DELIVERABLE 4.2

VELOCITTÀ EVALUATION RESULTS AND RECOMMENDATIONS

WP 4: Monitoring & Assessment of Effectiveness

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Table of Content

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Tables

Figures

1 Introduction to the Project Evaluation

1.1 General objectives of VeloCittà

With more than 500 cities in 49 countries worldwide bike sharing has experienced an enormous growth and is one of the fastest ways to make energy efficient and sustainable transport available in urban areas. On the longer term, Sharing Systems (not only bike) can contribute into increasing the efficiency of transport and of infrastructure use with information systems, behavioural approaches and market-based incentives as mentioned in the EU White Paper (2011).

VeloCittà brought together **five urban Bike Sharing Systems (BSSs)** with performances lower than the desired levels of use.

The general objectives were:

- To **identify** and **remove** the responsible market and organisation **barriers** by applying strategies and methods that have already been proved effective in stimulating a behaviour change through **segmented marketing** and **operational enhancements**.
- To **encourage** citizens, tourists and employees to **use an energy efficient and sustainable transport mode** for their urban travel journeys.
- To **change the travel behaviour** of the public with two complementary approaches:
  1. Utilisation of user **segmentation techniques** to overcome perceptual and/or attitudinal barriers;
  2. Adoption of the most effective available **operational solutions** with regard to financial organisation and political involvement to improve the performance of the BSSs.

1.2 Specific and strategic objectives of VeloCittà

BSSs have an important role in providing an alternative mode of transport within cities, and helping to shift journeys away from private car and public transport to cycle. In this framework VeloCittà specific objectives are:

- To draw on existing **proven techniques** to bring about behavioural change leading to increased use of BSS through effective **communication approaches** in each of the five demonstration sites.
- To improve the **organisational and operational efficiency** of the BSS in each of the five demonstration sites by addressing issued related to financial viability and "best business cases", as well as by increased political involvement and support.
- To analyse, collate information on effective actions for increasing BSS use, and **transfer knowledge**, and **exchange experience** between partners and other organisations engaged in VeloCittà and other groups with existing BSS.
- To improve **energy efficiency** by shifting journeys currently undertaken by car and public transport to cycling across the case study regions, by increasing the visibility and acceptability of cycling.
- To analyse and assess the **impacts** of the project to spread information about the cost-effective opportunity represented by this type of investment for public mobility.
- To provide a permanent 'home' – during the project and beyond – for information on and advice to cities on Bike Sharing Systems by setting up an online BSS Workspace, connected to the project website as a start and to be integrated with other websites/Workspaces afterwards.

In this framework, the VeloCittà strategic objectives for the long term will be twofold: i) to continue to improve energy efficiency through increased used and potential expansion of BSS in all case studies cities and ii) to support other BSS schemes across Europe to increase their user numbers and efficiency by providing a knowledge and experience base on communications and operational approaches, in the form of a permanent online Bike Sharing workspace.

1.3 Evaluation in Velocittà

Evaluation in VeloCittà followed an established approach framed by the EU project MAESTRO and further refined through succeeding EU projects, amongst which the family of CIVITAS demonstration projects.

In Velocittà the primary goal of evaluation is to find and understand the concrete evidence produced by applying proven solutions/actions to a number of existing BSS aiming at increasing the use of shared

bike offerings. In order to reach the goal, evaluation is scheduled to execute a "before and after" analysis, which is effectively conducted as follows:

- Establishment of a **project baseline**, which represents to all means and purposes the departing situation (*before*) and as such the benchmark against which comparing the final one. The baseline is analysed in each Velocittà city through an initial round of data collection, which concerns the same exact impact and process indicators that are going to be collected at project conclusion.
- **Continuous verification** (*monitoring*) of the smooth implementation of the activities and intermediate rounds of data collection to monitor trends.
- Determination of a **final picture**, which represents the concluding situation (*after*) as a result of the interventions made possible by VeloCittà. Again, the instrument utilised is impact and process data collection, performed according to the methods employed for baseline and monitoring.

1.4 Key elements of this document "evaluation results and recommendations"

This report shows the results reached by the 5 VeloCittà BSS sites with the support of horizontal activities (market segmentation analysis, knowledge centres, communication) with the following tools:

- An accurate detection and interpretation of the **impacts** (counted, calculated, surveyed or estimated) of the project.
- An assess of the activities implementation, and their **process**, in order to understand how and why certain results have been reached, alongside the reasons for change and deviation from plans.
- The **contribution** of the work done by **other partners** in the project on political involvement (D3.8 and D2.4 factsheet), on the cooperation between municipality and operator (D4.3) and on financing and organization aspects (factsheet D2.4).
- For those interested in studying and/or replicating similar policies, a series of recommendations has been elaborated on the basis of the lessons learned.

2 Impact evaluation

2.1 Burgos: the story of BiciBur system

The Burgos Hire System was launched in 2006, and during the last seven years the system has been upsized up to 18 docks with ten available bicycles in each one. Burgos started with a free system, calling "Loan system".

It was free for citizens and tourists and they can take the bike for two hours (citizens) or three hours (tourists).

The tourists also had a locker to open the possibilities of leaving the bike outside and visiting a monument. In the year 2011, Burgos joined the public transport and bike share system in the same travel card, so it was very easy to access the bikes, reaching a total number of 12,000 users. Also that year the number of uses of the bicycle reached 150,000.

Figure 1 - BiciBur logo

The picture changed in the year 2012, as the Council decided to implement a fee of 15 € per year, resulting in a decrease in the number of users to only 500 and the number of uses to 5,000. In the face of that situation, the Council tried to get users by promoting inter modality, trying to promote it also among tourists and make the process to get a transport card even easier.

Figure 2 - Burgos BSS

At the same time during that period the modal split moved from 0,2 in 2005 up to 3.8 in 2011. The bike share service is owned (for profit) by the Municipality and operated by private company under a public contest. This means 180,000 € per year. It counts with 23 docking points in 2017 and 200 bikes.

Burgos was the first Spanish City to install this system and the same one has been imported to

more than 20 other Spanish cities, some Portuguese ones and a Polish one (mainly technology). The system was created under the European CiViTAS umbrella.

Towards the end of 2013, the picture has improved in terms of number of people who have signed up for the service: this has more than doubled: from 504 to 1020.

Burgos municipality has made enough budgets available for at least the period 2014-16, which was included in the SUMP. In addition to the 18 stations, 5 new ones have been introduced during the project lifetime.

To promote the inter-modality, the membership card was integrated with the public transport card to allow the use of only one card for buses and bikes. The same measure was implemented to integrate the University card with the BiciBur one.

The bike sharing system is open 24 hours a day during the whole year and it is a station-based system working with contactless cards. Therefore, it is possible to check in real time the availability of bikes. Up to the last year, in order to register, users had to go to the mobility office and paid the subscription (15 euro per year) through a bank. It is still not possible to book in advance a bike, but the user has to check online (by pc or mobile device) the availability before going to the rental station.

Thanks to the expansion of the system, the subscription was possible to do it through internet, and thanks to the renewal of the bicycles and the marketing and communication campaigns delivered within the VeloCittà project the popularity and the usage of the system increased rapidly doubling the number of users and rentals in only 2 years.

The main activities delivered during the project lifetime were:

- The website, which has been updated and improved, and now it is simpler to use the online membership system, a contributory factor in attracting new users. The marketing campaign ran from May to September 2016 and was based on some promotional gifts for both new users and those who renewed their subscription: a holder for the mobile, a water bottle and a headband to secure glasses. The campaign targeted both workers and residents, and included some advertising in the local newspapers and on the local news websites giving visibility to the campaign.

Figure 3 - A bike sharing station

- A contest was organized with 6 smart watches as the big prize. Two of the six winners had their picture taken when Burgos hosted the VeloCittà meeting when the contest finished in October.
- Now in terms of marketing campaign, leaflets were produced explaining the advantages of the system: easier now to be member, very cheap (only 15 € per year) and explaining the gifts and awards.
- As one of the targets was students, many activities were organized in the different campuses, mainly focused on giving leaflets and explaining the advantages and improvements of the Bike Sharing system.
- During this year`s European Mobility Week the city carried out promotional activities in the streets and in the pedestrian areas including special BSS membership stand.

- A blog was launched to promote the activities and to provide an explanation on how to become a member, with news and other information useful to new and existing members.


Figure 4 - Promotional activities

Table 2-1 – The Burgos state of play

Burgos framework	
Demography	✓ 179,000 inhab. ✓ 1,672.55 inhab./km^2 ✓ 157,520 commuters/day ✓ 6,500 university students
Modal share	✓ Private cars: 27% ✓ PT: 23% ✓ Cycling: 4% ✓ Walking: 45% ✓ Others (motorbike): 1%
Other existing BSS	Only renting per day for tourism, you can do it in the hotel and the prices vary from 10€ to 15€ per day depending on the bike.

Burgos framework	
Target groups	✓ Students ✓ Workers ✓ Tourists
Marketing measures	✓ Launch of the system ✓ New mobility in the city ✓ Leaflets to remind the scheme existence

2.2 The results achieved

The following table summarizes the Burgos baseline and the results achieved. The most relevant ones are described more in detail.

Table 2-2 – Burgos BSS Key Performance Indicators

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 1	Saved energy (induced by modal shift)	-	-	Not applicable[1]	Nov 2015	2.421 litres of fuel (petrol) for travels made by bike (yearly)	Assumptions[2] on distance and fuel consumption	Oct 2016	14.835 litres of fuel (petrol) for travels made by bike (yearly)	Assumptions on distance and fuel consumption
KPI 2	CO2 levels	July 2014	0,1 mg/m3	Burgos has four stations to measure, easily available in real time and historic data in http://servicios.jcyl.es/esco/tiempoReal_bu	Nov 2015	0,1 mg/m3		Oct 2016	0,1 mg/m3	
	NOx levels	July 2014	NO: 2 ug/m3 NO2: 10,14 ug/m3		Nov 2015	NO: 2 ug/m3 NO2: 8,95 ug/m3		Oct 2016	NO: 6 ug/m3 NO2: 17 ug/m3	

[1] Since the energy savings will be calculated as a difference between the departing conditions (Baseline) and the final situation where it will be considered that a certain modal shift towards bicycles is occurred, for the baseline measurement no value can be applicable.

[2] We have considered an average fuel consumption of 0,1l/km and a maximum travel by bike per day of 10 km (5*2) Sources:

http://www.theicct.org/sites/default/files/publications/ICCTupdate_EU-95gram_jan2014.pdf

http://www.ilsole24ore.com/speciali/emissioni_auto/emissioni_auto_emissioni_tipologia_ford_benzina.shtml

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
	PM10 levels	July 2014	12,25 ug/m3	scar.do Historical for the last week	Nov 2015	13,15 ug/m3		Oct 2016	16 ug/m3	Weather and infrastructure works
KPI 3	N. of registered users	Jan 2014	502 users	Mobility Office Data	Nov 2015	542 users	Users year 2014	Oct 2016	1020	Total number of users with a subscription
KPI 4	N. of rentals/user by registered members	Jan 2014	37,5 rentals/user	Mobility Office Data (yearly)	Nov 2015	39,2 Rentals/ user	Mobility Office Data (yearly)	Oct 2016	33 rentals/ user	Mobility Office Data (yearly)
KPI 5	N. of rentals/bike	Jan 2014	175,9		Nov 2015	111,72		Oct 2016	204	
KPI 6	N. of rentals/dock across scheme area	Jan 2014	991		Nov 2015	1118		Oct 2016	1464	
KPI 7	N. of cycles	Jan 2014	107 bicycles	Mobility Office Data	Nov 2015	190	New 150 to be acquired soon	Oct 2016	150-180 bicycles	There is a transition

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
									in the system	between the old bikes and the new ones
KPI 8	N. of stations	March 2014	18 stations	Mobility Office Data	Nov 2015	18 stations	A new one to be opened soon	Oct 2016	23 stations	
KPI 9	Scheme density (station/mt)	Jan 2014	0,17 stations per km2	Mobility Office Data	Nov 2015	0,17 stations per km2	Same data as Jan 2014	Oct 2016	0,21 stations per km2	
KPI 10	Modal shift in the target group	2011	3,80% modal share	Mobility Observatory, Mobility Office City Council Burgos	Nov 2015	Still data from 2011	To be updated soon	Oct 2016	8,9 % based on Jan 2016 study	
KPI 11	Willingness of different target groups to shift towards bikes	13% at least likely to change PTP Cycle Data, Baseline of the project								

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 12	User satisfaction	Jan 2014	8,8 out of 10	Mobility Office Data	Nov 2015	8,8 out of 10	Same data as Jan 2014	Oct 2016	No new data, 8,8 as Jan 2014	
KPI 13	Operating revenues	Jan 2014	7,500 €	Mobility Office Data	Nov 2015	8,250 €		Oct 2016	15,300 €	
KPI 14	Operating costs	Jan 2014	180,000 €	Mobility Office Data	Nov 2015	180,000 €		Oct 2016	180,000 €	

Thanks to the Velocittà project and to the attention payed in the delivery of targeted campaigns to commuters, residents (age around 35-45) and students, it is possible to observe the increase in the annual number of rentals that from 18825 reached the number 33660 with 78% more usages than in 2013.

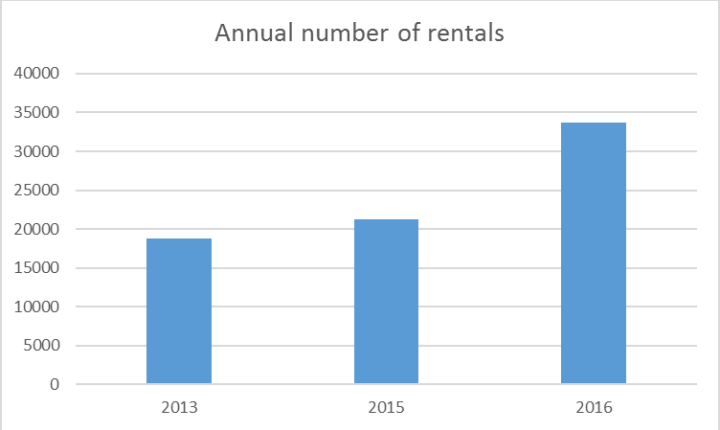

Figure 5 - Burgos Annual rentals

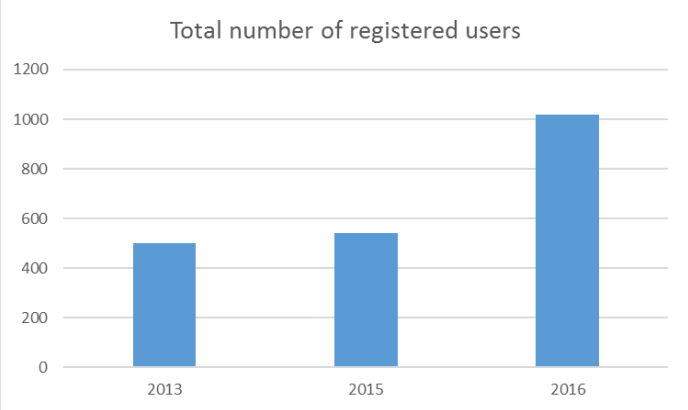

Figure 6 - Burgos registered users

Also the number of subscribers rose to 1020 doubling the initial data. From the start of the crisis (i.e. the introduction of a 15 € fee) when the users were only 500, the system is well on its way towards a complete recovery.

The system not only had more users but also an increase in usage with an important growth in the number of rentals per bike (+16%). It is important to notice that in these cases usually the number of rentals per user, due to the greater usage of the system (and in some cases decreased availability of bikes), tends to decrease significantly.

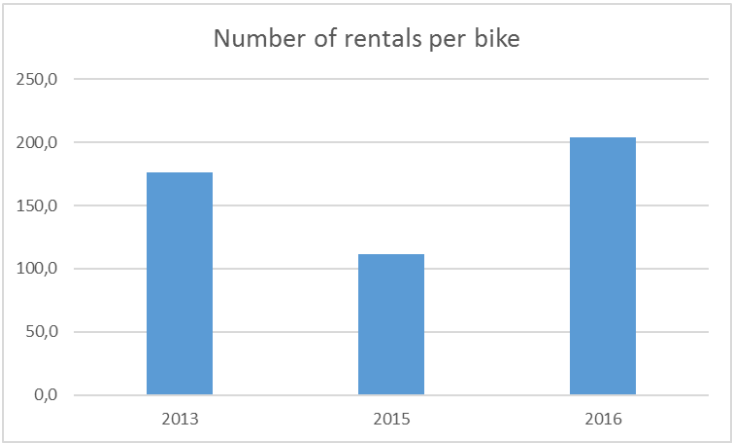

Figure 7 - Rentals per bike

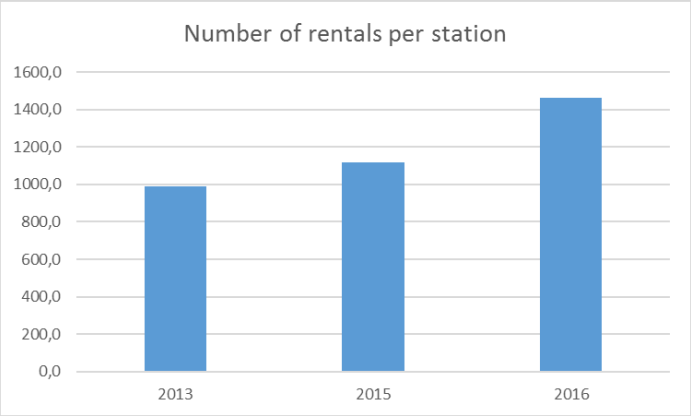

Figure 8 - Rentals per stations

However, thanks also to the increase in the number of bikes (from 107 to 180) and in the stations (from 18 to 23), the rentals per user drop only from 37 to 33 percent.

As for the rentals per bikes, also the rentals for each station increased by 47%. As showed in the figure on the right, even if the number of stations increased from 19 to 23 also the usage of the stations is more intense.

Another relevant result gained by the city of Burgos is the modal shift obtained at the end of the project; based on a study carried out on January 2016 the percentage of persons who shift from other modes to cycling increased from 3,8% to 8,9 %.

The man in the following pictures was interviewed in October 2016 about his experience with the BSS. After showing to us how was easy and quick to take and bring back a bike, told us about his experience as commuter who decided to leave the car and use the BSS for his daily trips.

Figure 9 - A user who brings back a BiciBur bike

Concerning the air quality (KPI 2) the city of Burgos provided the requested data but it is impossible to assess which is the amount of impact the modal shift from car to bikes caused on the environment. Several factors interfere and influence the quality of the air in a city and it is reasonable to say that cycling is one of these and ensures, with all the others sustainable transport modes, a better and liveable environment.

For the saved energy (KPI 1) it is possible to make some assumptions on distance travelled daily with the bike-sharing and on an average fuel consumption (see table 2.2). Supposing a petrol saving for each travel made by bicycle instead of by car (the subscribers) we calculate 14.835 fuel litres saving per year. Even with low numbers of short trips (maximum 10 kilometres per day) it is possible to impact on the energy saving in a significant way.

2.3 The story of the two Krakow bike sharing systems

The Bicycle Renting System "BikeOne" started to exist in Krakow in autumn 2008 thanks to 6th FP project CIVITAS CARAVEL. This was the first implementation of bike sharing system realized in Poland and one of the first in Central Eastern Europe.

Figure 10 – The first Krakow bike-sharing: KMK system

It started off with 100 bicycles and 12 self-service bicycle stands with places for bicycles. Within the first 3 years of its existence, the system expanded up to 120 bicycles and 16 stations. The system was operated by the consortium of private companies that won the tender. All the elements were of municipal property.

The company earned from subscriptions and advertisement placed e.g. on the bicycles (the company cooperated mainly with the biggest online /auction service in Poland named Allegro). The subscription was possible only via internet; the payment system based also on the on-line tools only (credit cards, wire transfers). Customers needed to register via internet and make initial payments on the BSS's website.

During registration the user obtained a personal customer number and defined a personal PIN code. Only these two numbers were needed to use the system later on. No credit card was required. The users could choose an option from different types of subscription (e.g.: monthly, seasonal). Initial period of every ride (30 minutes) was free of charge. After that time client's customer account was charged depending on rental time. Special subscriptions for tourists were available as well. The number of average number of rentals amounted to 5000-8000 by month (within 2009-2011), and the number of day rentals achieved ca. 150-170. Each year the number of trips increased by ca. 20% per year. At the end of 2011, system had ca. 6000 registered people with 4000 active users ("active" meaning at least 1 rental).

When the contract expired the new tender was opened and another company, settled in the city of Rzeszow won it. The company operated Rzeszow's bicycle renting system. Unfortunately, the

cooperation between the new company and the Municipality did not proceed very well and the contract was dissolved in April 2013.

Subsequently the system was being operated by The Authority of Municipal Infrastructure and Transport (ZIKiT), which is a municipal unit. There was a strong political will to keep the system and to develop it in the future. However, until the end of 2013 there was no dedicated budget for development. In the beginning of 2014, coinciding with the start of VeloCittà, the idea of selecting a private operator came up. In the late spring 2014 a new operator named BikeU was appointed in a public tender. BikeU acted as a technical operator, whereas ZIKiT still acted as a managing operator. The system was called KMKBike (KMK as an abbreviation of Komunikacja Miejska w Krakowie – Urban Communication in Krakow).

The KMKBike system was planned to be integrated with the Krakow's Municipal Card (a kind of electronic ticket enabling to use PT in the city). The plans were to enable all holders of the Krakow's Municipal Card for all PT lines to use the system freely.

The system served the citizens in principal. The registration procedure based on the website but it changed in order to simplify the whole procedure. The mobile phone number was necessary to obtain a special and unique SMS code.

Figure 11 - The system expansion

The contract lasted till the end of 2014 and a new public tender, opened at the beginning of 2015, appointed another company for the year 2015. At that time there were 29 docking stations and 270 bikes. In the same time the city started to rethink completely the bike sharing organizational model. Knowing that a big change is going to come, only part of the VeloCittà marketing and promotional campaigns were rational to be delivered in 2015.

. The city of Krakow engaged with a variety of stakeholders during the campaign planning with frequent meetings. The city and the VeloCittà project supported with some nice gadgets also cycling students of one of the Krakow's universities participating in the annual rally.

They also promoted the system in multiple ways: focusing on residents, they offered them a set of thematic tourist bike tours during the summer time. In order to ride safely and securely on the bikes, the city also organized training courses in a real traffic environment acquainting them with the new cycling infrastructure.

Figure 12 - Cycling tour in Krakow

To raise the awareness of residents, students and employees about the BSS Krakow launched a knowledge competition consisting of a series of questions to test the participants' awareness on Bike sharing.

Finally, at the end of 2015, the city decided to outsource the entire system to a private company. The impossibility for the municipality to have a multiyear planning and to allocate to bike sharing more than "one year budget" brought to the decision to entrust the management and the infrastructure of the 4th generation new system through a new tender for an 8-year contract. After a long bureaucratic process BikeU bid won the contract.

The new system, Wavelo, started in the mid of October 2016 with a pilot phase (100 bicycles) planning the official launch for April 2017 with 150 stations and 1500 bikes.

Figure 13 - Wavelo: the new system

The operation is different. The registration is possible via website or with online application and daily, monthly or annual subscriptions, including 60 or 90 minutes for free every day, are available. The new system is much more sophisticated and therefore flexible. For instance, the tech is inside the bike,

equipped with GPS and on-board computer. Stations and bike stands no longer need any mechanical elements to rent a bike.

The new system addresses 4 different target groups: residents, especially families, commuters, students and tourists offering different subscription options and taking care of different needs (and communication campaigns). The messages are different: on one side there are families interested more in safety and in the possibility to use the same subscription for more persons, on the other side students are looking for high availability and a cheap service. Tourists are more focused on an easy registration process and for commuters the availability of bikes early in the morning and in the afternoon as well as their localization nearby workplaces is a must.

BikeU is also working to establish conventions with big companies and hotels in order to offer the better service to the different users.

VeloCittà activities helped the growth of the old system in the years 2014-2015 and are supporting now promotion of the new system with the knowledge acquired during the project. Due to the project a professional marketing campaign was possible. It started with a promotional and instructional movie that explains clearly how to use the new system. The movie is accompanied with 5 animated instructional short movies with each of them focusing on a separate aspect of Wavelo (1. Kraków welcomes Wavelo, 2. Three methods of logging in, 3. Expansion plans, 4. Wavelo's influence on health and state of mind – addressed esp. to students, 5. On Wavelo's bikes to work). In the same time, the system was promoted with beautiful big size posters presented on the so called city lights located by public transport stops (welcome poster, Christmas poster, a poster targeting students and expansion poster). Small versions of 4 posters (the above-mentioned plus a poster targeting employees and commuters as a replacement of a Christmas poster) were produced and prepared for hanging out at universities, workplaces, dormitories etc.

Table 2-3 – The Krakow state of play

Krakow framework	
Demography	✓ Ca. 762 400 inhab. In 2016 ✓ 2,329 inhab./km² in 2015 ✓ 204,897 workers ✓ 178 807 students in 2015 ✓ 10 050 000 visitors in 2015

Krakow framework	
	✓ 8 150 000 tourists in 2015
Modal share	✓ Car: 35,8 % ✓ Public Transport: 32,3% ✓ Walking: 27,1% ✓ Cycling: 4,3% ✓ Other: 0,6%
Target groups	✓ Residents (mainly city centre and central districts in 2015, in 2016-2017 all districts) ✓ Commuters and students and tourists (in 2017)
Marketing measures	✓ Simplification of existing BSS procedures. ✓ Tailored marketing campaigns.

2.4 Krakow after the project: the results

The following table summarizes the Krakow baseline and the results achieved. The most relevant ones are described more in detail.

Table 2-4 – Krakow BSS Key Performance Indicators

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 1	Saved energy (induced by modal shift)	May 2014	-	Not applicable[3]	Dec 2015	36.296 fuel for travels made by bike	Assumptions[4] on distance and fuel consumption	Jan. 2017	795.046 fuel for travels made by bike	Assumptions on distance and fuel consumption
KPI 2	CO2 levels	May 2014	no data available							
	NOx levels	May 2014	254 µg/m3 110 µg/m3 74 µg/m3	Website of the monitoring network of the Małopolska province average values for 3 stations for 4 months in 2014	Dec 2015	247 µg/m3 99 µg/m3 72 µg/m3	Website of the monitoring network of the Małopolska province average values for 3 stations for	Dec. 2016	225 µg/m3 98 µg/m3 70 µg/m3	Website of the monitoring network of the Małopolska province average values for 3 stations for 3 months in 2016 (Sep-Nov)
	PM10 levels	May 2014	86µg/m3 67µg/m3 64µg/m3		Dec 2015	76 µg/m3 53 µg/m3 59 µg/m3		Dec. 2016	56 µg/m3 40 µg/m3 41 µg/m3	

[3] Since the energy savings will be calculated as a difference between the departing conditions (Baseline) and the final situation where it will be considered that a certain modal shift towards bicycles is occurred, for the baseline measurement no value can be applicable.

[4] We have considered an average fuel consumption of 0,1l l/km and a maximum travel by bike per day of 10 km (5*2) Sources:
http://www.theicct.org/sites/default/files/publications/ICCTupdate_EU-95gram_jan2014.pdf
http://www.ilsole24ore.com/speciali/emissioni_auto/emissioni_auto_emissioni_tipologia_ford_benzina.shtml

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
							3 months in 2015 (Sep-Nov)			
KPI 3	N. of registered users	May 2014	11520	The Authority of Municipal Infrastructure and Transport (ZIKiT)	Nov 2015	54756	The Authority of Municipal Infrastructure and Transport (ZIKiT)	Apr/May 2017	40000	The system now is only a trial version. These are assumptions for the new system that will start in April
KPI 4	N. of rental/user by registered members	May 2014	0,43 (monthly)		Nov 2015	0,75 (monthly)		Apr/May 2017	1,5 rentals per day	
KPI 5	N. of rental/bike	May 2014	18,16		Nov 2015	125		Apr/May 2017	533	
KPI 6	N. of rental/dock across scheme area	May 2014	169		Nov 2015	1250		Apr/May 2017	5330	
KPI 7	N. of cycles	May 2014	270		Nov 2015	330		Apr/May 2017	1500	

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 8	N. of stations	May 2014	29		Nov 2015	33		Apr/May 2017	150	
KPI 9	Scheme density (station/mt)	May 2014	600 - 1000 m		Nov 2015	600 - 1000 m		Apr/May 2017	300-500 m	1000 mt if the station is in a less dense populated area
KPI 10	Modal shift in the target group	May 2014	1,9%	Cycling modal share	Nov 2015	4,3%	Cycling modal share	Apr/May 2017	+1% of tourists Commuters from PT and private car to bike sharing	The system will start in April and there is not yet an assumption on modal shift
KPI 11	Willingness of different target groups to shift towards bikes	May 2014	no data available		Nov 2015	Residents (76%, 83%) Students (84%, 74%)	Velocittà surveys (WP2)	Jan. 2017	no data available	

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
						Employees (63%, 40%)	Opinion on Bicycles and Bss			
KPI 12	User satisfaction	May 2014	no data available	not available	Nov 2015	Qualitative data: before the end of the system the satisfaction was pretty high	not available	Jan. 2017	no data available	Considering the high quality and reliability of the new system, the user satisfaction should be higher
KPI 13	Operating revenues	May 2014	3.894 PLN (ca. 950 EUR)	incomes from users	Nov 2015	Ca. 4.500 EUR	incomes from users	Apr/May 2017	22.500 EUR	incomes from users/ Assumptions made for 40.000 users with an annual subscription

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 14	Operating costs	May 2014	9.3500 PLN (ca. 22.805 EUR)	Costs paid by ZIKiT monthly (average) to the operator. No data available concerning all operating costs incurred by the operator.	Nov 2015	Ca. 88.000 PLN (ca. 21.500 EUR)	Costs paid by ZIKiT monthly (average) to the operator. No data available concerning all operating costs incurred by the operator.	Jan. 2017	Investment made by BikeU: 1500 EUR/bike Cost for the city: 36.000 EUR for 8 years contract	

Krakow is a very specific case in the VeloCittà constellation. During the project lifespan two different systems occurred and both benefited from the VeloCittà activities.

In fact, a first marketing campaign was delivered during 2015 helping the old system to increase substantially the number of users (from 11.520 to 54.756) and rentals (from 4.955 to 41.250).

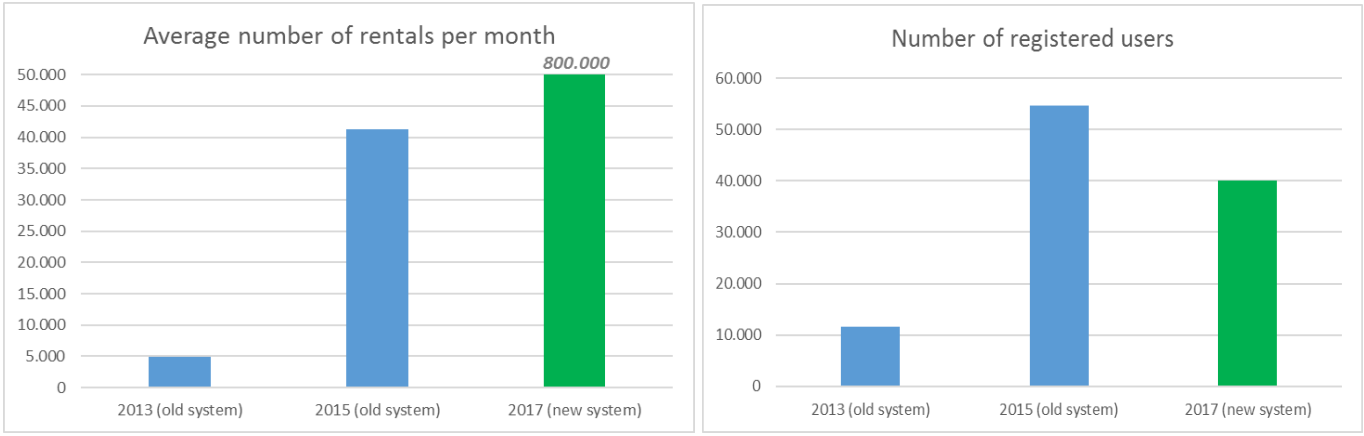

Figure 14 - Monthly rentals and subscribers

The new system Wavelo started in Oct. 2016 and is now on a trial phase and will be officially launched in its full size in April 2017. Experiences and knowledge exchanges gained during the past project years are now at disposal of an intensive and well targeted campaign that is addressing, with different messages and strategies, 4 target groups: tourists, commuters, students and residents (especially families).

The numbers indicated for the new system are a credible estimation made by the city and the new operator on the basis of the number of early subscribers during the pilot phase and users of the past system that received a voucher for a free month subscription.

The expected number of rentals per month is very high in comparison with the old system and this is justified by the price of the subscription (higher than in the past one); the more a user pays for a service, the more he will take advantage from it using the system for a high number of trips and purposes.

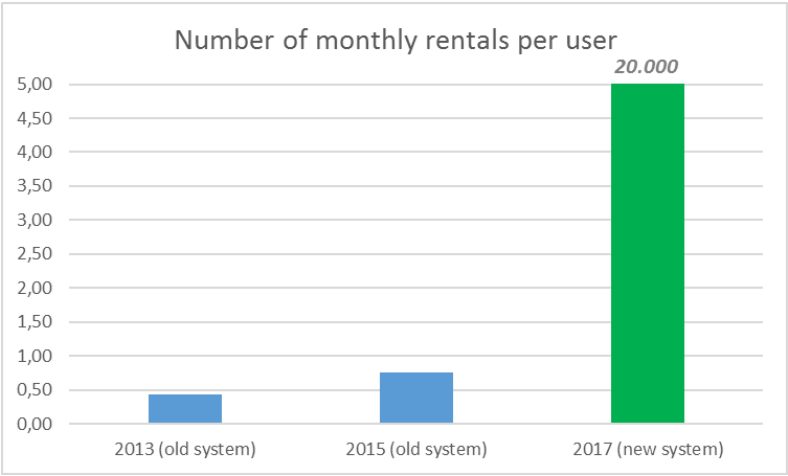

Figure 15 - Monthly rentals per user

The high expectations for the new system are also based on the great investment that the operator is doing; the number of bicycles available from April will be 1.500 instead of 330 (270 at the beginning)

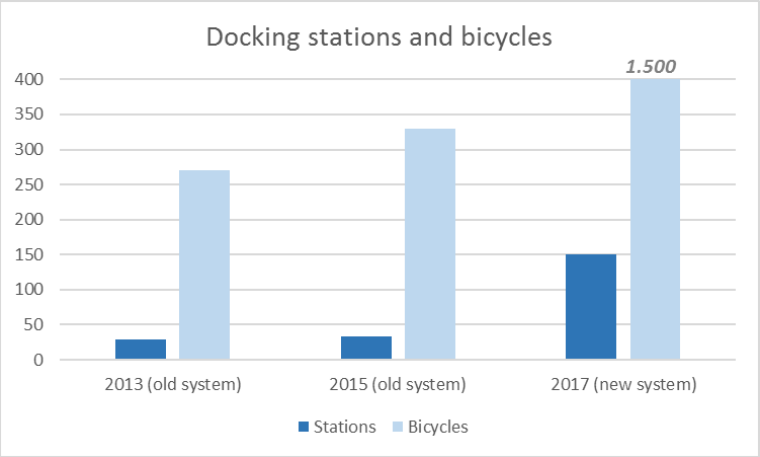

Figure 16 - Stations and bicycles

and the stations 150 instead of 33 (and 29 in 2013). The increase in bikes and docking points at disposal to users is growing of 456% and 417% respectively.

This increase in system coverage and in capillarity will allow the new bike sharing to offer a better, reliable and flexible service.

Also the different options for the subscription will attract a significant percentage of tourists interested in discovering the city by bike. Every year about 10-12 millions of tourists visit Krakow and, even with 1% estimation of them, this would mean 10.000 daily subscriptions per year.

Concerning the air quality (KPI 2) the city of Krakow provided the requested data but it is not possible to assess which is the amount of impact the modal shift from car to bikes caused on the environment. Several factors interfere and influence the quality of the air in a city and it is reasonable to say that cycling is one of these and ensures, with all the others sustainable transport modes, a better and liveable environment.

For the saved energy (KPI 1) it is possible to make some assumptions on distance travelled daily with the bike-sharing and on an average fuel consumption (see table 2.4). Supposing a petrol saving for each travel made by bicycle instead of by car (the subscribers) we calculate 795.046 fuel litres saving per month. Even with low numbers of short trips (maximum 10 kilometres per day) it is possible to impact on the energy saving in a significant way.

2.5 London (Lambeth & Southwark): the story of the system

The London Cycle Hire Scheme launched in July 2010 with 315 docking stations and 5000 bicycles available to hire in 8 Central London boroughs including Southwark & Lambeth. The scheme is available to both registered members and casual users, able to hire a bicycle on an ad-hoc basis with their credit cards.

Figure 17 - The old bike sharing system

In March 2012 the scheme expanded further eastwards to cover Tower Hamlets as part of the Phase 2 expansion. The bicycles were available in 9 boroughs in Central London. In December 2013 the system was extended also to new areas within Wandsworth, Hammersmith & Fulham, Lambeth and Kensington & Chelsea.

Although the cycle hire scheme did not yet cover large areas of Southwark and Lambeth there was ambition and plans to extend the scheme further southwards into these boroughs. The proposed extension area into Southwark has a high propensity to cycle and already a cycle mode share which is higher than the inner London average.

Usage of the scheme had been increasing London wide and Southwark is no exception. When comparing the same months in two different years (2014, 2015 and 2016) the number of hires and docks has increased every month for which comparable data was available.

Southwark has 39 cycle hire docking stations located in the north of the borough. The most popular cycle docking stations in the borough were focussed in the London Bridge and Bankside areas which form part of the main business district. The majority of the usage tended to be by commuters and employees. Less popular docking stations tended to be away from the central area and towards the scheme periphery. A better understanding was required of the potential demand at these locations and how to exploit that

Figure 18 - Santander bikes

demand. Southwark was, and still is, one of the fastest growing boroughs in terms of population in London.

Given the high density of development, with many residents having limited space to store their own bicycles, there was the potential for high demand for the bike hire scheme in large parts of the borough.

Southwark's current schemes now include Quietways (quiet cycle routes), Grid routes (cycle routes), Cycle to School partnerships (cycling awareness and infrastructure improvements), and minor implementation projects (cycle parking).

As for Lambeth, the north of the borough where the scheme was in place and the areas of the proposed expansion have high densities of residents who have limited space for storing their own bicycles thereby creating potential demand for the bike sharing system.

Vauxhall in the centre of the Cycle hire area was coming to be home to a large student residency which will serve many London Universities across the city and scheme should be maximised for their use as transport to their various institutions. Statistics showed that only 23% of members of the scheme are female and 6% are non-white, this is compared to 61% of Lambeth residents who classify themselves as non-white. This shows a great potential for identifying the specific barriers to these groups as residents or as students or workers in the area.

Lambeth Council adopted its Cycling Strategy in July 2013, and has commissioned a propensity to cycle study which is due for completion in December 2013.

Figure 19 - Lambeth station near the student residency

Due to Southwark and Lambeth's role in the Central London Partnership, the two boroughs disseminated lessons learnt to the other London Boroughs with Santander docking stations, thereby improving the overall uptake and management of the London bike sharing scheme.

The London Cycle Hire scheme is operated on a revenue-generating basis, with any surplus reinvested into transport projects or deficit subsidized. The scheme is owned by Transport for London (public company). After Barclays contract, from 2015 Santander is currently sponsoring the scheme giving them

branding rights. The scheme is operated by Serco (private company) under the terms of a contract procured by Transport for London (public company).

Barclays sponsored the scheme from the outset for £25m which ended in 2015. Santander took over the sponsorship for 7 years, with a clause for the bank to promote and grow the scheme, ensuring greater engagement and involvement. The deal at £43.75 m was the largest public-sector sponsorship in the world at the time.

Thanks to the Olympics legacy, the wide investment made with the new sponsor Santander and also due to the high number of tourists visiting London after the *Brexit* referendum, the system grew hugely and the Velocittà activities found a perfect field for the marketing and communication campaigns.

Lambeth and Southwark worked closely with Transport for London who use sponsorship money for marketing campaigns. Activities included marketing on bus stops, tube stations and digital media as well as bike rides, roadshows and free trial weekends. They attached project activities on these others to maximise the benefits for Velocittà campaigns.

For the VeloCittà campaign, specific docking stations with low usage but high population densities and a propensity to take up cycling were targeted. Residents were London's main target groups, with employees and students secondary target groups. Understanding the target groups allowed them to know what the issues were and informed the campaign.

The aim of London's campaign was to diversify the existing market and attract more women, young people and people from a wide range of backgrounds and incomes.

Figure 20 - Cycling in Southwark. TfL campaigns

Both Lambeth and Southwark held focus groups on the street to better understand the target groups. They learnt a lot about who used the bike scheme and how, and if not, why not. These discussions within the focus groups helped them shape our campaigns.

As one of the largest employers in the borough, Southwark Council employees were also targeted. Over Summer, staff were sent emails and online notifications, with posters in the office and Santander Cycle Hire face to face staff speaking to staff over a month period, providing free Cycle Hire vouchers. The council also signed up to a business account to make it easier for staff to hire bikes.

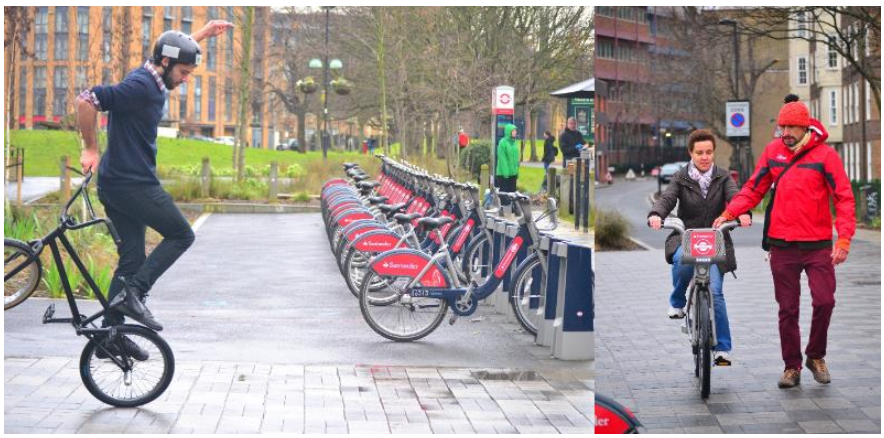

Figure 21 - Lambeth event

In Lambeth they decided to try a marketing and event campaign for the targeted residents. To make it family friendly, the event was held on a Saturday with a pop-up playground and free hotdogs to entertain the children while Santander bike experts chatted to parents about using the bikes. Similar event for the students was organized close to a large student accommodation serving Central London universities. Lambeth plan to work with the student accommodation every year to inform new students.

Southwark experimented new marketing techniques, commissioning graduates from the London College of Communications, a branch of the University of Arts London, to design, test and document a very targeted on-street marketing campaign.

One of the Unique Selling Points the graduate designers identified was Speed and Ease, with a focus on showing how close destinations are to cycle from Harper Road in Southwark. They designed and installed the numbers on Harper Road.

Figure 22 - Southwark campaign

This was complemented by a leaflet which was distributed to all households and businesses surrounding the docking station – with free trials and cycle confidence training.

Table 2-5 – The Lambeth state of play

Lambeth framework	
Demography	✓ 304,500 inhab. ✓ 5,767 inhab./km^2 ✓ 225,300 commuters/day
Modal share *(at London level)*	✓ Private cars/motorcycle: 23% ✓ Bus/tram: 24% ✓ Underground DLR: 8% ✓ Taxi/other public: 1% ✓ Cycling: 4% ✓ Walking: 30%
Target groups	✓ New users ✓ Existing members
Marketing measures	✓ Promote first time casual use. ✓ Enhance daily members' frequency of usage. ✓ Encourage yearly members to renew.

Table 2-6 – the Southwark state of play

Southwark framework	
Demography	✓ 288,300 (2011 Census: residents) inhab. ✓ 9,988 inhab./km^2
Modal share *(at London level)*	✓ Private cars/motorcycle: 23% ✓ Bus/tram: 24% ✓ Underground DLR: 8% ✓ Taxi/other public: 1% ✓ Cycling: 4% ✓ Walking: 30%
Target groups	✓ Hard pressed families ✓ Students

Southwark framework	
	✓ Employees
Marketing measures	✓ Launch the new TfL campaign. ✓ Include an online component, building on existing websites. ✓ Focus on targeting 'hard pressed families' to become casual users. ✓ Increase awareness of the docking stations. ✓ Concentrate on Southbank University students and Unite campus. ✓ Dedicated promotional activities for employees. ✓ Develop key messages to attract new users.

2.6 London after the project: the results

The following table summarizes the London baseline and the results achieved. The most relevant ones are described more in detail.

Table 2-7 – Lambeth BSS Key Performance Indicators

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 1	Saved energy (induced by modal shift)			Not applicable[5]	Nov 2015	10.171 litres of fuel (petrol) for each for the travels made by bike (monthly)	Assumptions[6] on distance and fuel consumption	Oct 2016	19.188 litres of fuel (petrol) for the travels made by bike (monthly)	Assumptions on distance and fuel consumption
KPI 2	CO2 levels	2010	170 kilotonnes	Travel in London Report 2011 (LEGGI)	Nov 2015		Further reports have not been carried out so no further data	Oct 2016		Further reports have not been carried out so no further data
	NOx levels	2011	77 µgm3	vauxhall annual mean	Nov 2015			Oct 2016		
	PM10 levels	2011	43 µgm3	vauxhall annual mean	Nov 2015			Oct 2016		
KPI 3	N. of registered users	July 2014	7.159	Members who live in Lambeth	Oct 2015	8.641	Members who live in Lambeth	Oct 2016	10.121	Members who live in Lambeth
KPI 4	N. of rentals/user by registered members	July 2014	8,3	Month data usage stats	Oct 2015	8,1	Month data usage stats	Oct 2016	7,8	Month data usage stats

[5] Since the energy savings will be calculated as a difference between the departing conditions (Baseline) and the final situation where it will be considered that a certain modal shift towards bicycles is occurred, for the baseline measurement no value can be applicable.

[6] We have considered an average fuel consumption of 0,1l/km and a maximum travel by bike per day of 10 km (5*2) Sources:
http://www.theicct.org/sites/default/files/publications/ICCTupdate_EU-95gram_jan2014.pdf
http://www.ilsole24ore.com/speciali/emissioni_auto/emissioni_auto_emissioni_tipologia_ford_benzina.shtml

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 5	N. of rentals/bike	July 2014	6,3		Oct 2015	6,8		Oct 2016	7,5	
KPI 6	N. of rental/dock across scheme area	July 2014	1388		Oct 2015	1625		Oct 2016	1610	
KPI 7	N. of cycles	July 2014	1189 9512	Docks and bikes	Oct 2015	1288 10333	Docks and bikes	Oct 2016	1486 10584	Docks and bikes
KPI 8	N. of stations	July 2014	43		Oct 2015	43		Oct 2016	49	
KPI 9	Scheme density (station/mt)	station every 300m average between each station								
KPI 10	Modal shift in the target group	July 2014	5%		Nov 2015	5%	Further reports have not been carried out so no further data	Oct 2016	5%	Further reports have not been carried out so no further data
KPI 11	Willingness of different target groups to shift towards bikes	May 2014	10%	propensity to cycle study	Nov 2015	10%		Oct 2016	10%	
KPI 12	User satisfaction	Dec 2013	71% satisfied across the whole of London	TfL usage and satisfaction survey	Oct 2015	71% happy with VFM. 83% renewing membership	TfL usage and satisfaction survey (members)	Oct 2016		
KPI 13	Operating revenues	no data available								
KPI 14	Operating costs									

Table 2-8 – Southwark BSS Key Performance Indicators

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 1	Saved energy (induced by modal shift)		-	Not applicable[7]	Nov 2015	4066 litres of fuel (petrol) for the travels made by bike (monthly)	Assumptions[8] on distance and fuel consumption	Oct 2016	8.541 litres of fuel (petrol) for the travels made by bike (monthly)	Assumptions on distance and fuel consumption
KPI 2	CO2 levels	2010	170 kilotonnes	Travel in London Report 2011 (LEGGI)	Nov 2015		Further reports have not been carried out so no further data	Oct 2016		Further reports have not been carried out so no further data
	NOx levels	2013 average	Site 2: 75.61 (NO2) Sites 10&11: 60.39 (NO2)	LBS Environmental protection team data	Nov 2015			Oct 2016		
	PM10 levels	2013	Sites 10 and 11: 25mg/m3		Nov 2015			Oct 2016		
KPI 3	N. of registered users	July 2014	8468	TfL data	Nov 2015	9955	Usage stats	Oct 2016	11400	

[7] Since the energy savings will be calculated as a difference between the departing conditions (Baseline) and the final situation where it will be considered that a certain modal shift towards bicycles is occurred, for the baseline measurement no value can be applicable.

[8] We have considered an average fuel consumption of 0,1l/km and a maximum travel by bike per day of 10 km (5*2) Sources:
http://www.theicct.org/sites/default/files/publications/ICCTupdate_EU-95gram_jan2014.pdf
http://www.ilsole24ore.com/speciali/emissioni_auto/emissioni_auto_emissioni_tipologia_ford_benzina.shtml

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 4	N. of rental/user by registered members	July 2014	6,1	Month data usage stats	Nov 2015	5,6	Month data usage stats	Oct 2016	5,2	Month data usage stats
KPI 5	N. of rental/bike	July 2014	5		Nov 2015	5,4		Oct 2016	5,7	
KPI 6	N. of rental/dock across scheme area	July 2014	1315		Nov 2015	1419		Oct 2016	1359	
KPI 7	N. of cycles	July 2014	1086 10324	Docks and bikes	Nov 2015	1086 10333	Docks and bikes	Oct 2016	1344 10584	Docks and bikes
KPI 8	N. of stations	July 2014	39	TfL data	Nov 2015	39	Total docking stations	Oct 2016	44	
KPI 9	Scheme density (station/mt)	July 2014	400m	Average between each station	Nov 2015	300m	Average between each station	Oct 2016	300m	
KPI 10	Modal shift in the target group	Casual Wave 2 July/Aug 2013; Members Wave 7 Nov/Dec 2013	Start cycling: 48% members; 60% casual users; Cycle more: 30% members; 80% casual users		Nov 2015		Further reports have not been carried out so no further data	Oct 2016		Further reports have not been carried out so no further data
KPI 11	Willingness of different target groups to shift towards bikes		48% Members; 60% Casual users		Nov 2015			Oct 2016		

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 12	User satisfaction		Casual - 82 points (out of 100); Members - 71 (out of 100) general / 79 (out of 100) for last trip		Nov 2015	71% happy with VFM. 83% renewing membership	TfL usage and satisfaction survey (members)	Oct 2016		
KPI 13	Operating revenues	no data available								
KPI 14	Operating costs									

Considering the wide coverage and the big budget that the city of London, TfL and Santander are investing on the BSS is difficult to demonstrate the amount of impact ascribable to the VeloCittà project and we cannot know for sure if there have been other influencing factors.

For sure it is visible the positive impact on cycling and a favourable public feedback that is the first step for a broad behavioral change and more people are aware of how to use the scheme in these areas. Thanks to the segmentation thinking and to the focus groups, the boroughts could address different target groups with different approaches, making them feel like key players of the process.

The boroughs, involving citizens and paying attention to their requests, also received useful information on where to expand the system (for example in Peckham area).

Another succesful result gained thanks to the project is the collaboration with London Universities: the engagement of academic sited in the area helped the boroughs to build cheaper but more efficient campaigns.

The following figure for the targeted docking stations shows an increase in use over the VeloCitta project period.

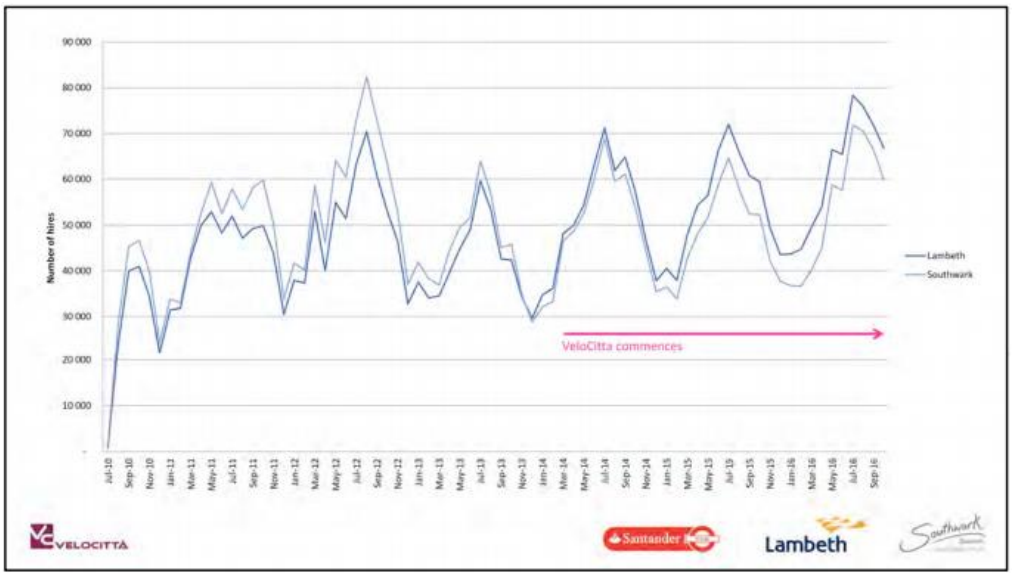

Figure 23 - Velocittà contribution

Looking more in detail at the impacts, while the number of stations increased about 12% in Southwark and 14% in Lambeth and the number of bike available in the system 3% in Southwark and 11% in Lambeth, the registered users grew up significantly, 35% in Southwark and 42% in Lambeth.

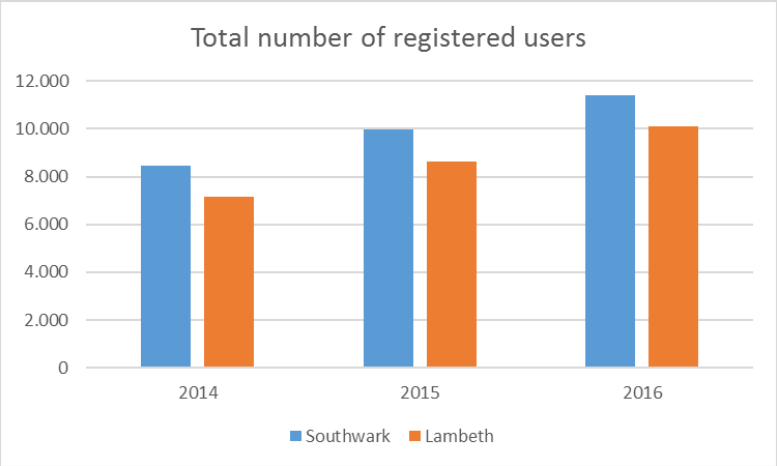

Figure 24 - Registered users who live in the borough

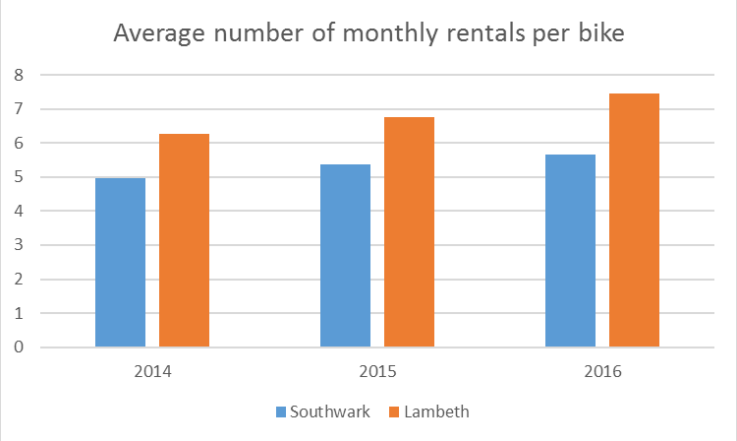

Figure 25- Monthly rentals per bike

As consequence of what we saw before, also the number of rentals per bike increased by 14% (Southwark) and 19% (Lambeth) from the baseline, indicating an intensive use of the system. This data could be impacted by the VeloCittà activities in the selected stations of the boroughs.

In the same way also the number of rentals, taking into account always the month of September, grew by 17% in Southwark and by 32% in Lambeth (from the 2014 baseline).

Concerning the air quality (KPI 2) in London after 2013 further reports have not been carried out so no further data can be collected.

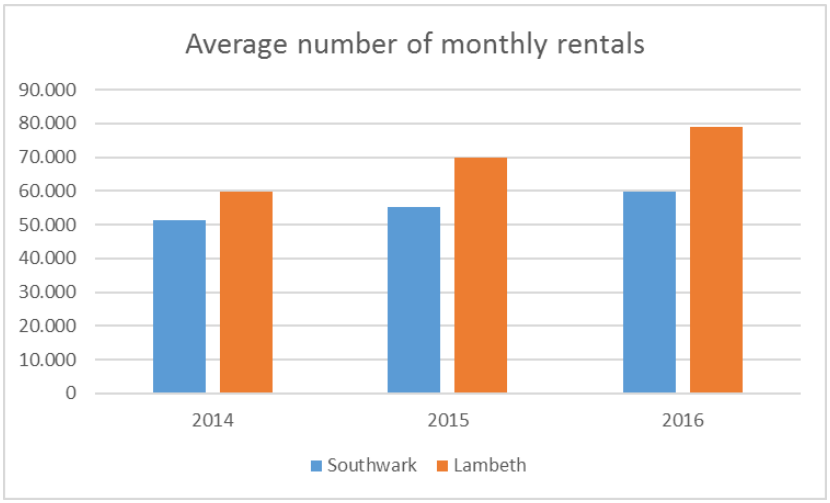

Figure 26 - Monthly rentals

However, the amount of impact that the modal shift from car to bikes in the project can cause on the environment is difficult to measure in such a complex and big context. Several factors interfere and

influence the quality of the air in a city and it is reasonable to say that cycling is one of these and ensures, with all the others sustainable transport modes, a better and liveable environment.

For the saved energy (KPI 1) it is possible to make some assumptions on distance travelled daily with the bike-sharing and on an average fuel consumption (see tables 2.7 and 2.8). Supposing a petrol saving for each travel made by bicycle instead of by car (the subscribers) we calculate 8541 fuel litres saving per month in Southwark, and 19188 in Lambeth. Even with short trips (maximum 10 kilometres per day) it is possible to impact on the energy saving in a significant way.

2.7 Padua: the story of GoodBike Padova

'GoodBike Padova' is the Padua public bike sharing system and it consists of 265 bicycles (traditional: 200; e-bike: 65), placed in 28 stations in the urban area of Padua, 6 of them equipped with photovoltaic panels. Bicycles are available 24 h/day.

The system was projected and implemented by Bicincitta, a private company that won the tender in 2013. The full project cost is € 456,000, including the 10 years management, and it was co-financed by the European Project Neutralp Co2Alpine Space, the National Environmental Ministry, some private funds and Municipality resources. All the elements of the BS Padua System (bikes and stations infrastructure) are of municipal property. The company's incoming resources are from the subscriptions and the advertisement spaces placed on the BS stations. The subscriptions are possible both by internet and front-office; after the payment the user obtains a contact-less card that allows using the service.

Figure 27 - GoodBike Padova station and

A front office and a call centre are available from 9 a.m. to 7 p.m., all week days and give information as well as supports, telephone subscriptions, reports to the maintenance service. The web workspace and the app provide real time public info about the stations, availability of bicycles, bikeway maps, news about the service.

When the VeloCittà project started, the system had about 2000 users, achieved in the first 6 months of operation. As the challenge of the project was to increase the number of subscribers, this very positive start created belief that the city's desire to increase the number of memberships would be successful. In order to improve the sale of the BS subscriptions a partnership with the public transport operator and local hotels was made.

The rapid increase of registered users and rentals put a strain to the capacity limit of the system. Soon the redistribution and maintenance of the bicycles started to struggle, with decreasing levels of quality and service perceived by the municipality and confirmed by declining user satisfaction.

In all fairness it should be noted that many BSSs show a physiological decline the second or third year of operation; the launch of a BSS is normally met by curiosity, and the novelty of public bicycles tends to

appeal to curious users. After one or two years the effect tends to wear off and registrations accordingly decline.

Also, it is important to point out that despite the mentioned decrease in users, the number of hires in Padua stayed strong with 219,527 in 2015; this means that a substantial part of the users have been won over and that the fidelity level is satisfactory. All in all, the combined effect of the above caused the BSS to register only 1.990 users at the end of 2015.

Figure 28 - Promotional event

In 2016, thanks to the promotional campaigns part of VeloCittà, the municipality, with the operator's support, held a series of communication events that concentrated during the spring and the summer. The campaigns allowed the BSS to target new groups, mainly residents and commuters, not aware of the previous communication actions.

Padua's promotion campaign focused on students including activities such as promotional events and marketing trough the university radio, prizes with subscriptions and discounted annual membership for University students. The campaign also used traditional advertising materials, including poster and leaflets. Face to face meetings at sporting events were also organised, to encourage cyclists and runners to extend their sports passion to a daily practice with the bike sharing system.

Bike sharing promotion was also carried out during other cycle and sustainability promotional events which took place in the city squares and included many attractions to involve as many people as possible. The aim of these events was not only to attract people's interest onto bike sharing, but also give the possibility to try the bicycle. Although the number of members did not increase as the city expected initially, they were able to create loyalty among members.

As part of the project, the city, in cooperation with the operator, monitored the system's operation.

Figure 29 - Poster from the campaign

One of the measures taken was a trial test, to increase the number of bicycles at the stations and test the ability of the system under stressed conditions.

To improve the service, the city also carried out a survey on members and those who didn't renew the subscriptions: the results suggested that the solutions are only possible with improved cooperation between City and operator.

To increase the number of subscribers the survey identified 3 key issues that need to be improved: 1) the age of the bicycles, 2) the efficiency of the redistribution service and 3) the expansion of the bike sharing system to other areas of the city.

Figure 30 – The introduction of new bikes in the system

Table 2-9 – The Padua state of play

Padua framework	
Demography	✓ 209,679 inhab. ✓ 2,258 inhab./km^2 ✓ 48,000 commuters/day ✓ 93,000 employees ✓ 58,000 students ✓ 607,000 visitors/year
Modal share	✓ Private cars: 48% ✓ PT: 22% ✓ Cycling: 16% ✓ Walking: 9% ✓ Others (motorbike): 9%
Target groups	✓ Students ✓ Residents

Padua framework	
Marketing measures	✓ Give incentives for university students' subscriptions. ✓ Organise dedicated promotional activities during students and schools events. ✓ Organise a festival dedicated to bikes. ✓ Organise guided cycling tours.

2.8 Padua after the project: the results

The following table summarizes the Padua baseline and the results achieved. The most relevant ones are described more in detail.

Table 2-10 – Padua BSS Key Performance Indicators

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 1	Saved energy (induced by modal shift)	-	-	Not applicable[9]	Nov 2015	5.478 fuel litres saved for the travels made by bike (yearly)	Assumptions[10] on distance and fuel consumption.	Dec 2015 Oct 2016	33.840 fuel litres consumption for the travels made by bike	Comparis on before and after the campaign in 2016
KPI 2	CO2 levels	March 2014 Aug. 2014	0.3 - 0.4 0.2 - 0.3 mgr/m3	Traffic station - urban area station	Nov 2015	0.6 - 0.6 mgr/m3	Traffic station - urban area station	Oct 2016	0.5 - 0.4 mgr/m3	Traffic station - urban area station
	NOx levels	March 2014 Aug. 2014	29 - 29 58 - 47 µgr/m3		Nov 2015	121 - 68 µgr/m3		Oct 2016	42 - 38 µgr/m3	
	PM10 levels	March 2014 Aug. 2014	14 - 9 32 - 36 µgr/m3		Nov 2015	26 - 29 µgr/m3		Oct 2016	25 - 28 µgr/m3	
KPI 3	N. of registered users	July 2014	3130	Source: Bicincittà Yearly data	Nov 2015	2535	Source: Bicincittà Yearly data	Oct 2016	2413	Source: Bicincittà Yearly data
KPI 4	N. of rental/user by registered members	July 2014	68		Nov 2015	87		Oct 2016	79	
KPI 5	N. of rental/bike	July 2014	808		Nov 2015	1347		Oct 2016	1530	

[9] Since the energy savings will be calculated as a difference between the departing conditions (Baseline) and the final situation where it will be considered that a certain modal shift towards bicycles is occurred, for the baseline measurement no value can be applicable.

[10] We have considered an average fuel consumption of 0,1l/km and a maximum travel by bike per day of 10 km (5*2) Sources:
http://www.theicct.org/sites/default/files/publications/ICCTupdate_EU-95gram_jan2014.pdf
http://www.ilsole24ore.com/speciali/emissioni_auto/emissioni_auto_emissioni_tipologia_ford_benzina.shtml

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 6	N. of rental/dock across scheme area	July 2014	7645		Nov 2015	7843		Oct 2016	6829	
KPI 7	N. of cycles	July 2014	265	BS Tender documents	Nov 2015	163		Oct 2016	125	
KPI 8	N. of stations	July 2014	28		Nov. 2015	28		Oct 2016	27	
KPI 9	Scheme density (station/mt)	300/400 mt								
KPI 10	Modal shift in the target group	July 2014	n.a.	Since the service started only on 11th July 2013 it was too early to make a user survey	Nov 2015	n.a.	Further reports have not been carried out so no further data	Oct 2016	12% from car, 25% from walking	
KPI 11	Willingness of different target groups to shift towards bikes	July 2014	n.a.		Nov 2015	n.a.		Oct 2016		
KPI 12	User satisfaction	July 2014	n.a.		Nov 2015	n.a.			20% high satisfaction 60% satisfaction, 18% low satisfaction	
KPI 13	Operating revenues	Operating costs and revenues for the Padua Municipality are equal to zero due to the agreement between the Municipality and Bicincittà.								
KPI 14	Operating costs									

As explained above the Padua bike sharing system, after an excelent start, and then experienced a crisis period between July and December 2015. The peak in number of subscribers was reached in July 2014 but in July 2015, even with a small decrese in the number of users, the rentals were the highest ever registered: 219.527, that means 86 rentals per user. These numbers were probably the capacity limit of the system.

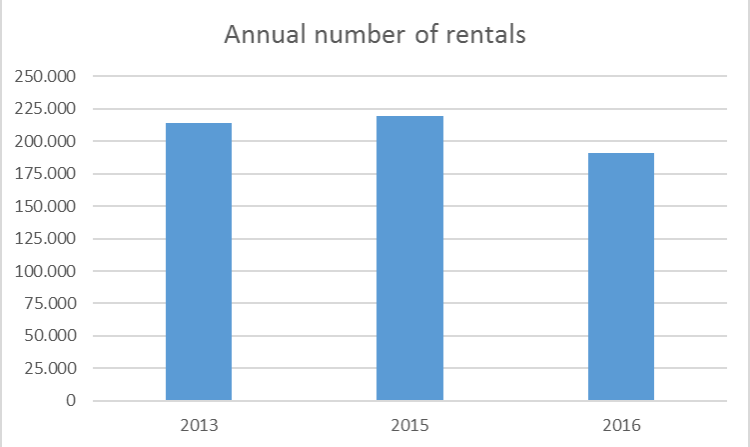

Figure 31 - Number of rentals

Soon the redistribution and maintenance of the bicycles started to struggle, with decreasing levels of quality and service perceived by the municipality and confirmed by declining user satisfaction. The low number of subscribers was registered in December 2015 with 1990 users in the system.

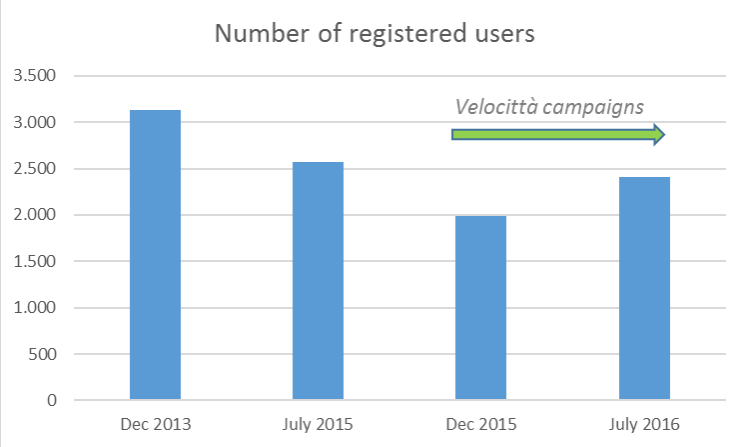

Figure 32 - Number of registered users

The Velocittà activities have been put in place with a perfect timing; the positive results of the campaigns allowed for a contrast and offset of the negative factors convincing students and residents to subscribe, for the first time or again, to the system.

The number of subscribers grew again from 1.990 to 2.413.

Also, it is important to point out that despite the mentioned decrease in users, the average number of rentals per user Padua stayed strong with 79 in 2016; this means that a substantial part of the users have been won over and that the fidelity level is satisfactory.

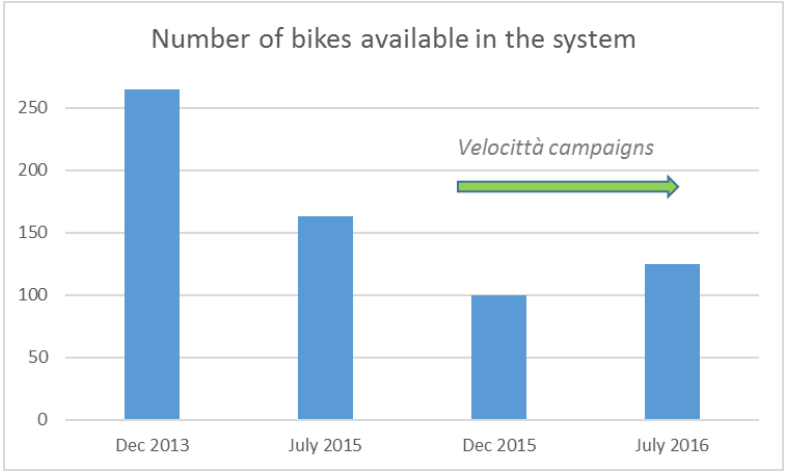

Figure 33 - Bicycles available

After the significant decrease in number of bikes available (due to maintenance issues and lack of quality), an additional effort was made by Bicincittà with the introduction of 25 new bikes in the system in Spring 2016.

Nevertheless, the necessity of having more bikes in the system is still high. This is demonstrated by the number of rentals per bike that continued to increase: 808 in 2013, 1.347 in 2015 and 1.530 in 2016.

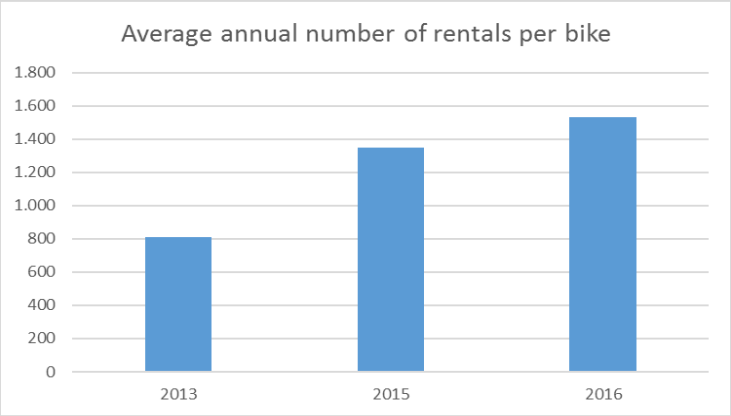

Figure 34 - Number of rentals per bike

With the beginning of 2017 Bicincittà is planning to replace part of the old bikes that are no longer reliable, with the new ones returning to the number of 185 (which is considered by the city the minimum requirement considering the 371 total number of bicycle locks and the standard fill out rate).

Concerning the air quality (KPI 2) the levels of CO2, NOx and PM10 are almost stable at the level of 2013. However, as already said for the other cities, the amount of impact that the modal shift from car to bikes in the project can cause on the environment is difficult to measure in such a complex and big context. Several factors interfere and influence the quality of the air in a city and it is reasonable to say that cycling is one of these and ensures, with all the others sustainable transport modes, a better and liveable environment.

For the saved energy (KPI 1) it is possible to make some assumptions on distance travelled daily with the bike-sharing and on an average fuel consumption (see the table 2.10). If we limit our analysis for the period of the campaign implementation (December 2015 – September 2016), the number of subscribers grew from 1.990 to 2.413. This data could be read as a modal shift of 423 citizens. We calculate 33840 fuel litres saving per year for each travel made by bicycle instead of by car supposing:

- a maximum of 10 kilometres per day per user;
- an average of 80 rentals per user yearly.

For more details, lessons learned and recommendation on operator – municipality cooperation, VeloCittà made a case study (Deliverable 4.3, see www.velo-citta.eu) in which Padua and Bicincitta feature prominently.

2.9 Szeged: the story of CityBike

Szeged is located in the Southern part of Hungary, and it is the third largest city with a population of around 170.000. Hungary's second biggest university can be found here. Szeged is one of the top 10 tourist destinations in the country. The bicycle is a very popular vehicle and the "EuroVelo 11" bicycle route (5964 km long) goes through the city.

The CityBike Szeged Scheme has been launched in October 2013 with 12 docking stations and 100 bicycles available to hire. This was the first implementation of bike sharing system realized in Hungary; in recent years other Hungarian cities have adopted similar schemes. The system is owned (for profit) and operated by a private company (Sund Magyarorsz6g Ltd.) that won a tender. Sund was project partner in VeloCittà.

Figure 35 - CityBike station in front of the University library

All the elements are of private property. The purpose is to install this system and extend it all around the country. The scheme is available to registered members only. People are able to hire a bicycle on an ad-hoc basis with their mobile phone.

The subscription is possible via internet; the payment system based also on the on-line tools only (i.e. credit cards). Customers needed to register via internet and make initial registration fee on the BSS's website. During registration he/she obtains a personal customer number and defines his/her own PIN code. To use the system a PIN Code – got after the registration – is required. Additionally, the user needs to call via mobile phone a dedicated number in order to establish a connection between the mobile phone and the system. This system, based on mobile technology (mainly GPS), allows to know immediately the hiring times (start and end) and the exact position of the bikes and so the users. Additionally, bikes can be booked in advance and the user can use the bike for the whole day even if the rate is always calculated on an hourly base.

The stations are almost all located in the central city, and 2 of them are nearby the interchange parking. The bike sharing service is focused on short trips, with a pricing policy in favour of the frequent and short-term users. The possibility given to the operator to take advantage of exclusive advertising on the

bicycles, in dedicated spaces, allows ensuring the economic sustainability. Tourists could have a locker for easier use to have the possibility to leave the bike outside and visit a monument.

At the beginning the system became very popular and, out of curiosity, residents and tourists subscribed to the BSS. During the last two years the percentage of active users decreased. The positive aspect is that while residents are using the system less, tourists use it more.

Within the VeloCittà project the city of Szeged addressed students, residents, employees and tourists, designing different messages and campaigns for them: posters and leaflets, coupons (in restaurants and cafeterias where customers could get a coupon with 1 hour free cycling after purchasing), face to face events, critical masses, campaigns during summer concerts.

Figure 36 - Bike sharing promotion during a critical mass event

They also introduced the Szeged CARD, which is just an additional extra comfort service that allow the user to register himself and pay the initial fee in a cheaper and easier way.

Figure 37 - Campaigns activities

Thanks to the support of the VeloCittà *Knowledge Centre*, the cooperation between the bike sharing operator and the city is improving and they are planning for the next spring (2017) two new docking stations. They are also planning to open another station in the city centre near to a business area with 6 companies to serve and address their commuters.

Table 2-11 – The Szeged state of play

Szeged framework	
Demography	✓ 161,837 inhab. ✓ 901,21 inhab./km² ✓ 11,328 commuters/day ✓ 30,526 students ✓ 500,000 persons/year
Modal share	✓ Private cars: 22% ✓ PT: 47% ✓ Cycling: 9% ✓ Walking: 22%
Target groups	✓ Tourists ✓ Students ✓ Citizens ✓ Commuters
Marketing measures	✓ Organise information campaigns for each target group. ✓ Arrange communication activities to increase the residents BSS usage. ✓ Build on existing websites and extend mobile applications for BSS diffusion. ✓ Establish links with University and hotels websites.

2.10 Szeged after the project: the results

The following table summarizes the Szeged baseline and the results achieved. The most relevant ones are described more in detail.

Table 2-12 – Szeged BSS Key Performance Indicators

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 1	Saved energy (induced by modal shift)	-	-	Not applicable[11]	Nov 2015	1.418 litres of fuel (petrol) for the travels made by bike (yearly)	Assumptions[12] on distance and fuel consumption	Nov 2016	628 litres of fuel (petrol) for the travels made by bike (yearly)	Assumptions on distance and fuel consumption
KPI 2	CO2 levels	July 2014	n.a.	Not measurable	Nov 2015	n.a.	Not measurable	Nov 2016	n.a.	Not measurable
	NOx levels	July 2014	9.4 µgr/m3	Hungarian emissions test centre	Nov 2015	9.4 µgr/m3	Hungarian emissions test centre	Nov 2016	9.4 µgr/m3	Hungarian emissions test centre
	PM10 levels	July 2014	13.3 µgr/m3	National Air Quality Monitoring Network	Nov 2015	13.3 µgr/m3	National Air Quality Monitoring Network	Nov 2016	13.3 µgr/m3	National Air Quality Monitoring Network
KPI 3	N. of registered users	July 2014	237	Active users:190 (80%) Residents 80% Students 20%	Nov 2015	2795	Active users: 838 (30%) Residents 40% Students 60%	Nov 2016	3727	Active users: 745 (20%) Residents 40% Students 60%

[11] Since the energy savings will be calculated as a difference between the departing conditions (Baseline) and the final situation where it will be considered that a certain modal shift towards bicycles is occurred, for the baseline measurement no value can be applicable.

[12] We have considered an average fuel consumption of 0,1l/km and a maximum travel by bike per day of 10 km (5*2) Sources:
http://www.theicct.org/sites/default/files/publications/ICCTupdate_EU-95gram_jan2014.pdf
http://www.ilsole24ore.com/speciali/emissioni_auto/emissioni_auto_emissioni_tipologia_ford_benzina.shtml

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
KPI 4	N. of rental/user by registered members	July 2014	472	Yearly data	Nov 2015	1890	Yearly data	Nov 2016	1110	Less residents More tourists
KPI 5	N. of rental/bike	July 2014	4,7		Nov 2015	18,9		Nov 2016	11	Yearly data
KPI 6	N. of rental/dock across scheme area	July 2014	75	9 stations; 2 with 6 docks, 6 with 9 docks and 1 with 12 docks	Nov 2015	75		Nov 2016	75	
KPI 7	N. of cycles	July 2014	100		Nov 2015	100	-	Nov 2016	100	
KPI 8	N. of stations	July 2014	9		Nov 2015	9	-	Nov 2016	9	
KPI 9	Scheme density (station/mt)	0.88 per km2								
KPI 10	Modal shift in the target group	July 2014	Citizens: 80% Tourists: 20%	estimated data	Nov 2015	Student: 30% Citizens: 10%, Tourists: 60%	estimated data	Nov 2016	Student: 30% Citizens: 10%, Tourists: 60%	estimated data
KPI 11	Willingness of different target groups	The cycling share is 16%. Those who do not cycle are very reluctant to change.								

	Impact Indicator	Baseline Measurement			Intermediate Measurement			Final Measurement		
		Date	Value	Notes	Date	Value	Notes	Date	Value	Notes
	to shift towards bikes									
KPI 12	User satisfaction	July 2014	n.a.		Nov 2015	n.a.		Nov 2016		80% satisfied (60 respondents)
KPI 13	Operating revenues	July 2014	Approx.: 1600 €		Nov 2015	Approx.: 2000 €		Nov 2016	Approx.: 2000 €	
KPI 14	Operating costs	July 2014	Approx.: 2000 €		Nov 2015	Approx.: 1000 €		Nov 2016	Approx.: 1000 €	

In Szeged the system was born around the start of the VeloCittà project and in 2013 the number of register users was only 237. The subscribers rose to 3727 in three years and, thanks to the promotional campaigns that addressed the students, the percentage of young people that uses the system grew from 20% to 60%.

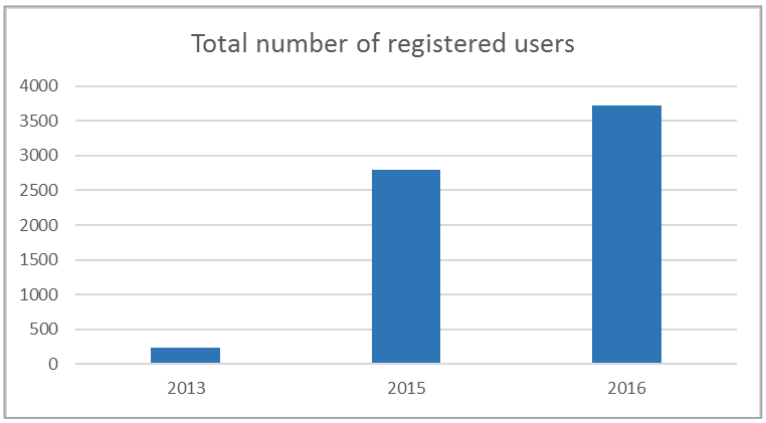

Figure 38 - Number of subscribers

Even if the subscribers are growing, the system experienced a decrease in the annual number of rental for reasons external to the project:

- The cycling modal share grew already at 16% (and walking is 18%) and residents usually have their own bikes. This issue is also confirmed by the Municipality that in 2015 considered the possibility to start with a public BSS but they gave up with the project due to the high number of private bikes;
- In the city the resistance to change mobility behavior seems very strong;
- The transport system is very capillary and also very convenient for the students.

Also in this case it should be noted that the effect of novelty and curiosity, after one or two years tends to decrease and the registrations accordingly decline. Thanks to the project, CityBike Szeged faced these obstacles confronting with other European cities and understating what was missing and how it could do better.

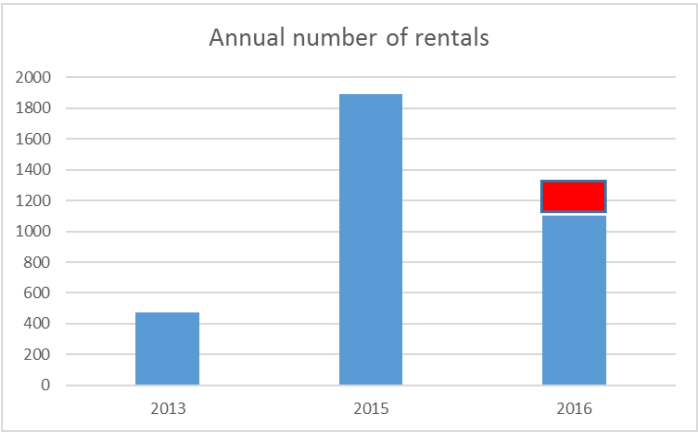

Figure 39 - Number of rentals

A positive aspect raised in the last two years is the involvement of tourists; the number of rentals connected to hotels and tourist flows reached the number of 200 only in the summer of 2016 (see Figure 34 – red part).

To test the users' satisfaction, CityBike Szeged delivered a survey to the subscribers where 80% of them gave a positive feedback. Those unsatisfied raised the issue of online registration and the station locations. Paying attention to these requests, they moved some stations in another area of the city.

Concerning the air quality (KPI 2) the levels of CO2, NOx and PM10 are almost stable at the level of 2014. However, as already said for the other cities, the amount of impact that the modal shift from car to bikes in the project can cause on the environment is difficult to measure in such a complex and big context. Several factors interfere and influence the quality of the air in a city and it is reasonable to say that cycling is one of these and ensures, with all the others sustainable transport modes, a better and liveable environment.

For the saved energy (KPI 1) it is possible to make some assumptions on distance travelled daily with the bike-sharing and on an average fuel consumption (see the table 2.12). From the start of the project until the end of 2016 the rentals increased from 472 to 1100. Supposing a petrol saving for each travel made by bicycle instead of by car and a maximum of 10 kilometers per day per user, we calculate 628 fuel liters saved per year.

3 Process evaluation

Process evaluation is the necessary complement to impact evaluation. Whilst the latter finds out if and to what extent certain results have been achieved, the former allows understanding how and why those results have (or not) been attained.

In VeloCittà, process evaluation aims at assessing the processes affecting the effectiveness of the knowledge centres and the actions put in place to increase use of BSS. Experience gathered from previous EU funded projects demonstrates that factors influencing the outcome of measures are of high importance, and need to be known.

3.1 Market segmentation and campaigns

The market segmentation was expected to represent the primary marketing asset put at disposal of the cities. To this purpose a consulting firm was hired, for guidance, support and analysis. Exchange of experience was another key aspect for the success of this activity.

Concerning the report on market segmentation cities stated that the report was too general. Because of the questionnaires delivered to the cities that were too generic (addressing all the target groups and identical for all the cities). The effort spent to interview citizens was very high and not always there was a correspondence with visible results.

In Burgos, the results of questionnaires and surveys needed to be reviewed when the city realized that the most interested people, and so the main target, were more mature people (around 35-45), and not only students.

Nevertheless, all partners implemented campaigns (more or less) for separate population segments and partners had a positive experience during the marketing campaigns design and implementation. The exchange of knowledge among cities brought benefits to all. The cities participation, in comparison with a similar activity outside the project, was more active, stimulating and effective. Cities were a source of inspiration, new ideas and, sometimes, confirmation on their approach.

Generally, the segmentation technique itself was very interesting and it could be valuable to define better how to address the target group in each city. In Padua and London market segmentation is considered necessary and the cities will continue to use these techniques after the project

A lesson learned from the project is that, in case of a key and important task it would be better to have a full partner of the project, specialized in segmentation technique and with a wide knowledge on cities' peculiarities, culture and circumstances to deliver these activities with a more custom-tailored approach and assistance.

3.2 Knowledge centres, factsheets and website

VeloCittà was conceived as a project in which struggling BSSs would benefit from two types of consulting services, called knowledge centres: 1) Communication, and 2) Organisation and Operation. Both were expected to facilitate discussion, exchange information, supply answers and technical support, both on a collective and individual basis.

In the original proposal the role of the knowledge centre (work package 2) was wider: a platform with free consultancy for cities and working groups. Due to the daily routine of partner cities and to the difficulty of working together in an international consortium, the work was more based on webinars and fact sheets.

However, partners found the webinars a very interesting, useful and efficient tool to improve knowledge on themes connected to BSS. Even if in some cases (Southwark) they can't put in practice what they have learned and the results will not be visible inside the time of the project, the material is still a legacy. The contents were inspirational and influenced the new generation of BS in London. They influenced the internal discussion to decide/consider other options.

Concerning the fact sheets produced during the project under WP2 (on financing, on political involvement and on various target groups, see www.velo-citta.eu), they revealed themselves effective at different levels. For Krakow they contain info for beginners, with useful indication if you have to set up a new system. In fact, Krakow circulated them to different city departments and to the new BS operator. They can also be a great tool for people outside the project. For Szeged and Southwark, they were very helpful also to convince politics that something is working in another place (even if the immediate effects are not demonstrated). For Burgos the fact sheets were very interesting to organize the campaigns and address the targets.

Partners found the information available on the knowledge centre on the website interesting and beneficial, even if not directly. The consultancy tool was used mainly by Padua that asked information about cooperation with university, and Szeged who asked for some specific documents.

3.3 Political and external stakeholders involvement

As all EU projects VeloCittà navigated in an open environment in which many factors come into play. These are not always foreseeable and controllable, and can have supportive or adverse effects on project results.

Each city as a different political situation and in general it is difficult to understand the real interest of politics for the BSS. Within VeloCittà, a report on political perceptions on barriers and drivers with regard to bike sharing was developed (deliverable 3.8) and a political statement was signed by 15 cities from 8 different countries (D3.9), where more details on the project's political involvement can be found.

In Lambeth the interest for cycling aspects (not for the project) raised during the project lifetime and cycling have become the most appealing subjects, also because it attracts big investments and can be seen as a political legacy; the politician installed 5 new stations before leaving.

In Southwark some politicians showed their interest in BSS and their willingness to participate in the final conference held in Rotterdam.

In London different boroughs have different political involvement. In Lambeth they showed their interest also by replying to the political questionnaire. In Southwark these aspects are managed by technical figures.

In Szeged, where the BSS is privately owned the politicians are not involved in the project. After a first phase where they were sceptical about the system, now, thanks to the project, they are becoming increasingly interested, and they have even promised additional space for new docking stations. The city also used the images of the BSS for its promotional campaigns to show how nice is the city.

In Krakow, even with the change of the bike sharing operator, the mayor always bolstered it and insisted for the new system designing budget for it. However, the involvement of politicians is limited to deciding about financial issue and not to ground activities or support in marketing of the system.

Padua was successful in involving the politician in the VeloCittà project and in support of BSS: he participated in various bike share related cycling events. Unfortunately, change in city administration changed that too. The new mayor is involved in more infrastructural works and has other priorities. However, it is not against the system and encourages cycling in the city.

In Burgos politicians were very supportive in general and agreed with the idea of promoting the bike sharing system. However, due to political conflicts in the city it is a pity that the good results have not

been published or explained as much as would have been possible would there not have been political unrest.

In Krakow municipal units and bureaucracy considerably slowed down the process of BSS implementation, as they were seeking for the optimal solution and were experiencing all the difficulties connected with public tender. In London TfL (Transport for London – the public transport operator) retracted from a larger BSS roll out owing to a spending review that decided to cut down on BSS unless the individual Boroughs decided to commit own funds.

In Burgos, the help of the University, companies, hotels and bike associations fosters the impact of the marketing campaigns helping the city to reach an high number of potential users.

Summarizing the stakeholder involvement, site partners organized altogether approx. 170 separate meetings with stakeholders with the overall attendance of more than 850 people. Almost 100 of all meetings were attended by the so called new stakeholders, i.e. those that took part in the meeting for the first time. Stakeholder Involvement Summary Report (D3.6, www.velo-citta.eu) provides more detailed information on the types of stakeholders involved in during the project lifetime and the activities they engaged in.

3.4 Partners internal dynamics

In Southwark because of continuing budget cuts against requests to focus on the "core" activities and maintain the same level of service, activities like those of VeloCittà could have suffered, but the dedication of the staff made it possible to continue. In the future this lessons means that dedicated staff will need to be hired to follow EU projects.

In Krakow the impact and relevance of external factors was very high but it brought the change of the system and the arrival of a new operator with the aim to have a better system. There was a good institutional cooperation in Krakow, with one exception due to personal conflict (no data supplied from local technicians). The staff working on specifically VeloCittà was the same throughout the project.

In Burgos, internal struggles between departments and several political parties dominated the last year of the project, when the shift of work and budget from the initial project partner to a new project partner (via a contract amendment) was put into question and this put some of the work on hold. However, the staff working specifically on VeloCittà remained the same throughout the project, providing stability and a steady source of information, just like in Krakow.

Padua feels it has a strong institutional structure and feels that internal of personal factors did not affect the outcome of the project. The internal dynamics between Padua and operator Bicincitta are described in the separate report on municipality-operator cooperation (D4.3).

3.5 Focus groups

Focus groups were extremely interesting and informative in all cities. Work in the project and knowledge exchange helped to improve ways in which focus groups are handled.

The cities all organised at least two focus groups, with specific demographic or groups whose attitudes they wanted to understand better. While it was anticipated in the project proposal that the focus groups would be held in the testing phase, a focus group can be held at any stage: either at the preliminary or exploratory stage; during – to evaluate or develop a particular programme or activities; or after – to assess the impact or generate further avenues of research/activity. The focus groups enabled the cities to find out more about their target groups attitudes to the proposed key messages, offers, operations, marketing materials and communication channels. Most of the cities organised their focus groups during the campaigns and adapted according to the response.

In Padua the involvement of universities, hospital, associations in focus groups was very fruitful and they showed much more interest than they thought before. Also in Krakow and in Burgos the focus groups turned out very useful. Even the low number of participants the highlights were very interesting. London confirms the utility of the focus groups stated that they are very economical in time and resources and, at the same time, effective.

3.6 Project assessment: failures and barriers

As often happened in European projects, the bureaucratic aspects are one of the main barriers for municipalities. Krakow recognized that one of the barriers is the administrative burden that take a lot of the time spent during the day subtracting time to the project activities.

For some cities another difficult point was the different, sometimes overlapping, requests for information that arrived from different partners (WP leaders).

For Choice the main barrier was the communication and the speed of communication, causing a loss of time that would be spent on production. They also shared their previous experience in EU past projects where the local partners were supported by the participation of local private consultancy to help cities.

In London Lambeth the lack of help and internal collaboration with other colleagues was perceived as a barrier.

For London Southwark one of the difficulties was to work on a double role: as city and as leader of WP3.

Some suggestions related to the communication within the consortium or outside are:

- To not plan/deliver newsletters too early without having enough material;
- In the internal communication to use more phone and less emails.

For Szeged, the project during its lifetime, with the expertise and the EU contribution, helped their company to grow up and they are worried on what will happen after the end.

More in general, change in coordination, in staff structure can influence the project. However, Padua stated that the strong city structure allowed the activities to proceed smoothly without consequences in case of changes in the internal dynamics.

3.7 Project assessment: successes

For London Southwark the most relevant added value was the people themselves, the cultures met and the relationships established.

For London Lambeth the involvement of politicians within the project was a great success. The Lambeth mobility Councillor for example enthusiastically attended the European Conference on Bike Sharing (the final event of VeloCittà) and signed the Political Statement.

Bicincittà stated that an important achievement was the valuable things learned. Coming from a limited vision they acquired a big knowledge on market segmentation and on targeted campaigns. However, they regretted that in daily routine it's difficult to have time to put things learned into something more practical.

Another success factor was that the cooperation between the city of Padua and its operator Bicincittà that was helped by the project. In Padua a barrier is the BSS contract with the operator made 3 years ago that needs to be reviewed. One lesson learned is the importance to pay much more attention to the contract definition.

For Krakow the success factor was the flexibility and the freedom to develop campaigns, to postpone some activities where needed.

In Szeged, the small dimension of the partner company that owned the service showed its positive aspects: clear roles and strong motivation in doing what they are doing.

All partners stated that relationship with the coordinator, and the confidence in comparison with other programmes, was a driver for the deployment of the project.

For Burgos the main achievement has been the number of new users; the expectation to double the number was achieved despite the barrier of the students' target group.

4 Conclusion and lessons learned

4.1 Cities results and successes

VeloCittà sought to bring together cities with BSSs that for different reasons could benefit from exposure to marketing segmentation technique, exchange of information on technical and organisational issues, as well as direct observation of the respective systems in operation. VeloCittà negotiated its pathway in the broader mobility environment presented by each city, facing fluctuating political moods, newly intervening policies, and contingent socio-economic factors. Results shall thus be put in perspective in order to appropriately understand the contributions that the project was able to deliver.

As a whole VeloCittà is associated with success in all participating cities, both owing to the increased capacity produced by the project and to concurring external factors that favoured the improvement of BSS service levels.

In London, the local BSS generally witnessed a noticeable surge in all monitored indicators, with a rising number of registered members (+100% in Southwark and +66% in Lambeth), docking stations (+13% in Southwark and +58% in Lambeth), public bikes (+7% in Southwark and +34% in Lambeth), hires and journeys (+10% in Southwark and +40% in Lambeth). These remarkable achievements are clearly linked with the expansion strategy decided by London, and in fact similar trends are visible also in the other Boroughs served by the BSS. However, the staff working in VeloCittà agree that VeloCittà segmented marketing campaigns had a strong influence on shifting behaviours towards public bikes and cycling in general, thus substantially reinforcing the expansion strategy already planned. The assessment is confirmed by the observation of the improved performance of the specific docking stations that the two Boroughs targeted with their segmented marketing campaigns.

In Burgos results are also promising. After the local BSS switched from a free to a fee-based service (2012), the number of registered had collapsed, almost obliterating the system. As of 2013, and with the help of VeloCittà, the BSS rebounded recording a 100% increase in registered users. The number of monthly hires also went up by 76%, confirming that the system is now on its way to complete recovery.

The BSS of Szeged, which was launched at in 2013 at VeloCittà outset, the number of registered members witnessed a 15-fold increase. The segmented marketing campaigns, which targeted students, were effective and helped push the number of registered students up, passing from the initial 20% to 60% of total registrations. In terms of customer satisfaction, the local system has maintained high ratings, and

currently 80% of users is happy with the public bikes and actually in favour of additional docking stations.

In Padova the BSS was launched in 2013, with an immediate success confirmed by annual registrations that hit a peak in 2014 with 3.130 registered users. As of 2015 numbers started to decline, reaching 1.990, mostly owing to waning political support, physiological disaffection and the inability to cope with bikes maintenance and adequate bikes distribution. However, the segmented marketing campaigns delivered in 2016 were able to lift numbers up with 2.413 annual registrations, thus countering the negative trend.

Krakow is a very specific case in the VeloCittà constellation. During the project lifespan two different systems occurred and both benefited from the VeloCittà activities. On one hand the project helped the growth of the old system in the years 2014-2015 with a substantial increase in the number of users (from 11.520 to 54.756) and rentals (from 4.955 to 41.250). On the other hand, the city of Krakow is supporting now the promotion of the new system thanks to the knowledge acquired during the project delivering professional marketing campaign (for example a promotional and instructional movie that explains clearly how to use the new system). Due to the great investment the operator is doing, the high expectations for the new system will bring to an The increase in bikes and docking points at disposal to users is growing of 456% (from 270 to 1.500) and 417% (from 29 to 150) respectively.

4.2 Key outputs and results of VeloCittà

The efforts of VeloCittà partners can be summarized with the following two tables:

Table 4-1 – key project outputs

Key expected outputs	Achieved outputs
Market segmentation analyses, one per site.	✓
About 300 questionnaires filled out in each site to define market segments.	An average of 446 questionnaires filled out in each site to define market segments.

Key expected outputs	Achieved outputs
Communication campaigns aimed at target sectors, one per site.	✓
1 report analysing the perceived political barriers and drivers with regard to BSS.	Deliverable D3.8
1 report on the "10 golden rules" for BSS financing and organisational aspects.	1 report (Deliverable 3.7) and 1 video on the "10 golden rules": https://www.youtube.com/watch?v=q03Y8h66_Xg&feature=youtu.be
5 communication working groups set-up ad running covering the different target groups.	✓
2 public workshops to present the results of communication working groups with at least 20 attendees (excl. project partners).	1 public event with 130 delegates from more than 25 countries: http://velo-citta.eu/bikesharingconference/
5 factsheets or guidelines about effective communication tools, one for each communication group.	✓ (D2.4)
2 discussion groups focussing on BSS financing and organisation and BSS political involvement and commitment.	✓
2 public workshops on operation of BSS with at least 20 attendees (excl. project partners).	During the Rotterdam European Bike Share Conference (final project event on 30.11.2016) 5 tables to discuss about Contract management, political barriers and operational aspects (around 100 participants)

Key expected outputs	Achieved outputs
Factsheets about financial and political optimisation strategies to encourage the use of shared bikes.	✓ (D2.5)
1 online Bike Sharing Workspace.	✓
1 signed Political Statement by all demonstration site politicians.	19 signatures from 15 cities in 8 European countries

Table 4-2 – Key project results

	Burgos	Krakow	London	Padua	Szeged
Increase of registered users by 2017	200%	375%	S 35% L 41%	18%	1473%
Increase in rental/user by registered members	-	75%	-	16%	16%
Increase in rental/bike	-	581%	S 14% L 19%	89%	133%
Increase in rental/dock across scheme area	48%	632%	S 3% L 16%	-	-
Increase in n. of cycles	54%	22%	S 3% L 11%	-	
Increase in n. of stations	21%	14%	S 13% L 14%	-	
Energy (fuel) saving due to modal shift	14.835	795.046	L 19.188 S 8.541	14.835	795.046

4.3 Conclusions and lessons learned

As a whole, the experience of VeloCittà allows to reach a few general conclusions.

Across cities, BSSs tend to witness initial enthusiastic responses, with registered users that increase the first 2 or 3 years, and then show slight downward or stable trends from the 3rd year onwards, also depending on the expansion strategy of each city.

Marketing segmentation is a powerful tool that prior to VeloCittà was virtually absent in the partner cities and that thanks to the project allowed the participating BSSs to be better connected with the respective users. Getting to know and understand the array of current and prospective users, especially through the administration of focus groups, is the single most valuable legacy that VeloCittà leaves the cities with, and one that will be used and improved in the future.

Likewise, the knowledge generated and exchanged within the project, whether all-round good practice, specific issue handling, or live observation of other BSSs, proved to be a strong source of inspiration for all involved, and provided a stimulating discussion platform that in turn allowed the local staffs to return home with new ideas, options, as well as validation for approaches and techniques.

The improved capacity, and the confirmation provided by working in a EU project, supplied robust arguments when selling the merits of BSS to politicians. The latter displayed different levels of attention and commitment toward BSS, with strong involvement especially in Lambeth, Krakow and Padova (at least initially). Despite these variations, BSS is confirmed to be a relatively inexpensive service, able to generate substantial visibility and attract relevant investments, especially in medium-large cities, and as such it is bound to resonate with politicians.

4.4 Tips and suggestions for your future BSS

- **Politicians awareness.** Politicians have become aware through the BSSs that although changing attitudes to mobility can take time, that the success of BSS shows that there is now a very significant demand for cycling. More than this, the politicians are also aware that BSS is both a useful way to promote cycling and a useful lever in helping to reduce the dependence on private cars in cities. As said by a Parma politician “The bike sharing it's a great way to get around without having to worry about where to park your own car”.
- **Bike sharing as strategic measure**. If bike sharing is not yet part of the urban development and/or cycling strategy in your city, it should be added to the existing or planned scheme to the plan during

the next revision phase. This will add political relevance to the topic and decision making processes might improve.

- **Setting targets.** Bike sharing schemes perform very differently under different framework conditions. Demographic, geographic, economic, climatic and cultural factors have an enormous impact on whether the scheme can perform well or not. Experts and existing best-practice literature should be consulted to set the targets.
- **Incentive scheme**. The operator should become an ally of the city. Without an operator that wants to achieve the best possible result the city will not be successful. Economic incentives are the strongest argument and thus a detailed incentive scheme should reward the operator for performance levels that contribute to your strategic goals.
- **Open data.** To monitor the performance of the bike sharing scheme, full data access is needed. Operator contracts should therefore include data access agreements. A full integration into existing or planned municipal open data platforms increases transparency and gives independent researchers and developers the opportunity to contribute with performance analyses, apps, tools for operation etc.
- **Urban planning suggestions:** Concerning the regulations, as any other public infrastructure, bike sharing stations need permits from different authorities. Early involvement of these authorities and agreements about needed documents and minimum planning standards help to shorten the permission process.

  The bike sharing infrastructure as well as the bikes themselves should have an individual design; preferably one that is in line with the city's corporate design and existing street furniture to establish a local brand.
- **Participation tools**. Involving the crowd with online participation tools through interactive maps enables citizens to articulate demand and to become designers of "their" scheme. Focus groups are also excellent participation tools.
- **Attention to the contract:** A simply written contract leads to misunderstandings and inevitably to service shortcomings, which in turn prompts users' dissatisfaction and eventually leads to system failure. Bicycles, docking stations, payment system, targeted communication, and system management, maintenance and minimum quality levels are vital elements in the delivery of the service, and a good contract must address all these points.

Operator motivations. In many BSSs, the operator is paid in full at contract signature. This can reduce the level of motivation, while lump sum instalments and possible performance-based incentives, or on the contrary penalties, are best suited to keep the momentum and the level of

attention alive. However, experience shows that these sort of contracts have another face of the coin, unless the incentive component is well designed: the operator ends up failing to ensure the agreed service levels because redistribution and maintenance is more expensive than losing portions of the payment.

Sponsors. Sponsoring is an attractive way to gain considerable and predictable sources of funding. However, as contracts last relatively long, both sides should balance reasons for and against a sponsorship. Low scheme performance might reduce the marketing success for the sponsor while a bad development of the sponsor image might spill-over to the scheme.