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CiViTAS
Cleaner and better transport in cities

DESTINATIONS



Measure Evaluation Result

LIM 6.3 - Bicycle challenge:
competition between employees of
companies

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Responsible Author(s):	Nicole Mavrovounioti, Thomas Parissis
Responsible Co-Author(s):	Stavroula Panagiotidou
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Executive Summary

This measure aims to create a healthier and more sustainable mind-set by using the bicycle as an alternative mode of transportation to travel from home to work and back, and around the city, instead of using a car. To achieve such behaviour change, the Bicycle Challenge Campaign was implemented twice during the lifetime of the project, and counted with the participation of 100 participants. All employees participating in the bicycle challenge campaign had a positive experience and became aware of using cycling as a mode of transportation. In such way, locals had the opportunity to improve their health and attract more Cypriots to use cycling.

During the campaigns, the participants deepened their knowledge, ability, and experience of cycling in their daily life. Participants acted as multipliers to motivate other people including tourists to use bicycles during their leisure trips.

Upon completion of the campaigns, the local partners contacted the participants through phone calls to follow up about their mobility choices and most participants expressed their interest to keep cycling to work and for leisure purposes. It was understood that at least 70% of the 100 participants continued to use their bike to get to work. Therefore, the measure has encouraged citizens to change their habits and use bicycles in their daily life. It also helped residents to improve their health during this program and changed their own habits even after the end of the project. Health benefits played a significant role since residents have improved their health by using bicycle in their daily life.

In addition, the increased use of cycling has led to better infrastructure (funded under DESTINATIONS, under LIM 3.1, which consisted of implementing new cycling lanes and walking routes, as well as 5 bicycle parking facilities which have been installed in the region), which is an attractive element for visitors. Also, tourists can be affected by the behaviour of locals and use cycling more often during their leisure trips in Cyprus.

The main result achieved by this measure was the behaviour change, with 70% (70) of the participants starting to use a bicycle for their daily commuting. Related to behaviour change, there was a significant decrease in noise pollution by 42,45 dB compared to the initial levels of traffic noise which had reached 74.435 dB. During the measure's implementation, employees attended presentations regarding the benefits of cycling that contributed to increase awareness and engagement in the campaign. Additionally, the measure significantly reduced driving to work, resulting in a decrease of 35,77 t of CO₂ emissions. Therefore, fuel savings reached 7.392 L and fuel cost savings reached 9.166 €.

The measure has been completed on time, allowing the data to be gathered and be used to proceed with the evaluation. After the end of the project, the local partners expect that residents and tourists will continue to change their habits and use cycling in their daily life and for leisure purposes. The benefits of the whole program were remarkable, as it contributed to the development of a cycling culture as an alternative mode of transportation and the adoption of a different way of living which is more environmentally healthy and friendly.

A Description

This measure aims to change the habits of locals and for them to become actors in their own town, by promoting cycling in their daily life. With the cooperation of Limassol Cycling Club and KMeaters Cycling Team, a campaign, 'Bicycle Challenge' took place in 2017 and 2019 in order to promote cycling in everyday life and particularly from home to work. Therefore, 70 workers participated in the campaign of 2017 and 30 workers in the campaign of 2019. This campaign also included visits to workplaces where the benefits of bicycle commuting have been presented and discussed, including issues such as safety, gear, and suggested routes, and technical workshops on basic cycling took place. With the implementation of this measure, people have been encouraged to use cycling to explore the region according to their special interests and use it in their everyday life. At the end of the campaign, the participants who covered the longest distance from each company/organization won a prize and all participants received a certificate of participation.



Figure 1: Completion of the Bicycle Challenge Campaign (left), recording of cycling activity (right)

A1 Objectives and outputs

City policy level objectives

The measure is in line with Limassol Municipality's Strategy aiming to promote the sustainable mobility of residents and tourists in the Limassol region, contributing to the below objectives:

- Reduced CO₂ emissions
- Reduced traffic noise in the city centre
- Reduced energy consumption
- Public health and safety
- Change habits of local people and tourists
- More attractive tourist destination

Measure Specific objectives

- Organization of bicycle challenge between employees of companies
- Behaviour of participants is expected to change towards more environmentally friendly behaviour
- Increase cycling to work by employees

Outputs

- 100 employees participated in the campaigns and were motivated to use bicycles to go to work instead of a car
- 70 employees changed their behaviour and started using a bicycle for their daily commuting
- A number of meetings held with 20 companies for providing their feedback and data collection
- 2 bicycle challenge campaigns (Duration period – 3 months for each campaign)
- 10 companies participated (5 companies during 2017 and 5 companies during 2019)

Supporting activities

For the bicycle challenge, the Limassol Chamber of Commerce and the KMeaters Cycling Team promoted the campaign and motivated employees to use bicycles to commute to work.

A2 Inter-relationship with other measures

LIM 6.3 has a strong interaction with other DESTINATIONS measures:

- **LIM 3.1:** Increase cycling and walking in combination with special interest tourist activities as an integrated product, as the 5 bicycle parking facilities, the new cycling lanes and walking routes developed under measure 3.1 encourage people to cycle to work instead of driving.
- **LIM 4.2:** Expansion of public bike sharing system, include e-bikes, as the expansion of the bike sharing system, the increase in available stations and bikes in the region as well as the new parking points developed under this measure encourage people to cycle to work instead of driving.

A3 Target groups and/or affected part of the city or region

Mainly residents moving across the Limassol region have been influenced by this measure. Also, tourists can be affected by the behaviour of locals and use cycling more often during their leisure trips in Limassol.

A4 Stakeholders involvement

Stakeholder name	Activities description
Chamber of Commerce	Promotion of the measure
Limassol Cycling Club	Promotion of the measure, motivation for using bicycles
KMeaters Cycling Team	Promotion of the measure, motivation for using bicycles

Table 1: Stakeholder involvement

B Measure implementation

B1 Situation before CIVITAS

Most people used their private cars to go to work increasing traffic congestion, and noise and air pollution in the city. There is a need to improve and promote the health benefits and sustainable mobility to work and everyday life. At a local level there is a need for using alternative transport from home to work. In such a way, employees of certain companies were motivated to use bicycles to arrive at work in order to achieve health and environmental benefits as well as savings in terms of money and time as well.

B2 Innovative aspects

The most innovative aspect of this measure is related with the **new mode of transport exploited**. With the implementation of this measure, people use cycling to explore the region according to their special interests, but most importantly, people are encouraged to cycle from home to work. The cycling networks have been expanded, bicycle parking facilities have been added, and routes have been created. This measure helped residents to improve their health and change their own habits even after the end of the project. The increased use of cycling has led to better infrastructure which has been an attractive element for visitors.

B3 Technology development

No development of own ITS tools for this measure but use of existing applications. Already existing applications like “Strava”, “Bike Gear Calculator”, “Viewranger”, and “Map My Ride” have been used.

B4 Actual implementation of the measure

Initially, a strategic plan has been prepared to identify the companies participating, the number of employees from each company, and the schedule for the meetings. Additionally, a cooperation plan has been created between key actors. Several meetings took place with the companies to inform them about the campaign. Also, presentations on the benefits of cycling have been delivered, followed by discussions with management and employees. During the meetings, ideas and suggestions have been exchanged about the routes that were followed from home to work as well as safety issues.

A campaign, 'Bicycle Challenge', took place in 2017 and 2019, lasting 3 months each year (September to December), in order to promote cycling in everyday life and particularly from home to work. The companies which have participated in the campaign during 2017 included BSM Cyprus, Polyclinic Ygeia, KEO Ltd, MAM Baby, and Marlow Navigation Co Ltd, while in 2019 included CASSIOPEIA Shipmanagement Ltd, KEO Ltd, Elias Neokleous & Co LLC, and Intership Navigation Co Ltd.



Figure 2: Completion of the Bicycle Challenge Campaign

The participants have used their own bike for the competition, and through mobile applications they have been recording the distance travelled each day, the cycling time, and the route. Upon completion of the campaign, information has been collected and each participant has received a certificate as well as a prize depending on the longest distance covered.

In February of 2020, STRATAGEM came into contact through direct phone calls with the 100 participants of the campaigns, either by calling the person directly or by calling the representative of each company who has previously asked his coworkers. STRATAGEM carried out this interview to understand the percentage of people who continuously cycle back and forth from home to work. The conclusion was that 70% of people adopted cycling to go to work almost every day with some exceptions (weather conditions, appointments to other places far away for their usual route, etc.). The other 30% were not able to continue due to lack of time, or because they have to go to other activities after work very fast, or to pick other people with them.

C Impact evaluation

C1 Evaluation approach

Expected impacts and indicators

Impact category	Impact indicator	Unit of measure
Environment	1 - CO ₂ emissions	ton
Energy	2 - Fuel consumption	L
Environment	3 - Traffic noise	dB
Economy	4 - Fuel costs	€
Society	5 - Awareness Level	%
Society	6 - Acceptance Level	%
Society	7 - Number of participants in the challenges	N ^o
Society	8 - Number of employees changing their behaviour	N ^o

Table 2: Expected impact and indicators

Method of measurement

Impact indicator	Method*	Frequency			Target Group	Domain (demonstration area/city)
		Bef.	Dur.	Aft.		
1 - CO ₂ emissions	DC/ E	12	26	45	Vehicles in demonstration area	demonstration area
2 - Fuel consumption	E	12	26	45	Vehicles in the area	demonstration area
3 - Traffic Noise	DC/ E	12	26	45	Inhabitants and visitors	demonstration area
4 - Fuel costs	E	12	26	45	Transport service providers	demonstration area
5 - Awareness level about the current situation of the transport system	S	n.a.	12-15	36-39	Employees of companies	city
6 - Acceptance level about cycling	S	n.a.	12-15	36-39	Employees of companies	city
7 - Number of participants in the challenges	DC	n.a.	12-15	36-39	Employees of companies	city
8 - Number of employees changing their behaviour	DC	n.a.	n.a.	41	Employees of companies	city

*(Data collection (DC), Estimation (E), Survey (S))

Table 3: Method of measurement

Detailed description of the indicator methodologies:

1 CO₂ emissions – This indicator was estimated using the data extracted by the environmental sensors installed in the main areas in the city which were established to improve cycling conditions.

3 Traffic Noise – This indicator was obtained from the environmental sensors, which collected data from the 6 areas in the city centre which were established to improve cycling conditions.

2 Fuel consumption and 4 Fuel costs – These indicators were obtained based on estimations made in cooperation with the Cyprus Public Works Department of the Cypriot Ministry of Transport, Communication and Works. For the calculation of this indicator, it was considered that 70 employees started to cycle to work instead of driving a car, avoiding on average 5 km of driving in Limassol city centre per trip. It was also estimated that each employee is cycling 22 days per month, and the approximate consumption of an average car was 8 L/100 Km. Also, the average fuel price in Cyprus for the period of the implementation of the measure and the evaluation was set at 1,24 €/L.

5 Awareness level about the current situation of the transport system and 6 Acceptance level about cycling – These indicators were assessed based on surveys applied to understanding, usefulness, and willingness for travelling to work by using alternative transport mode. Survey findings were related to questions about the current situation of the transport system in Limassol city centre and their satisfaction about the mobility modes of transportation. Such questions were “How did you get to the attractions that you visit” and “Do you know about the taxi sharing scheme, if yes do you use this service, how often, and how was your experience”, “Did you make a bike trip, will you use the bike more often”, “Have you seen or do you know about the bike sharing, did you use it, if yes then how often did you use it, and how was your experience with the service” and “Did you make a bus trip and will you use the bus more often”. The surveys were applied to the 100 people which participated in the campaign.

7 Number of participants in the challenges – This indicator presents the actual number of workers which participated in the “Bicycle Challenge” that took place in 2017 and 2019, lasting 3 months each year (September to December).

8 Number of employees changing their behaviour – This indicator measured the actual number of workers which continued using their bikes to go to/from work after the campaign completion. To collect the number of people who continue cycling to work, STRATAGEM came into contact through direct phone calls with the 100 participants of the campaigns, either by calling the person directly or by calling the representative of each company who has previously asked his co-workers.

The Business-as-Usual scenario

Considering the type of indicators, mostly comprised of surveys and indicators whose information was gathered for the first time, carrying out a BAU analysis was not possible for most of the indicators. In case that the measure had not been implemented, the campaign would not have

taken place and the participants would not had an incentive to start cycling to/from work. The measure contributed to behavioural change which would not have been achieved in another way.

C2 Measure results

Impact category	Impact indicator	Unit of measure	Baseline	Ex-Ante	Ex-Post
Environment	1 - CO ₂ emissions	ton	93,31	46,48	57,54
Energy	2 - Fuel consumption savings	L	0	8.640	7.392
Environment	3 - Traffic noise	dB	74,35	54,2	31,9
Economy	4 - Fuel costs savings	€	0	10.714	9.166
Society	5 - Awareness level about the current situation of the transport system	%	0	40	80
Society	6 - Acceptance level about cycling	%	0	40	80
Society	7 - Number of participants in the challenges	Nº	0	200	100
Society	8 - Number of employees changing their behaviour	Nº	0	200	70

Table 4: Measure results

C2.1 Environment

1 - CO₂ emissions

The increase in everyday cycling decreased the driving and as a result traffic congestion was reduced in the monitored areas. There was a decrease of 35,77 tCO₂ compared to the baseline scenario (93,31 tCO₂).

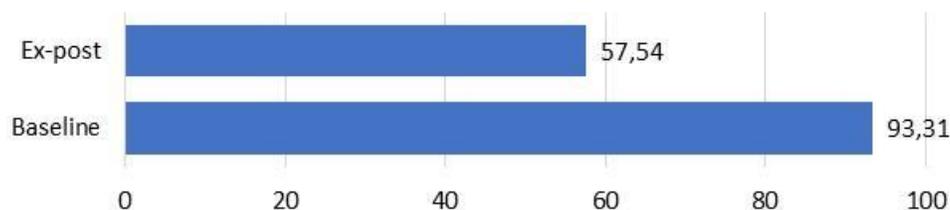


Figure 3: Levels of CO₂ emissions (Tons)

3 - Traffic noise

This measure significantly reduced the unnecessary traffic congestion in Limassol city centre to improve cycling conditions, resulting in a lower level of noise pollution and achieving a reduction of 42,45 dB compared to the baseline situation (74,35 dB).

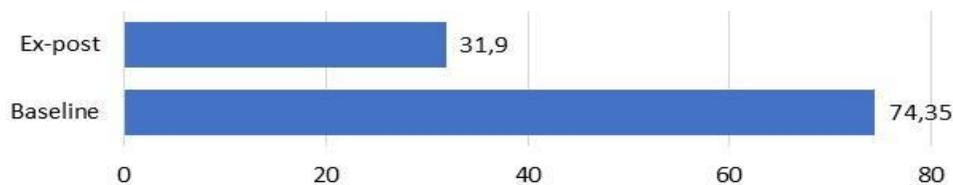


Figure 4: Levels of Traffic Noise (dB)

C2.2 Energy

2 - Fuel consumption savings

People are cycling to their work instead of driving through the implementation of this measure, adding multiple benefits to their everyday lives as well as fuel savings, which reached 7.392L.

C2.3 Society

5 - Awareness level about the current situation of the transport system and 6 - Acceptance level about cycling

The survey results revealed that through the implementation of the measure, people become more aware and accepting of the measure after the presentations on the benefits of cycling, reaching 80% for both indicators.

7 - Number of participants in the challenges

A total of 100 workers participated in the campaigns. 70 workers participated in the “Bicycle Challenge” campaign of 2017 and 30 workers participated in 2019. Despite the result being far from the goal of 200 participants, the local partners considered that the experience with the 100 workers went very well and was a great opportunity to promote the use of this mode.

8 - Number of employees changing their behaviour

After contacting the campaign participants, it was understood that 70 employees were still using their bicycles to go to work, 70% of the total participants. However, this achievement is far from what was hoped, considering that only 100 participated on the campaigns, instead of 200 as planned in the Grant Agreement.

C2.4 Economy

4 - Fuel costs savings

The implementation of the measure allowed fuel savings of 9.166€ to be achieved, since the newly introduced “cycling to work” concept worked towards a more sustainable economy, with works replacing daily journeys normally made by car, to be done by bicycle.

C3 Quantifiable targets

No.	Target	Rating
1	Less CO ₂ emissions: 46,83 tCO ₂	*
2	Less traffic noise in the city centre: 15%	***
3	Less energy consumption: 77,76 MWh	*
4	Increase the awareness and acceptance levels of people by 50%	**
5	Less fuel costs for 200 people reached: 10.714 €	**
6	Less fuel consumption for 200 people reached: 8.640 L	**
7	Public health and safety	N/A
8	Change residents and tourists' habits	N/A
9	More attractiveness	N/A
10	*At least 50% of the participants of the challenges changing their behaviour towards cycling	**
<p>N/A = Not Assessed 0 = Not Achieved * = Substantially achieved (at least 50%) ** = Achieved in full *** = Exceeded</p>		

*New target, not in GA

Table 5: Assessment of quantifiable targets

All targets have been evaluated on time and either been substantially achieved, fully achieved, or exceeded compared to the initial targets stated in the Grant Agreement. Targets 7, 8, and 9 were not possible to be assessed due to a lack of such quantifiable data.

Target 1 was only substantially achieved. After the implementation of the measure, the evaluation results revealed that the CO₂ savings reached 35,77 tCO₂, compared to the expected 46,83. tCO₂. The target was only substantially achieved because the evaluation was planned to occur during more months, however due to the delayed implementation it was only possible to collect data for around 1 year. Also, initially there was an adaptation and acceptance period among the employees for them to get used to it and apply it in their everyday life.

Target 2 was exceeded. With the measure implementation, it was possible to achieve a reduction of 42,45 dB compared to the baseline situation (74,35 dB).

Target 3 was not possible to be assessed due to a lack of collecting data regarding the energy consumption from cars that is avoided due to cycling to work for the competition needs. However, it is expected that the target is substantially achieved as Targets 1, 2, and 6 were achieved. Additionally, this target was achieved through the implementation of the other interrelated measures referred in section A2.

Target 4 was achieved in full. During the surveys, it was possible to understand that 80% of the residents and tourists surveyed were aware and cycle more than before. The employees have also adopted this habit into their daily routine.

The reduction of unnecessary traffic congestion, unnecessary driving in the city centre, and increased levels of everyday cycling allowed Targets 5 and 6 to be achieved in full. The “cycling to work” concept allowed savings of 7.392 L, and consequently, savings on fuel costs by 9.166 €. During the proposal, the goal was that the campaigns would contribute to 200 employees to change their mobility habits towards cycling, a very ambitious target. However, during the measure implementation, only 100 participated in the campaigns and that in fact, only 70 changed their behaviours. In any case, the local partners consider that achieving a result of 70% of the involved employees changing their habit is a very good result.

Target 7 was not possible to be assessed due to a lack of such quantifiable data. Although it was not possible to measure the public health and safety directly, it is expected that this target has been improved considering that CO₂ emissions and fuel consumption have been decreased. The decreased targets (Target 1, 2, 5, and 6) are affecting human health and safety directly.

Additionally, Target 8 was not possible to be measured because although it has been measured that 70% of workers continue to cycle to work, this answer does not apply to the residents and tourists’ habits. This conclusion applies to the change of habits of the workers who have participated in the Bicycle challenge. However, considering that workers are part of Limassol society, it can be understood that indeed the habits of people changed. Additionally, a survey question regarding the intention of people to cycle more often revealed that 70.6% people answered positively. Considering all the above, it is expected that this target has been achieved.

Target 9 was not possible to be achieved due to a lack of such data. However, it is expected that people appreciate the cleaner, healthier, and safer environment to live in (achieved not only through the implementation of this measure but also through the implementation of the interrelated measures described in section A2), and therefore this target has likely been achieved. Maybe it would be wise to include questions in the survey regarding the effect of attractiveness from the existence of sustainable mobility applications to the tourists and resident’s lives. Another direct question could be if people and residents find Limassol city more attractive after the promotion and upgrade of sustainable mobility. But unfortunately, such questions were not included.

Target 10 was achieved in full, as more than 50% of the “Bicycle Challenge” participants changed their behaviour towards cycling. After contacting the workers, it was understood that 70 people out of 100 cycle to/from work and have the intention to continue cycling.

C4 Up-scaling of results

Not applicable.

D Process Evaluation Findings

D1 Drivers

Marketing actions included the justification of changing travel behaviour from the perspective of improved health and environmental benefits, as well as opportunities for employees to save money by cycling to work. Also available was advice and discussions about issues related to safety, weather, suggested routes from home to work, and technical workshops on basic cycling. The campaign generated a high level of awareness of the bicycle as a valid mode of transport with acknowledgement especially of the health benefits, hence shifting traditional cultural values.

D2 Barriers

The main barrier was the participation of the employees to promote reliable information about their daily trips, however this was overcome with the appropriate information provided to the participants about the health and environmental benefits that they would achieve.

D3 Main Lessons Learned

After the completion of the campaign, most participants expressed in direct dialogues that they would like to keep cycling to work. Following our communication through phone interviews, almost all of the participants continue to use their bike to get to work. Therefore, this measure has encouraged citizens to change their habits and use bicycles more often in their daily life.

E Evaluation conclusions

Two campaigns have been implemented during the DESTINATIONS project, with the participation of 10 companies and 100 participants. Therefore, remarkable data have been collected for the evaluation of this measure.

F Additional information

F1 Appraisal of evaluation approach

The measure has been completed on time, allowing the data to be gathered and be used to proceed with the evaluation. The local partners had enough time to analyse the data, therefore there is no need to undertake another evaluation for this measure.

Initially it was planned to achieve Targets 7, 8, and 9, but it was not possible for these indicators to be assessed mainly due to a lack of data. However, it is expected that though the decrease of CO₂ emissions and fuel consumption as well as the implementation of the interrelated measure

LIM 4.2 and LIM 3.1, the three targets have been achieved. Moreover, during the proposal stage the number of employees which would participate in the campaign was overestimated.

Additionally, the energy consumption (Target 3) was not assessed due to the impossibility of collecting data for the energy consumption avoided due to the to the cycling competition. However, it is expected that the target is substantially achieved through Targets 1, 2, and 6 of the studied measure as well as the interrelated measures in section A2.

F2 Future activities relating to the measure

This measure is not a business case, but after the end of the project has observed a significant percentage of residents changing their habits and using cycling in their daily life. Some participants (70%) have been motivated from this action and are using their bicycle more often in their everyday life.