Mobility Management for Business and Industrial Zones
MoMa.BIZ

Results of the Local Mobility Survey & Cost-Benefit Analysis of the Implementation Chosen for the BIZ of *Atarfe – Zona Norte de Granada*

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1. LOCAL MOBILITY SURVEY

1.1 INTRODUCTION

The surveys were used to characterize mobility, show major gaps and problems, identify measurable habits, collect views on possible measures to be implemented, and identify the main demands and expectations on the part of employees. In addition, the survey was a tool to raise awareness among employees of the need for changes in mobility behaviour.

It did its best to be brief, asking only the essentials, and deducting the rest by other means. He had a right size, about 34 questions, which involved a total maximum response of approximately 15/20 minutes. Confidentiality was assured at all times.

The format was fun and friendly, and allowed to respond in a simple and intuitive. As recommended, we also use an electronic format in which filters were introduced to avoid mistakes (like leaving questions unanswered), to aid in the responses, and provide links to the email address and appeared project page where information and awareness campaign.

However, the survey system, although necessary, should be supplemented by other means of collecting information, it presented some limitations:
- Does not allow pick nuances or problems that are not in the questions.
- Employees may feel constrained to respond when despite the anonymity of the survey.
- The manner of questions can induce responses.

In any case, be careful because sometimes, when completing the questionnaire, employees tend to say what they think the employer wants to hear or, conversely, to keep quiet about what they think could be used against them. Thus, an argument can be made from environmental faith; to demonstrate that the measures do not like them will not work because they will change their travel habits. For this reason we have the Local Group Mobility and opinions.

The survey information was supplemented with information collected directly through the meetings of the Local Group Mobility. These include maintaining semi-structured interviews with workers who volunteered to be responsible for mobility, a dialogue on how to transport home-work.

The purpose of these meetings is to collect all relevant information that has not been taken into account when performing the previous questionnaire. Unlike the survey, the questions in this case should be opened. These interviews lasted about three hours and were performed by the coordinator of mobility.

Supplementary information was obtained through visits to companies and interviewing workers about their commute to work, allowing us to gather opinions short and direct, reflecting well the key issues and dealt with very specific issues.

To ensure responses and usefulness of the surveys followed the following guidelines:
- It began with a pilot survey to test the questionnaire in a small group of people to see if it worked and was understood correctly.
- Local Mobility Group served as discussion group for better questionnaire design. This served also to involve all stakeholders.
- It was distributed in holiday periods or on a Monday or Friday, or coinciding with a local event that may influence the mobility (strikes, local festivals, etc.).
- It also avoided the overlap with other surveys that may be carried out in the company.
- For companies that were part of the business associations survey was accompanied by a letter signed by the presidents, explaining the reasons and importance of the survey, ensuring confidentiality, and reiterating the deadline for returning completed.
- It will announce the results of the survey to keep the staff involved and as a useful tool for promoting the Mobility Plan. May be made through the newsletter (newsletter of the project), brochures specially edited for the occasion, and so on. This not only keeps the interest in the Mobility Plan but will serve to underline the degree of need or desire for change.

Initially, the survey was sent to all employees, because it helped to involve all staff in the Mobility Plan. In any case, it was necessary to ensure that the sample was representative of the company, being sent to different departments, hierarchical levels, shift workers and schedule, full and part-time, etc.

The surveying, conducted in March 2012, was developed with the collaboration of companies and employers' associations on a representative sample of 275 workers. To perform the survey, we administered the questionnaire to workers who had finished their shift. To reach a sufficient level of representativeness, we considered the number of workers and, based on this information, estimated the sample necessary. We determined the sample size according to the following conditions: 1. we took as the parameter of interest the population proportion (number of users of the Rent a Car service); 2. The population proportion considered was 0.5, the least favourable that one might find (p=50); 3. We established the maximum allowable error as 0.03 (+/- 3.0); 4. We assigned a confidence level of 0.95.

By creating the formula, we obtain the following model for selection of the sample size used in the fieldwork:

$$n = \frac{\sum_h W_h^2 \frac{N_h}{N_h - 1} \frac{P_h Q_h}{w_h}}{\frac{e^2}{k^2} + \frac{1}{N^2} \sum_h \frac{N_h^2}{N_h - 1} P_h Q_h}$$

Where:

k, is the value of the confidence level calculated using normal distribution.

e, is the maximum allowable error, interpreted as the difference between the population parameter and the estimator of this parameter: $\left|\theta - \hat{\theta}\right|$

h, indicates the stratum at which we are operating (determined by taking into account the first stratum and weighting the other strata according to size).

W_h, are the weightings of each stratum, with the strata considered in this case to be uniform.

N_h, is the population size of each stratum.

$N = \sum_h N_h$, is the population size.

P_h, is the population proportion, where $Q_h = 1 - P_h$

The four premises stated above condition the model and the formula used to calculate “n”, the number of surveys needed to ensure that the data and the results of the research are statistically representative.

In the analysis phase of the surveys examined all information collected, according to different methods used. The analysis is thus an exercise more or less complicated depending on the number of questionnaires received, the type of survey used, etc.., Hence the software packages could use more or less sophisticated.

The mobility coordinator played a prominent role for the correct interpretation of survey results for this stage. The information collected should be able to detect weaknesses ("negative") and identify strengths ("positive"), as set out below:

Weaknesses:
- Regular bus lines with low frequencies.
- Need the car for other reasons (mainly school children).
- Different path to the work of a high percentage of employees.

Strengths:
- Support for the Mobility Plan by governments and businesses.
- Consolidated public transport company.

In short, this phase is very important because, for the drafting of the Mobility Plan, you must know all the parameters related to the business to determine the mode of transport and transport demand generated by the companies and the offer.

1.2 RESULTS OF THE MOBILITY SURVEY

1.2.1 Modal Split

The fact that the reason work is the one that generates more displacement gives an idea of the importance of travel to work in the mobility of a city. Furthermore, also influences the mode over 80% of commuting are performed in a car, while for other reasons only used at 20%. Furthermore, the average occupancy rate per car is about 1.2 persons, and most travel covering a distance less than 3 km.

Although there are important differences depending on the type and size of city and supply of public transport in the modal split of journeys to work in major metropolitan areas Spanish is evident the dominance of private car travel, which confirms the aforementioned data.

The rational use of private cars in urban centres and the promotion of clean urban transport are priorities (Transport White Paper, EC, 2001) The survey shows that the average time spent commuting to work is why 15 to 45 minutes in 60% of cases, and only 28% makes the trip in less than 15 minutes.

Moreover, the unbalanced growth of road transport is endangering the fulfilment of the Kyoto agreement in our country. Transport has increased its emissions by 1990-2003, while the average for all sectors has increased. Note that Spain's commitment in the Kyoto Protocol is that emissions of greenhouse gases (GHGs) must not exceed by more than 15% to those in 1990.

As mobility in metropolitan areas or, as the Metropolitan Mobility Observatory 2002, the average energy consumption and CO2 emissions per traveller at distances under 10 miles are between 2 to 3 times by car than by bus and underground.

This finding provides an overview that could be described as worrisome if one considers that in the modal distribution of Spanish urban mobility, the automobile is the dominant mode and its use is growing in most cities. No wonder, then, that the Transport White Paper of the EC includes among its objectives the rebalancing of transport, through measures in urban transport in large cities, to reconcile the modernization of public services and rationalization in the use of private cars.

Finally, increased mobility and, above all, the modal imbalance in favour of private vehicles are causing the capacity of access roads to the cities is often overloaded.

1.2.2 Behavioural Analysis

Mobility projects are effective if they are able to tackle complex issues calculating the users' reactions. Thus, it is possible to analyse actual behaviours (and declared ones) evaluating the hypothetical actions of the users. These are the actions chosen in order to adapt to the mobility's changes.
Behaviours related to mobility are affected mainly by time and cost factors. They are determined by habits. The general belief of every user is that his/her choice is the best solution; it is not common to assess other ones. Showing possible alternatives to the users and asking them about their hypothetical behaviour gives the chance to evaluate and measure different mobility's options.
Furthermore, in order to evaluate if users' actions are caused by habits or objective decisions, it is possible to ask them about their knowledge of the services and their willingness to change habits.

The analysis was done with the same criteria for the three Spanish Business Areas of the project. For each area similar graphs and tables are described, those permit to evaluate sample's behaviours. The text is organized considering first the single questions of the survey, and then areas' general evaluation.

Costs, as travel time, are an important factor to understand how transport options are chosen by users. The users take only direct costs into account, generally the fixed costs are not even considered (e.g. the cars' ones). Travel time can be also underestimated due to the waiting time, for example while queuing. Those times are often even bigger than the travel time itself. For instance, a car trip can be perceived quickly because the time finding a parking space has not been considered.
In order to better analyse these issues, some questions about factors affecting mobility's decisions have been introduced. In the chart below (Figure 1) comfort is considered by the interviewed sample as the most important factor, followed by freedom to move, cheapness, travel time and stress.

Regarding the values of using public transportation, the main drivers of users' behaviour are the time spent on the trip, the freedom of movement and the money saving. Observing the answers, public transport isn't commonly used because the sample evaluates it as an insufficient service with lack and inconvenient connections. Comfort and stress are also important factors influencing the users, they are less important than the ones quoted previously. Also the safety is important for a consistent size of the sample. The question's other factors are selected only from a little part of the sample.

It is quite clear from Figure 1 that the majority of the sample uses car for home/work trip, even without observing transport mode distribution. Indeed, the factors chosen by the users are peculiar to car transport mode. The traveller believes this is the faster transport mode and the one which gives more freedom.

This is confirmed from the analysis of the transport mode done by the sample: 84% used the car, as driver or passenger (also with carpooling equipment). At the same time, the disappointment for the public transport of the BIZ area is quite clear from the answers.

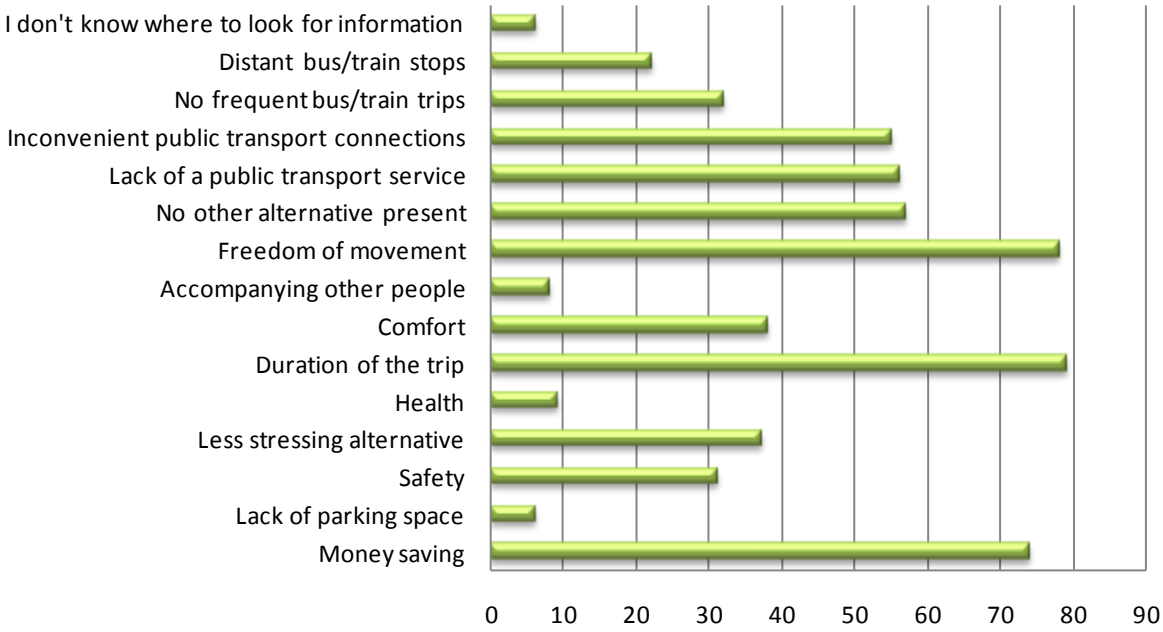


Figure 1. Factors that influence the choice of transport to/from the work place of the sample [Zona Norte de Granada]

Those data support the construction of mobility strategies, which permit to change users' travel behaviour. For example, if the strategy is improving bus quality, according to the interviewed, it is important to enhance comfort or safety. At the same time, a benefit for the users could help to balance the long duration of the trip. This issue is linked to the survey's question about intermediate stops. In Figure 5 the majority of the sample goes directly to work, so also who use car doesn't have problem with intermediate stops. Those are the first reasons to use car regarding its freedom of movement. Instead, who carries out intermediate stops, he/she generally brings children to school and/or stops to do his/her shopping.

Regarding Figure 1, an important factor choosing transport mode is the distance of bus stops, then it is possible that this factor influences the possibility to carry out intermediate stops shown in Figure 2. The improvement of bus stops in the BIZ area (near schools and markets/supermarkets) could determinate a shift from car to bus uses.

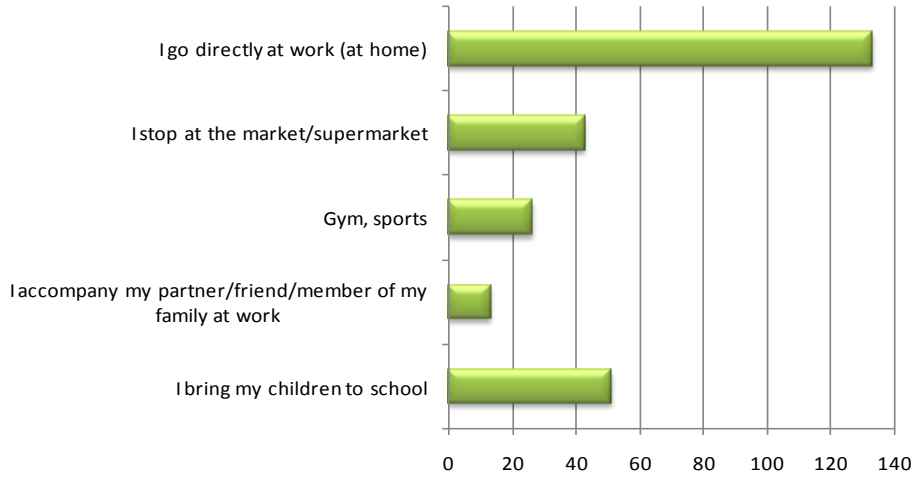


Figure 2.question "A3": When travelling to or from work do you carry out any intermediate stops/trips? [Zona Norte de Granada]

Those improvements could not be enough, as described before, also the duration of the trip is more important for the sample. Indeed, the features of public transport that need more improvement are timetable and frequency (described on Figure 3).

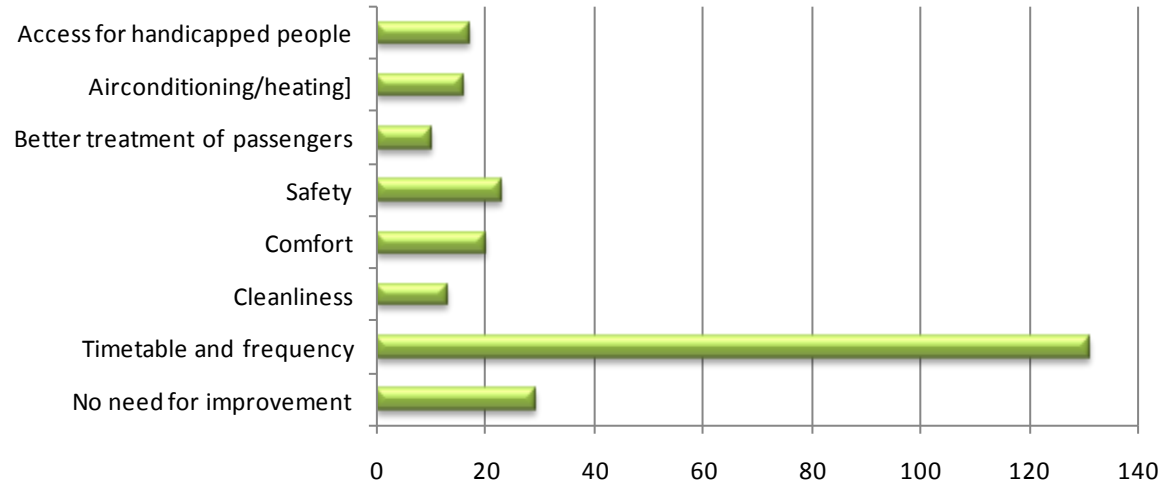


Figure 3.question "A5": In which of the following areas do you think public transport to/from your work place should improve? [Zona Norte de Granada]

Another question of behaviour analysis is to understand workers' attitude about changing transport mode going to work. The attitude to change is assessed without proposing a selected travel reference, asking instead an automatic and impulsive reply. So the results could be matched with other similar questions validating the answers.

In this question, the statements collecting the majority of users' answers are the one related to feelings of safety during the travel, the time spent for the trip and the comfort (Figure 4).The interviewed could choose three factors and it is not possible knowing the importance's order of chosen factors. Posing this question without referring to the usual trip home/work underlines the importance of safety; it is an aspect which didn't come out from other similar questions of the questionnaire.

The question about arriving at the destination as quick as possible focuses on the importance of fast trips, it is especially relevant for work habits. This answer is important both for car users and bus ones. The most chosen answers are two: "make trips only when necessary" and "like of the feeling of driving". Those are opposite. Who chose the second answer, rarely changes his/her transport mode. Instead, the group choosing the first answer could use the public transport if it is improved.

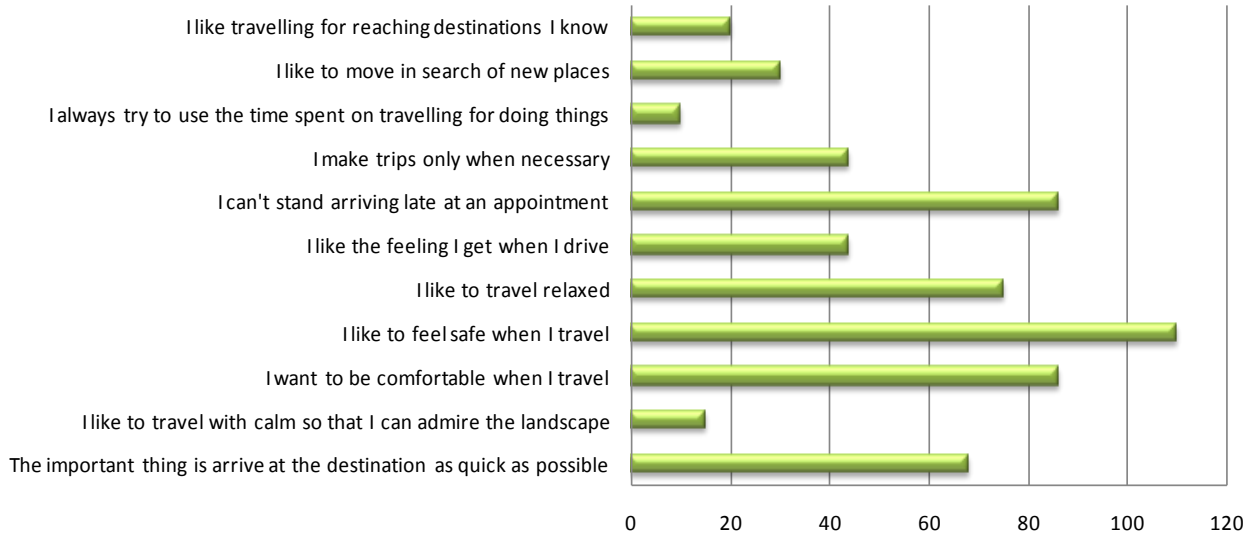


Figure 4. Question "C5": Choose 3 of the following statements that best reflect your way of thinking [Zona Norte de Granada]

The question investigating the attitude of car users concerns the agreements' degree of car related statements. The interviewees assigned to each statement a high value (10 point as shown in Figure 5). The collected data about this question confirm the previous comments. The most important thing is arriving at destination, with comfort and freedom as perceived from drivers. At the same time, drivers' belief is that car is the fastest mode of transport.

So, if the mobility plan's aim is reducing car use, for this sample the most relevant improvement is shortening travel time to the work place.

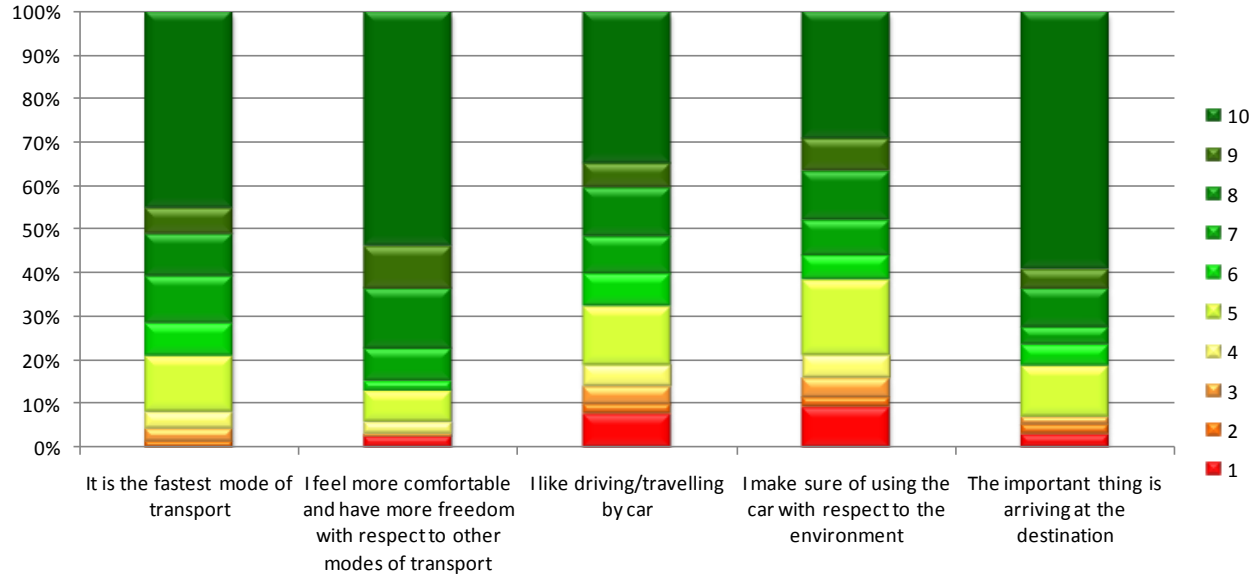


Figure 5. Question "C2": With regards to the trips you have carried out by car could you tell us to which degree you agree with the following statements? [Zona Norte de Granada]

Going to work in the long distance, car is often the only feasible mode of transport. This factor can be assessed observing the specific answer illustrated on Figure 6. Considering the map of public transport permits to evaluate the distance that could be covered by bus (rather than by car), for instance the distance about 3 Km. the change of mode could be done with a good alternative, not only for the time but also for money saving.

Evaluating transport costs, drivers often don't consider fixed costs, but only fuel costs and if there are tolls. Considering the same distance, it is easy to demonstrate that car is more expensive than bus. For short distance, it is more difficult to explain that bus not necessarily have longer trip and if allow from the structure of the town, is possible to avoid traffic problem with bus lane or similar.

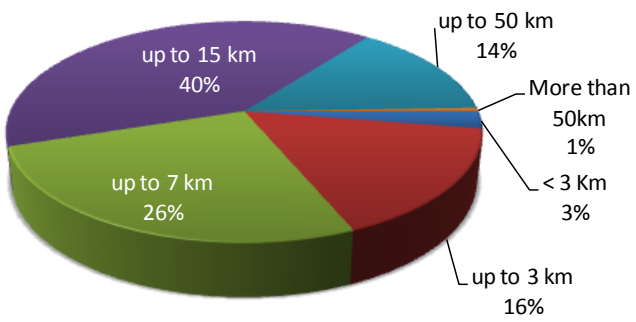


Figure 6. Question "A5": Distance covered by car, every day, to get to work (one way) [Zona Norte de Granada]

A share of 30% of interviewees says to drive always into the traffic and a share of 37% says it happens frequently.

Instead of the time spent to go to work, a share of 57% spent less than 15 minutes, so is possible to improve the time for bus trips? For example with bus lane or alternative route to avoid traffic?

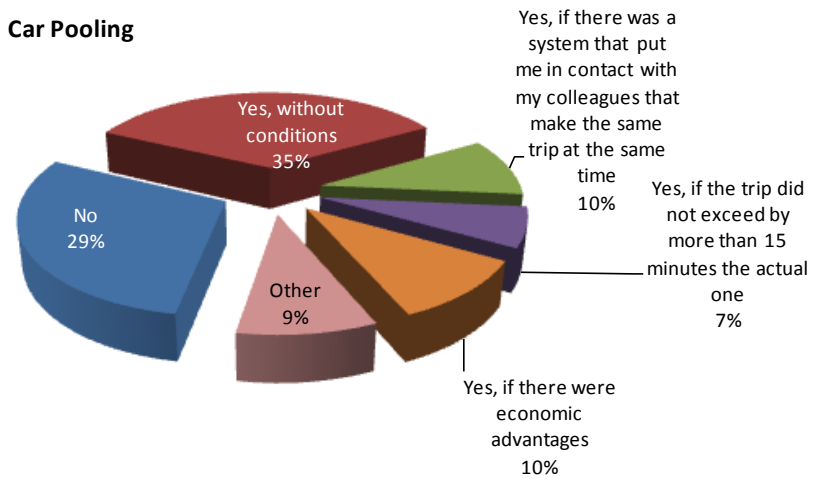


Figure 7. question "B8": Would you be willing to share the home-work trip by car with your colleagues as a driver/passenger?[Zona Norte de Granada]

Another alternative reducing the traffic is the car-pooling. The sample seems to agree to this mode. A share of 35% interviewees is willing to share home–work trips by car with other colleagues without conditions. The positive answers for car-pooling are the 57% of the total sample, (Figure 7).

Only 1% of the sample goes to work by bike. So it is difficult to improve this share. Furthermore, only the 8% of interviewees changing transport mode in summer prefers bus or motorbike.

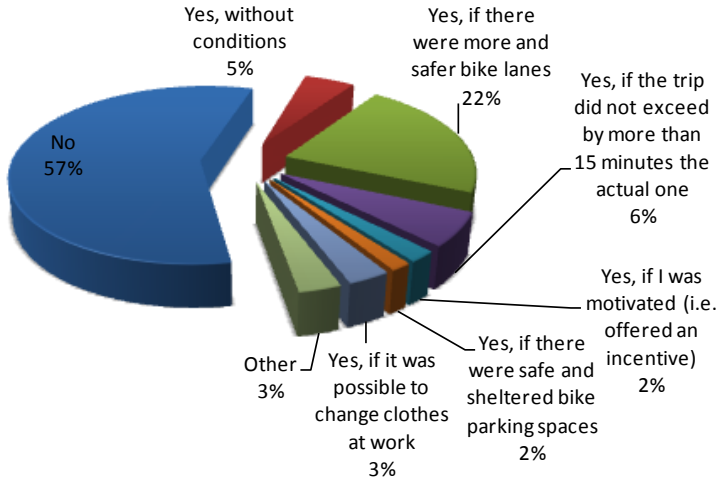


Figure 8.question "B9": Would you be willing to come to work by bike?[Zona Norte de Granada]

The 22% of the sample is willing to go to work by bike if there will be more bike line's kilometres and if these paths will become safer than the present conditions.

Other possible strategies (shown on Figure 8) collected less share but are advantageous for workers improving slow mobility.

As described previously, also public transport could be improved to make slow mobility more attractive. In this case a provocative question is used suggesting free public transport (Figure 10). The bigger share would increase the use of public transport if they received a benefit, perhaps a part of this share would confirm their answers if the service would be free.

On the other hand, if timetable share synchronized with job schedules, and there is financial subsidy for season tickets (Figure 9), there will be less time spent on bus and the share of public transport's preferences will increase. This is confirmed also from the answers about factors influencing the choice of transport mode. The answer related to "money saving" (Figure 1) collected a big share of the sample.

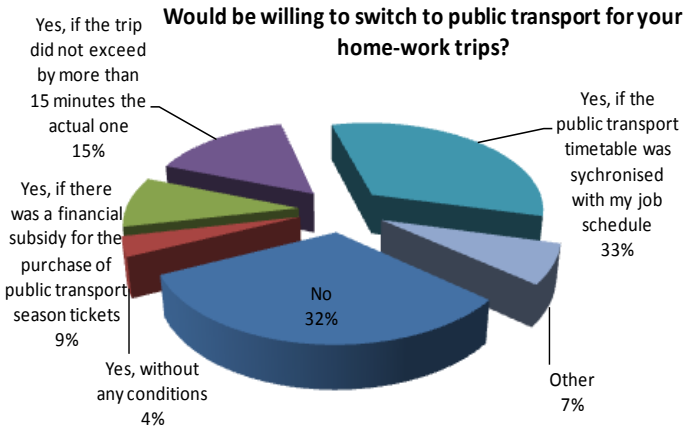


Figure 9. Question "B7": Would you be willing to switch to public transport for your home-work trips?

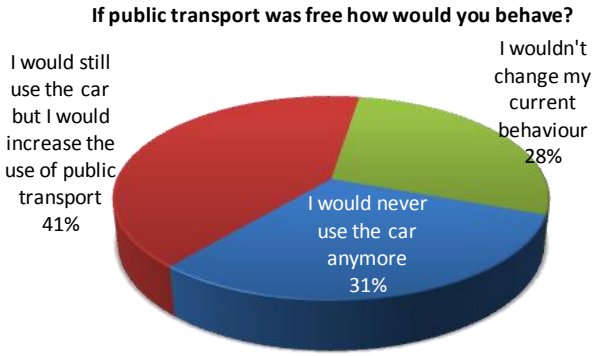


Figure 10. Question "C5": If public transport was free how would you behave?

Then the analysis moves to the graphs of the **GML Atarfe's BIZ**. The mobility theory is the same described previously. In this BIZ the car is the most used transport mode with a share of 75%, to which it is possible to sum the share of 8% of car-pooling. Then the share of home- work trips by bus is the 8%, the other transport modes have very smaller share.

The trips with private transport mode are very important for this sample. As is shown in Figure 11 the first factor influencing the transport choice is freedom of movement. The second one is money saving.
To evaluate benefit for transport mode change the time spent on movement could be used because the sample gave it an importance: the third factor for share is the "duration of the trip".

Analyzing the other factors, the sample uses car perhaps because the public transport's connections are poor and the interviewees perceive their transport mode choice as the unique possibility ("no alternative present").

Observing the graph on Figure 1, some factors collected less answers but they could be more characteristic for mode that are less represent on home-work trips of the GLM BIZ.

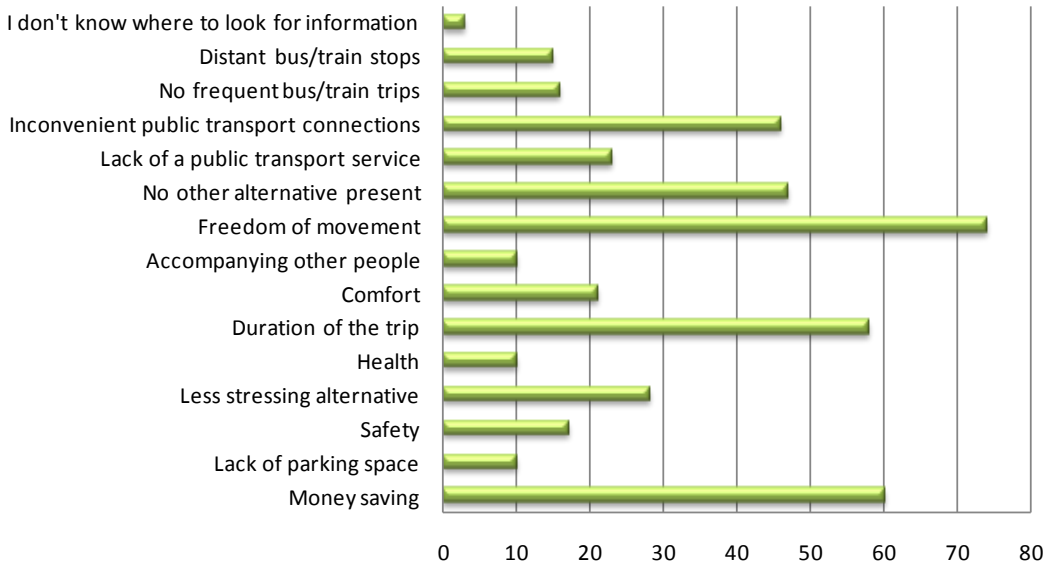


Figure 11. Factors that influence the choice of transport to/from the work place of the sample [GLM Atarfe]

The choice of the transport alternatives is evaluated according not only to the supply of transport service, but also to the needs of the workers (as shown on Figure **12**). In GLM the majority of the sample's share goes directly to work, the intermediates stops are mainly going to the market or to accompany somebody.

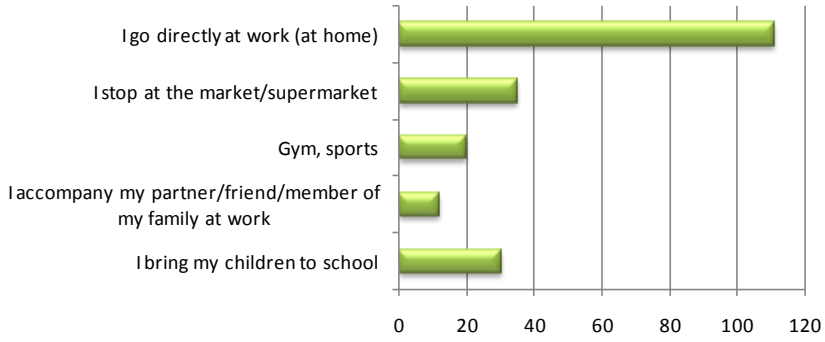


Figure 12. Question "A3" ": When travelling to or from work do you carry out any intermediate stops/trips? [GLM Atarfe]

The Public transport service of GLM BIZ is known from industrial zone workers but interviewee evaluated it as very bad (Figure 13 and Figure 14).Many workers, maybe drivers, don't know the public transport service of the BIZ,(see Figure 14), and this is confirmed by the 40% of the sample, who declared: "I don't know if public transport timetable is suitable for my work schedule".

In this case, the service could be improved, but it needs also a good “marketing operation” to bring workers to use it. The same project with or without marketing could get different results.

Figure 13. question “B2”: are you aware of the public transport present to/from your work place?[GLM Atarfe]

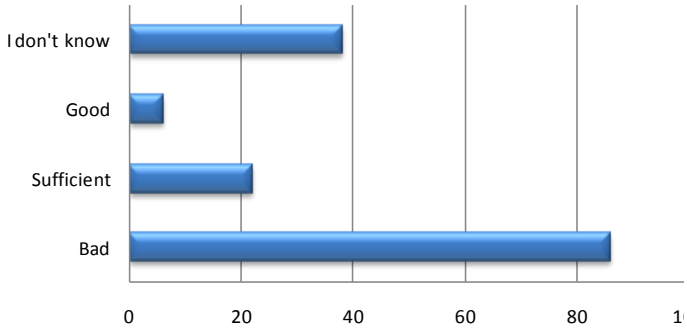
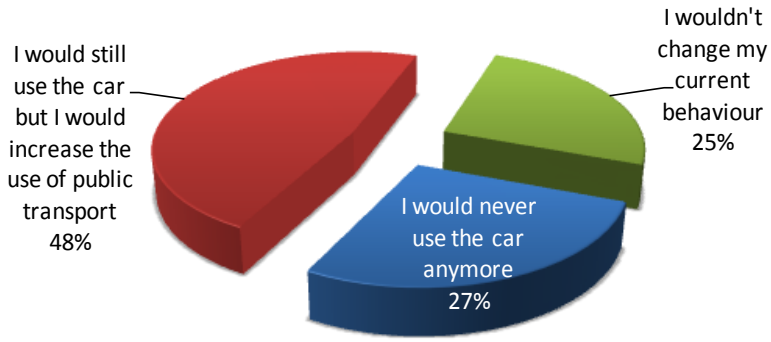


Figure 14. question “B3”: How do you evaluate the public transport to/from your work place?[GLM Atarfe]

For GLM Atarfe BIZ, the majority of the share wouldn’t be willing to switch to public transport for home–work trips; they believe that the service is really poor. Nevertheless, this idea could be changed. Only the 25% of the sample wouldn’t change its behaviour, Figure 15shows answers’ distribution in relation to the provocation about free transport service.



Furthermore, a share of 48% of the sample would increase the use of public transport not only if it will become free, but also if the users will know the strengths and the opportunities of this service.

Figure 15. Question “C5”: If public transport was free how would you behave? [GLM Atarfe]

As in the majority of behaviour analyses, (also for other BIZs), the car is perceived as the more comfortable mode and it gives much more freedom then the other ones (Figure 16). The sample of GLM Atarfe confirms that also the time spent on trips by car are perceived as fastest, even if drivers spend time into traffic or queuing.

Observing the graph, the sample doesn't give much importance to the environment because the statement "I make sure of using the car with respect to the environment" gained the lowest score.

A marketing focusing on this spot, like the importance of use less car to reduce pollution or to preserve the environment, probably would not reach a good result.

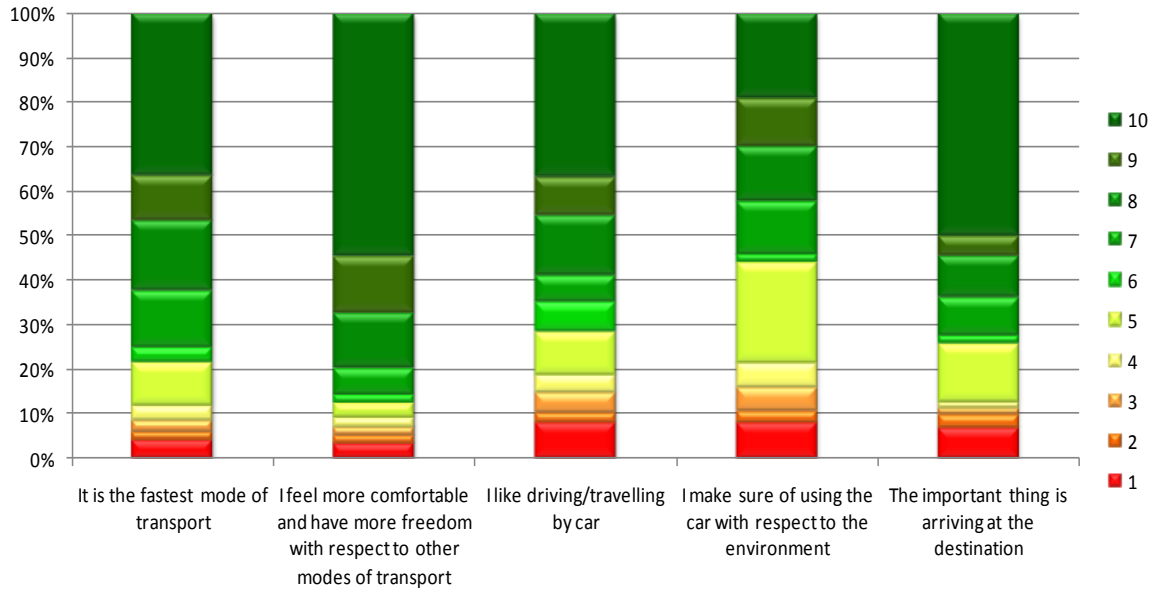


Figure 16. "Question "C2": With regards to the trips you have carried out by car could you tell us to which degree you agree with the following statements? [GLM Atarfe]

Drivers who are frequently into the traffic on their trip to/from work constitute the share of 46% of the sample, and 32% of interviewees declare that they are always into the traffic. Indeed, it is very strange that the car is considered the fastest transport mode. Figure 17 shows that workers of GLM Atarfe don't drive for long time, 40% of the sample spends up to 15 minutes, but a share of 54% said to have a trip about 30–50 minutes (30% of the sample).They are probably spending more time into the traffic. If they know how traffic could be avoided, they could change transport mode.

Figure 18 represents the perceived monthly travel cost of the sample. This graph could be used to propose cheaper transport mode for workers. At the same time, it represents that drivers didn't evaluated fixed costs.

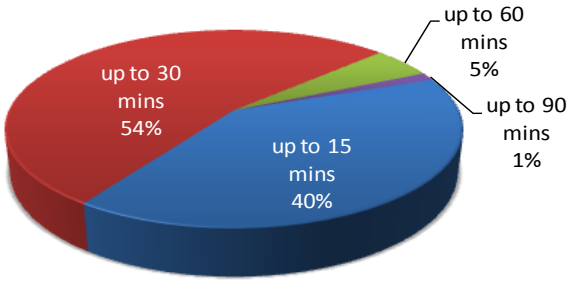


Figure 17. question "A6": How long does it take you to get to work (in minutes)

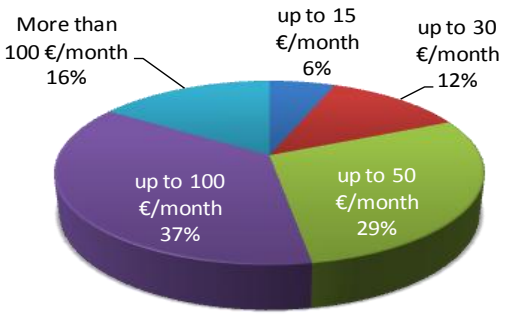


Figure 18. question "B1": How much do you spend per month on average for your home to work trip (€/month)

The majority of the sample uses the car alone, but the 31% would use car-pooling without any conditions. This means that if there are some improvements, the service's use could increase. The share declaring that it would use car-pooling with a system to get colleagues in contact confirms this. To evaluate this proposal, the group that have the same working hours should be considered.

On the other hand, the sample doesn't seem to be in favour of bike's use. An important factor has to be underlined: bike lanes are perceived as dangerous. This is an important point to increase bikers for daily trip to work, not only for pleasure.

The behaviour of the sample is shown through the answers' distribution of the next graph; it reflects the way of thinking of GLM Atarfe workers (Figure 19).

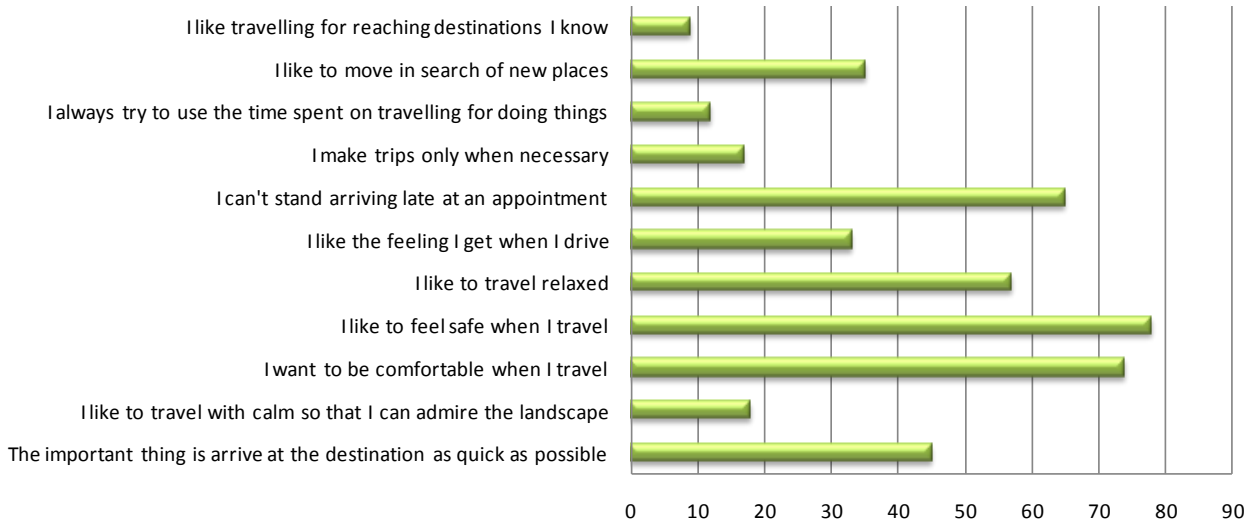


Figure 19. Question "C6": choose 3 of the following statement that reflect your way of thinking [GLM Atarfe]

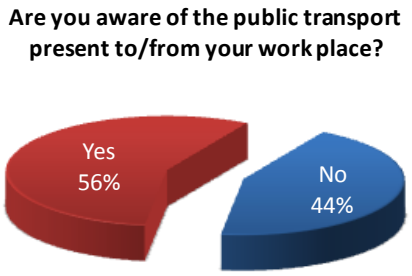
When the question doesn't refer to a particular trip to work, the relevance of safety travel appears clearly. This data could be read as a warning for public transport, the safety on bike line and also the safety by car is really important.

The second factor chosen by the sample is the comfort, then the importance to arrive on time at an appointment. Travel relaxed is another relevant factor for the sample.

The analysis of the sample collected from the **Atarfe BIZ** is very smaller than the other described before. For a sample about 27 answers the analysis could be wrong if the sample doesn't represent the BIZ, which is clear.
Is meaningful that a lot of shares are comparable with the same graph elaborated for other BIZ, as we could see observing the graphs. The principal difference that we could see is that in this area the workers doesn't used public transport services and almost all the sample use the car both in winter and in summer.

A few number of interviewee carry out intermediate stop during the trip, only a little share brings child to school. The distance covered by the worker of the BIZ is little that the other: the share of trips about 3 – 15 Km is bigger than others BIZ; a particular data is that the entire sample meets traffic on the trip.

Perhaps the workers of Atarfe BIZ's don't use the public transport because they evaluated it very negatively as illustrated on Figure 21. At the same time they didn't know if the public transport schedule is suitable for their work (38% of the sample) but they indicated "timetable and frequency" as the area that need more improvement.



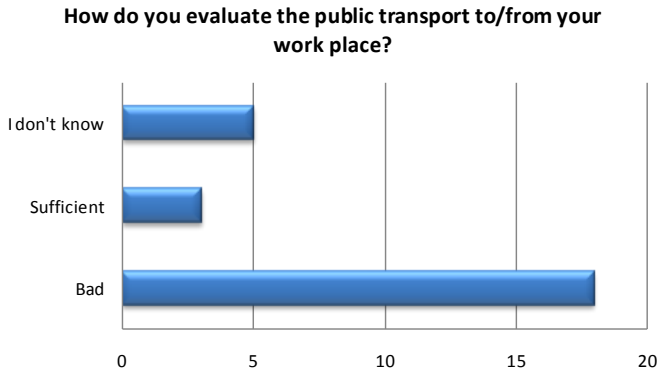


Figure 20. question "B2": are you aware of the public transport present to/from your work place?[Atarfe]

Figure 21. How do you evaluate the public transport to/from your work place? [Atarfe]

The sample is really well disposed to the car pooling but is not the same for the bike as transport mode to go to work, unless the improvement of the safety of the bike lanes.

On Figure 22 the answers distribution confirm the bad quality of the public transport service on the belief of the sample (factor: “distant bus stops” and “inconvenient public transport connections”). As in others BIZ the freedom of movement was an important factor as cheaper trip for work. So we compared this sample choice with the unusual proposal of free public transport. The share that should be influenced from this provocation is large (share of 77%, use less the car sum at use the car anymore).

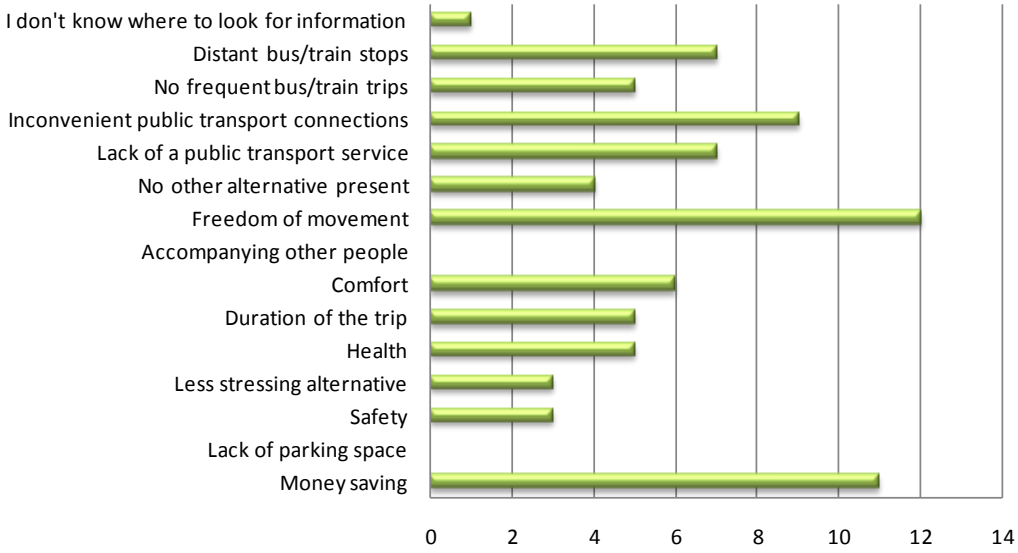


Figure 22. Factors that influence the choice of transport to/from the work place of the sample [Atarfe]

At the end the statements that characterize the Atarfe BIZ sample are the safety, that didn’t emerge as so important before. The relevance of could calculate the time to reach somebody or the work place is also important, ad represented from the statement “I can’t stand arriving late at an appointment”. The comfort is another important factor for the Atarfe BIZ sample that could be use also for the “marketing” of public transport services, whit the belief of workers that would have relaxed trips.

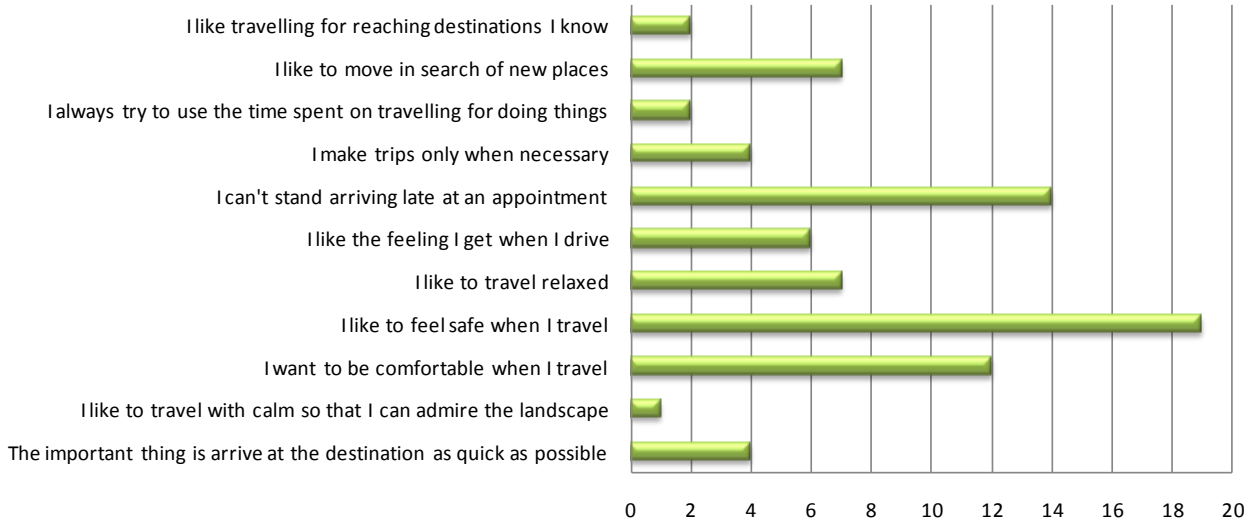


Figure 23. Question “C6”: choose 3 of the following statement that reflect your way of thinking [Atarfe]

2. COST-BENEFIT ANALYSIS OF THE MOBILITY SOLUTIONS CHOSEN

2.1 INTRODUCTION

Mobility solutions were elected at meetings of the Local Mobility Group from the results of the survey of mobility. There were three meetings at intervals of 5 months apart, which served to make contact with the current situation and where they discussed possible solutions, and which were agreed later. In this way, involving by the project, companies are protagonists of their own transformation. We can differentiate the aspects or strategies that were developed in the meetings:

List of measures to implement the mobility management in industrial estates

These may be applied as part of the Mobility Plan development or as isolation way to solve specific problems affecting the mobility of workers in the industrial estates of Atarfe.

Tips for using and improving of public transport

Public transport is a fundamental means of work transporting, and its existence should be a prerequisite for the proper functioning of the industrial area. It is also one of the transportation safest means.

As main advantages are the following:

- The workers come to work rested and stress-free.
- It is a viable option for workers who do not drive.
- Reduce the need to create more space for parking.
- Reduce the number of accidents.

The existing public transport mode in the area is a regular bus service of metropolitan public transport. It is involved in widespread traffic congestion, and it is rarely effective because it do not bring workers to his workplace. These services have the disadvantage of using long travel times.

In the absence of a local bus service with urban lines, it was discussed that a possible improvement might be strengthen of a regular character line, which connects the core of the population with the industrial area, and connecting the BIZ in rush hours with other public transport (mainly with tram which is currently under construction). It must be a service that does not perform too many intermediate stops if it wants to offer competitive travel times.

There are several key aspects to be taken into account to make public transport more attractive in the industrial area:
- The provision of public transport services must be appropriate to the mobility needs of the BIZ; we must ensure that the line which will be created or modified will connect with workers residential areas.
- It is essential to have canopies, which allow a comfortable waiting, and accessible platforms. Likewise, it will be consider the proximity of bus stops at each of the companies to avoid unnecessary travel of workers.
- Services must be frequent, with appropriate travel times, reasonable rates, and low waiting times, if we want to attract workers.
- Public transport should have segregated lanes in much of its route to avoid losing time in overall congestion. For that, unions must claim the creation of bus lanes for buses and high occupancy vehicles in access roads to large cities. Likewise at the entrances of the cities and in areas where industrial areas are located should be given priority to public transport (bus lanes, traffic lights, etc.).

From the Local Mobility Group it is possible:
- To ask workers about their interest in public transport.
- To provide schedules and maps of bus lines.
- To inform employers and employees of the existence of public transport coverage (stops, frequency, locations, etc.). The information should be kept updated and offered to employees in real time on the services they provide companies, and suggestions on the best route.
- Help develop programs of bonus rates (like discount tickets), or support for the hours not covered by public transport.

Implement or retrieve company routes

Company routes are bus services discretionary adjusted on a regular schedule that repeats during workdays. They have worked for decades in many companies that concentrate large volumes of employment. However, the model of residential dispersion has made these services ineffective, achieving the gradual decrease of the company's routes.

Therefore, there is a need to remodel these services through new ways that will make them energy efficient and competitive with private car. This is the case of:

- Short business routes, it's about adapting conventional routes with low occupancy rate by more efficient services in this sense, the remodelling is to use up to nineteen seaters, to avoid unnecessary detours to access centres work, and substantially shorten travel times.
- Shuttle bus services are discretionary, from a transit station. These are services that connect directly to the BIZ, where make 2 or 3 stops with transit station (commuter tram or even urban bus lines) and ensure a direct connection without congestion.

It will be consider most desirable situations for each type of service and accessibility for workers, and appraised funding formulas thereof.

Carpooling System

It consists of making the daily commute to work and back to home together with other workmates or BIZ who living in a place near or on the journey itself that makes the car that is being shared. There are several ways: carpooling (when sharing a car with five seating), or vanpooling (when sharing a van with a capacity of up to 9 seats).

In most cases people are known in advance, and to realize that perform similar movements, they decide to travel together. However, this does not always occur spontaneously and requires some initial steps driven by the company or workers to encourage carpooling to work.
The implementation of a car-sharing system in the field of industrial area opens the possibilities pairing, to merge the companies and workers in many diverse schedules.

For this you can set up a car sharing online platform, which in addition to a computer program of matches, and tools to legalize this service contract, you can assign an item to ensure economic 'homecoming" to workers in certain contingencies occasions.

Car-sharing is a system to streamline the transport sector which is operating in many European and American cities and that reduces the number of motorized trips for work.
Through such measures is possible to reduce energy consumption and pollution from these trips, while representing a significant reduction in costs for transport.

It has been shown how to share the car journey to the workplace represents a significant savings for its passengers, the use of own vehicle (depreciation, fuel costs, lubricants, maintenance and wear), the cost allocated to parking, on health (stress reduction, increased sleep, etc.) as well as improved environmental conditions to reduce overall traffic volumes and the negative consequences caused by it.

Parking management

It is one of the most effective tools to model the mobility of workers to safe and sustainable practices. But also as presents greater reluctance among workers. Always there will be to ensure viable alternatives for workers. The problem also arises when dealing with a commercial area, so parking is required for customers.

In cases where the parking is a problem due to the shortage of places or security problems that might arise, they may negotiate different management solutions for future:

- Analyze the problem, not only for drivers, but how that space can be used for the entire workforce, for transportation uses and other uses (space to rest, protected bicycle parking, etc...).
- Make priority places for disabled workers, car sharing users, those users that require the use of the vehicle by the activity needs of one's work, etc.

- Finding a financial return in the event that all stakeholders were in agreement (rental of parking spaces outside the company or for workers) that accrues on improvements to other travel systems (economic incentives to drive shared funding for other modes, etc.).

Would have to adapt existing parking standards in new developments to the requirements of lower demand for mobility by private car, so that will be in maximum thresholds that relate jobs per hectare in the industrial and business with the ability to parking space, not exceeding 12 to 15 places per 100 jobs. In this regard, it will be necessary to accompany this measure to provide it with enough other public transport services for industrial space, improvements to pedestrian and bicycle connections, as well as the implementation of car sharing systems or business routes.

Tips for biking to work

Measures to be applied in the BIZ to promote cycling to work:

- Networking cyclists in the interior design of the site, they must be safe, connect the biz with the outside, especially the residential areas of workers who are located in the middle and short distance.
- Must install safe parking for bicycles and protected from the weather, as close to the job. Must also raise special rooms for showers, lockers, changing clothes, etc.
- Provide information to encourage their use, such as: maps on the best routes, bicycle repair shops, facilities for changing clothes near of the workplace, bicycle parking, tools to look for other company employees to perform the travel together, lend or give away bicycles to workers, etc.

How to take the first step:

- There must be a test drive for the weekend to calculate the time spent.
- You can search for a co-worker or a friend who has a similar path with which to go.
- Start biking a weekday.

Making sure the journey...

... before starting the trip

- Make sure your bike is in good condition (go to a repair shop if you are unfamiliar with the mechanics of vehicle).
- Plan your route and check, in the test ride during the weekend to discover the problems of the route, look for specific bike lanes, streets and roads with little traffic.

... in the bicycle trip

- Wear a helmet and bright clothing and regulatory vest.
- At dawn or dusk, use the front light and red rear reflector (required by law).
- Obey all traffic rules and road safety.

• How to solve the problem of work clothes...

- You can purchase a special bike saddlebag to carry your work clothes, and change them when you get to your work.
- If the trip is short and does not make too much effort, you can go with the same clothes.

• Intermodal public transport

Currently, you can go with your bike to a station or public transport interchange (like tram... or bus stop), where you can:

- At rush hour, to park your bike;
- In others hours, will allow you to travel with your bike if it meets the regulations, in the case of buses, bike may be carried in the hold.

Going walking to work

Walking is a mode of travel that is conditioned by aspects terrain, the weather or the distance between the home and the workplace, but it certainly provides many benefits to those workers who want a physically fit and healthy.

Most workers who walk to work travel an average of about 2 km each way. The industrial area are often away from urban centres, but in many cases (especially in medium and small towns) that distance is not so great and it allows walking.

Consider personal health, if you have the necessary conditions for that daily ride. Then you have to study the route between home and work. You can start gradually, the first few days to try once or twice a week, gradually increasing the frequency to do every day.

To ensure such displacement of workers to the industrial areas is necessary to consider some basic elements that support this mode of transport:

- The existence of a network of pedestrian routes to ensure the safety of pedestrians and the BIZ connecting with the outside also must allow accessibility between public transport and the various companies and facilities.
- Priority should be ensuring pedestrian routes, making a special treatment at crossings and intersections with vehicles.
- The routes will have intermediate spaces, adequate refuge to bad weather and shadows that allows for stops.
- The itineraries are tailored to removing barriers, taking care that companies are accessible.

There are some aspects to consider before you begin:

- Choosing a good shoe that is comfortable for walking and appropriate clothing.

- You have to do a trial run for a weekend to know certain problems that may occur in the itinerary and travel time.

We must find safe routes:

- The pedestrians need safe and accessible routes: crosswalks and intersections with traffic lights, especially in high traffic areas, which often are unsafe points.
- We must seek paths that are well lit and analyze neighbourhoods especially during the last hours of the afternoon.
- If you walk at dawn or dusk, at times of low light, it is preferable to use reflective bands on the wrists and legs.

Continuation and expansion of the functions of the Local Mobility Group, to operate in the future as a mobility observatory in the BIZ

One way to track the implementation and execution of the Mobility Plan and other concrete measures to change to more sustainable patterns is to analyzing the evolution of the main indicators: modal split, energy consumption, pollutants emitted by the displacement of workers, accidents, land occupation, absenteeism and punctuality, economic benefits for the company and the workers, or contaminant levels. This would ensure the continuity of the great work of the Mobility Group Atarfe, although it would be necessary to seek external funding.

To start has formed a working group led by the mobility manager of the BIZ in collaboration with the heads of business mobility and also involving union and employers representatives. This group is supported by some concerned authorities (municipality, consortia or metropolitan transport authorities ...) to evaluate the evolution of the basic parameters:

• It periodically measured modal distribution of workers on their trips

This will involve the realization of allowing simple questionnaires see monthly changes are implemented under survey measurements.

• Measure the accidents

There will be a sheet of accidents that have occurred in the return to work, stating:

- Gravity thereof;
- Lost work hours in relation to the accident;
- Causes of the accident.

The results will allow inform workers and suggest them the safest means of travel: non-motorized and public transport; also it will include suggestions on ways to drive safely, and they will be taken into account in the training courses that will be taught.

• Pollutant emissions also should be monitored, especially ozone, a gas that is worrisome for the months of April to October, especially during hot weather or high humidity, which are especially dangerous to the health of people with problems breathing. Companies may be adversely affected by excessive levels of ozone which affect employee productivity.

• Transport costs: It shall accounts for the monetary cost that is allocated to labour mobility, watching its evolution before and after the commissioning of the measures. For this, it will design a table comparing the cost in different ways and means of transport from home-work travels, assigning indicators per passenger and kilometre.

2.2 COST-BENEFIT ANALYSIS

In this section we analyze the cost and benefit of all mobility solutions which we will implement in the BIZ. It performs this analysis for each solution separately, and it include all benefits provided by it (for example, what positive impact will have, what percentage of employees will benefit), and the negative costs (if any). From this analysis, it becomes clear that the solutions that have been chosen are advisable. The first thing we had to keep in mind is that we could not finance infrastructure such as bike-lines or sidewalks, so we have had to consider alternative actions related to various other fields.

SETTING SPECIFIC OBJECTIVES AND INDICATORS

To properly plan a Mobility Plan to workplace is necessary to identify the objectives themselves, which can be:

• transport (modal change, reducing the use of private vehicles in a certain percentage, reducing travel time).

Localidad	Distancia	Min. Peatón	Min. Bici	Min. Bus	Min.Coche
		100 m/min.	*250 m/min*	*283 m/min*	*916 m/min*
Atarfe	8670	87	35	31	9

• Energy (reducing consumption and fuel substitution).

• Scheme (reducing CO2 emissions and pollutants).

• Economic (rational use of transport modes).

• Social (road safety, health, social inclusion).

Objectives should be directed to solving the problems identified after the various surveys, and materialize into goals. For example, if the objective is to reduce congestion on the approaches to the company (typical case of industrial sites), can be set as a goal the reduction of access by car.

Indicators

An indicator is a variable that measures the level of achievement of a measure, that is, the extent of achievement of intended objectives (reducing the number of motorized trips, increased use of public transport, reducing emissions CO2, etc.). Indicators must be, therefore, closely related to the objectives which have been set by Mobility Plan.

We could note the following indicators applicable to a Mobility Plan to the workplace:

- Number of cars entering the parking lot of the company for every 100 employees.
- Number of workers who use public transportation.
- Persons registered in the carpooling web platform to measure the penetration of this measure.
- Number of employees who working at home, if we measure teleworking.

- Energy consumption and CO2 emissions.
- Emissions of air pollutants.
- Number of workers using the route bus services and / or shuttles, to measure the success of these measures.

A Mobility Plan involves the application of a range of measures, selected according to the mobility problems of industrial area in question. Normally that will combine several measures, because is rare the case where the Mobility Plan could achieve its objectives using only one. Then, we collect the most important measures for its application in Atarfe that we propose from the Local Mobility Group of MoMa.BIZ Project, grouped according to the methodology of the box solutions.

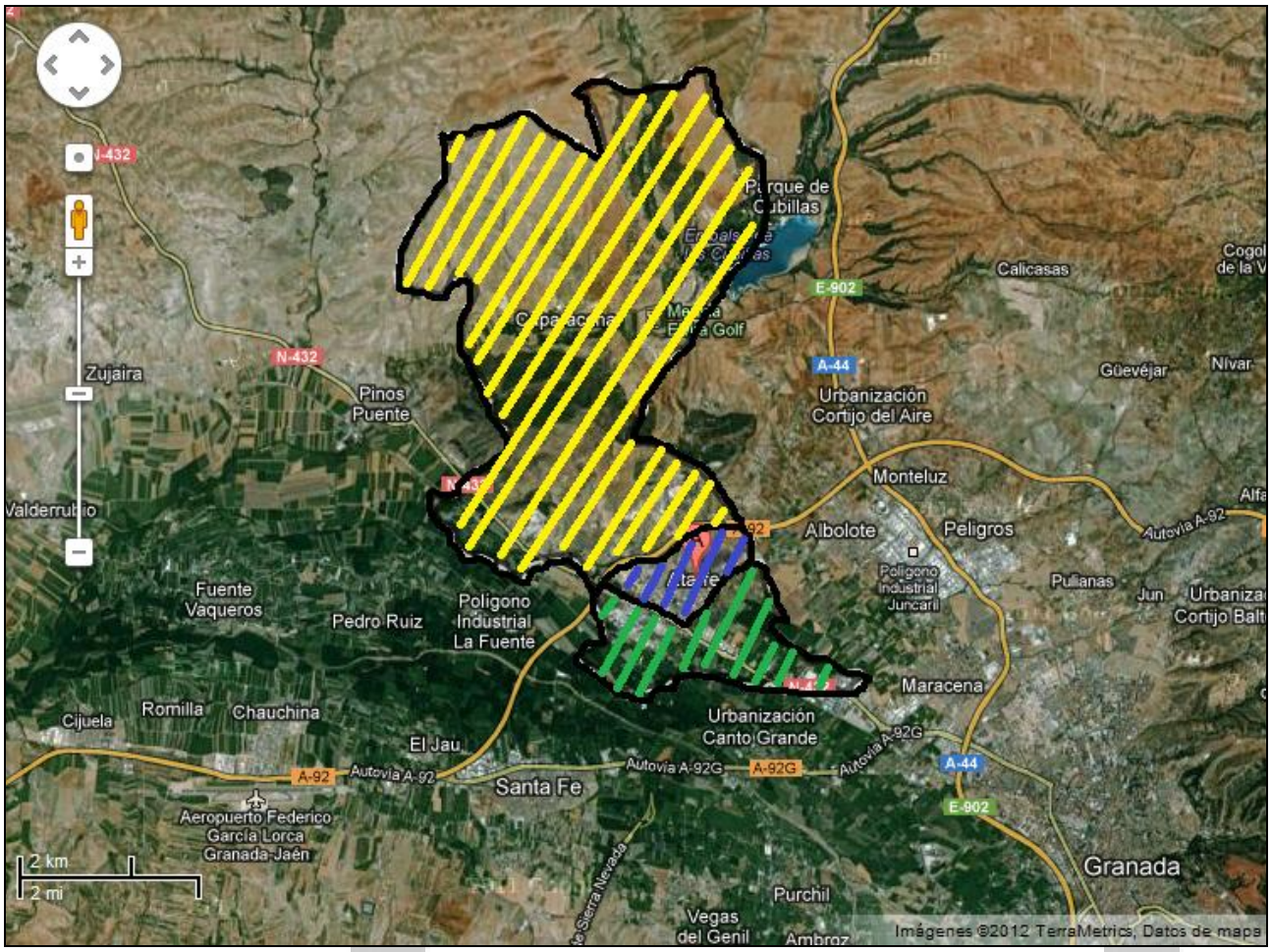
2.2.1 BOX: BUS

2.2.1.a Financing of transit line for connecting the BIZ with remote areas without access to it (as districts)

The public transport lines are usually designed on the basis of general mobility, very oriented to residential zones but not to the workplace. Thus, the routes, stops, times and frequency of bus lines do not generally provide coverage and adequate accessibility and workers of these industrial zones, which is part of the problem of low public transport use. This problem can be solved by implementing specific lines to more remote residential areas with no public transport and communicate with the workplace. The line must be fast, with few stops to get to the workplace, where it must have a route and number of stops the broadest possible for to do to more easily the accessibility to companies.

In Atarfe, the bus service covers only one third of the total municipal area, which can be seen in the following figure in black silhouette.

We can distinguish three parts: Atarfe city (with a blue striped), above, districts as Caparacena and housing developments (which is bigger, with a striped yellow), and finally in the lower, the industrial area (with a green striped). Areas with bus service are the two lower Atarfe and industrial area.

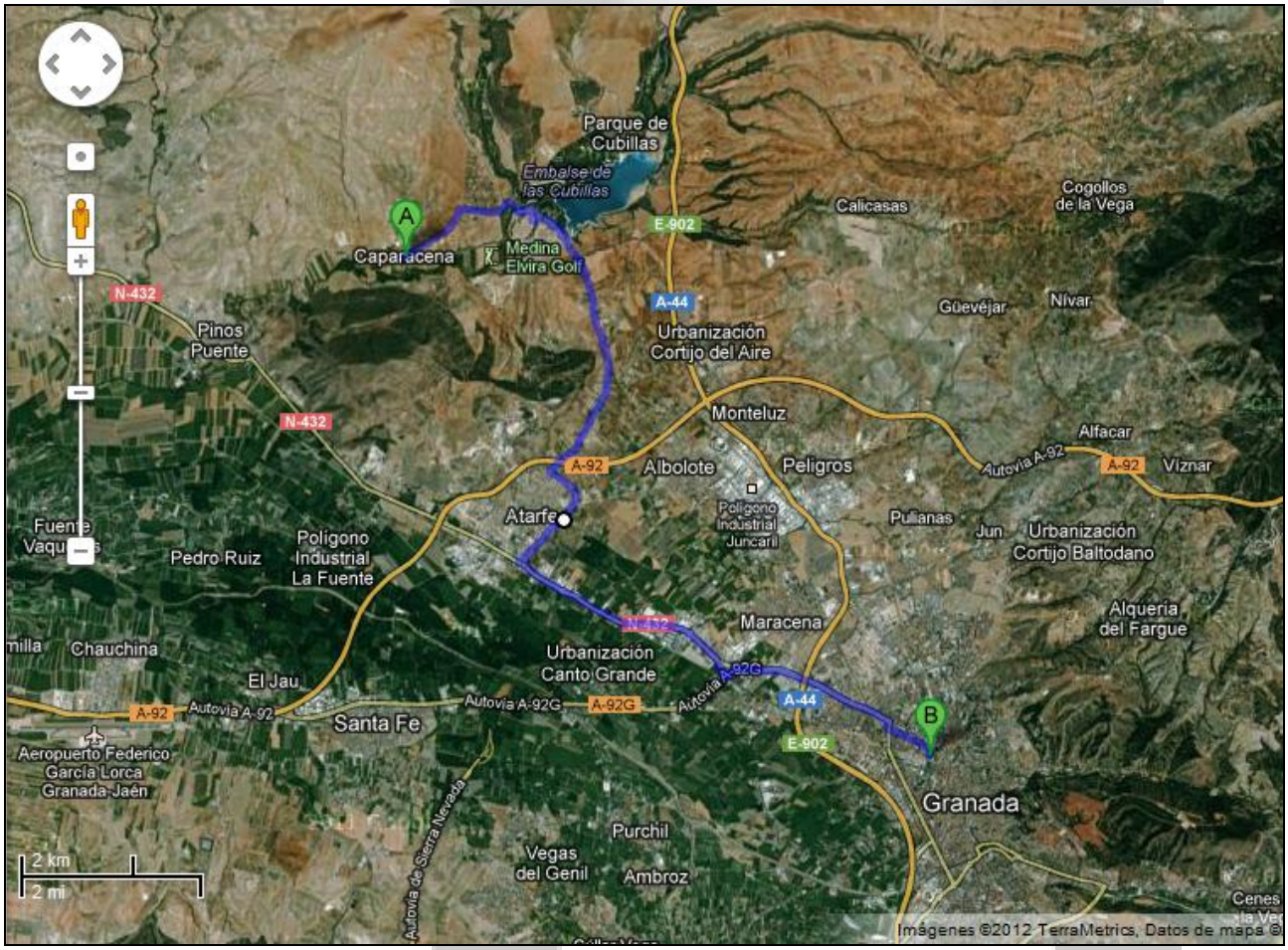


The first proposal is to help fund next to the Atarfe City Council and Transport Consortium of Granada a bus line which give service to this area and communicates it with the capital, Granada. It will help the bus line sustainability over time. It has been taken some trial experiences which have been successful. The funding would support part of the cost of the line next to the Atarfe City Council. Then, over time it will become a management concession which will have some transport company that form part of the Transport Consortium, but for that, first, the line must be operational. Thus, this funding would need to push the trial experience, and become it a new line of service to this area with the support of Transport Consortium of Granada and the Atarfe City Council. This measure may be continued through private management in the future.

As an example of cost, a line with a distance of 20 km per trip with five stops, Monday to Friday, with a bus (55 seats, making a total distance of 160 km a day) circulating at peak with an estimated time of an hour by way (from 7:20 to 10:30 am, from 12:50 to 15:50 h, from 16:50 to 17:50 h and from 21:00 to 22:00 h, and a frequency of one hour and three hour in valley period) would cost of approximately 40.000 Euros annual. Regarding the cost could be financed, would be around 33.000 Euros from innovation in the bus transport, although its funding would depend on the existence of other companies in the area concerned, the number of users, the ability to put advertising, whether the bus can combine with other services and, of course, the

price of the ticket (which would be the same as for all other services, 1.35 Euros each way and 0.91 Euros with the transport bonus).

The proposed route and followed for the trial experience was as follow:

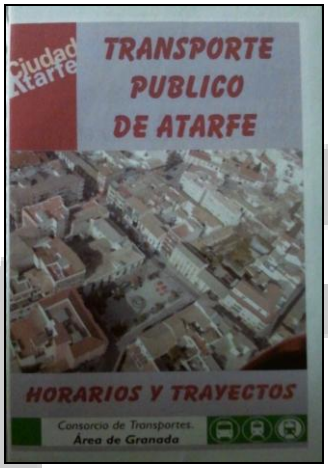


The aim is to get 12,000 people using the service in a year, of which 25% are employed in the industrial area.

Indicator	How to Measure	Responsible for Measuring	Expected Result/Target
1. Number of workers using this route bus service or shuttle mode to connect with Granada.	Surveys at the head of the line to ask the destination and purpose of travel on three consecutive days (Tuesday-Thursday) after implantation. The screening will take place during the peak hours of the day: from 7:00 to 10:00 12:30 to 14:30 16:30 to 18:30 It provides for two counts: First count: 16-18/10/2012 Second count: 18-20/12/2012	ALTERnet	15% increase in the number of employees who go to work by bus.
2. Number of different modes of transport available to get to the BIZ	Comparison of different modes of transport available to get to the BIZ before and after project implementation.	ALTERnet	Increase 30%
3. Measuring energy consumption for labour mobility	Measurement based in the decreased number of employees who go to work on car and use an Excel file named "CO2Emission_EnergySaving_Calculation"	ALTERnet	5% Decrease in energy consumption for work mobility in the BIZ.
4. Measuring CO2 emissions	Measuring based on the decrease in the number of employees who go to work and use an Excel file named "CO2Emission_EnergySaving_Calculation"	ALTERnet	5% Decrease CO2 emissions from mobility between home and work in the BIZ
5. The investment destined	This indicator refers to the budget of the project to implement the Local Mobility Plans. This indicator can be measured by comparing the initial amount of the budget for the implementation of the Local Mobility Plan and the budget amount actually invested.	ALTERnet	100% of the budget destined is invested in the Local Mobility Plan.

2.2.1.b Funding tickets or financial aid to cover the cost of transport bonus

In this case, workers of the BIZ will receive a free transport bonus (for Granada Transport Consortium buses) with an amount of 5 Euros to use on lines that communicate with Atarfe industrial area. This will encourage them to try the service at least once, as there is much unknowledge from lack of use of the service. This measure will encourage the interest of the recipient to knowing the bus lines if they want redeem the voucher. The cost of this initiative is 3.000 Euros from the departure of innovation in transport, for the purchase of 600 transport bonus for companies (especially those which are near public transport stops). This measure includes the publishing and distribution of guides, brochures, flyers, etc., about the provision of public transport to the workplace. With the transport bonus, employees will be provided information regarding the public transportation system, providing transportation maps, schedules and brochures published next to the Transport Consortium Granada, at a cost of 150 Euros, to inform about the bus lines to Atarfe industrial area.



Similarly, briefings will be organized in companies which want to distribute transport bonuses among its workers to promote its use, as a condition for participating in the measure. These transport bonuses may be recharged by employees at any tobacconist or kiosk of the province of Granada which having the corresponding sticker.

Also from the Local Mobility Group, and as an additional service without cost, personal information may be provided and updated to every worker who requests it via email or social networking profiles. The best option for the public transport (closest stops, transfers, etc.) through a custom case study. Also we will include on the website all the relevant information about the current public transport system and we will provide employees the page link.

About the funding of tickets, years ago it was common to find advertising on public transport tickets. Our proposal is, therefore, to recommend continuing this way and that travellers have the possibility to have a ticket to a lower price, thereby allowing the cost does not fall to the traveller fundamentally.

Another initiative that we recommend is that companies give workers a form of aid consisting of cover between 50 and 100% of the monthly cost of the transport ticket. In this case, the company acts as a sponsor and pays to deliver the tickets to workers at a price significantly better. It is far better valued by the worker. Furthermore, the ticket price tends to be lower if the company buys them because the public transport companies can make contracts with large companies to offer discounts on the purchase of tickets. These measures are appropriate for all types of businesses, but especially for those which are in zones well connected by public transport.

Indicator	How to Measure	Responsible for Measuring	Expected Result/Target
1. Number of employees who will go to work using the transport bond delivered.	Comparison of data from the Consortium of Transportation on the use of bonds to measure peaks showing a higher frequency of use in lines that provide access to the industrial area.	ALTERnet	10% increase in the number of employees who go to work by bus.
2. Measuring energy consumption for labour mobility	Measurement based on the decrease in the number of employees who go to work and using an Excel file named "CO2Emission_EnergySaving_Calculation"	ALTERnet	5% decrease in energy consumption for labour mobility in the BIZ.
3. Measurement of CO2 emissions	Measurement based on the decrease in the number of employees who go to work and using an Excel file named "CO2Emission_EnergySaving_Calculation"	ALTERnet	5% decrease CO2 in the home-work mobility
4. The investment destined	This indicator refers to the budget of the project to implement the Local Mobility Plans. This indicator can be measured by comparing the initial amount of the budget for the implementation of the Local Mobility Plan and the budget amount actually invested.	ALTERnet	100% of the budget destined is invested in the Local Mobility Plan.

5. Number of applications of case study on travel options.	Counting the number of requests on the Mobility Group via email or social profiles for case studies on the best choice for the public transport.	ALTERnet	Attending about 5 cases per month.

Other suggestions or recommendations to promote and facilitate the use of public transport.

Looking ahead, you can encourage employees to use public transport through a series of simple measures such as:

- Continuing with the introduction of tracking technologies for buses, which allows to give real-time information to users, in the head of the line, at Industrial Estate stops , and especially, on the website of the company, indicating the time of passage of the next bus at stops for lines serving the company.

- Installing ticket machines by transport operator in the vicinity of the industrial area, as there are no charging points transportation bond.

They are recommendations because its cost and the fact to need prior studies makes that cannot be funded by the project. Moreover, from the Mobility Group is considered that priority actions are 2.2.1.b and 2.2.1.a.

2.2.2 BOX: PRIVATE CAR

2.2.2.a Imparting driving courses

Since according to the survey, data reflects that the private car is the predominant mode of transport, that it does not take into account the environment while driving, and that most of the workers have no intention of changing means of transport, we must have consider measures to make this behaviour more sustainable. Also, we consider that there are companies with fleets of vehicles which need them to exercise their profession. The ecodriving is a new driving style, with which you can achieve fuel savings of around 15% without increasing travel times. It is governed by a set of simple and effective rules that try to exploit the potential of engine technologies of today's vehicles.

The measure is therefore to develop a series of training activities as driving courses which teach users efficient driving techniques allow greater comfort and safety, while helping to reduce fuel consumption and maintenance costs and fuel. Hence, its implementation favours especially to the general public, who will notice significant environmental improvements, among other things. It is a particularly advisable for companies with a fleet of own vehicles of a certain size, such as transport companies, distribution, packaging, etc.

Below is the description of the training courses, objectives, number of hours, participants, etc.

TECHNICAL SPECIFICATIONS OF TRAINING COURSES IN ATARFE

TITLE	EFFICIENT DRIVING FOR PASSENGER CAR DRIVERS.
PROFESSORATE	Rafael López Arredondo, Atarfe Mobility Manager MoMa.BIZ Project. Chance of a collaborator.
DESCRIPTION	The measure consists in teaching a course in 6 hours to employers and workers, and general drivers. There will be special emphasis on the efficient management of the fuel.
OBJECTIVE	The aim is to promote a new style of driving passenger vehicles, which are obtained with the reductions in fuel consumption of up to 15% over conventional driving.
CONTENTS	1. Introduction to the efficient driving 2. The car as a consumer machine 3. The attitude of driver while running: response to different traffic situations 4. Key practical aspects and main eco-driving rules 5. New fuels and alternative technologies 6. Self efficient driving
PARTICIPANTS	All workers in the industrial and commercial of Granada north area, in addition to general users.
HOURS	6 hrs.
MODALITY	Classroom.

TITLE	EFFICIENT DRIVING FOR INDUSTRIAL VEHICLE DRIVERS.
PROFESSORATE	Rafael López Arredondo, Atarfe Mobility Manager MoMa.BIZ Project. Chance of a collaborator.
DESCRIPTION	The measure consists in teaching a course in 6 hours aimed to drivers of company fleets, and generally truck and bus drivers. There will be special emphasis on the efficient management of the fuel.
OBJECTIVE	The aim is to promote a new style of driving commercial vehicles, which are obtained with the reductions in fuel consumption of up to 10% over conventional driving. Transport accounts for 39% of all energy consumed in Spain.
CONTENTS	1. Introduction to the efficient driving 2. Energy consumption and environmental emissions in road transport 3. The attitude of the driver while running: response to different traffic situations 4. Key practical aspects and main eco-driving rules 5. Engine and vehicle technology 6. Self efficient driving
PARTICIPANTS	All workers in the industrial and commercial of Granada north area, in addition to general users.
HOURS	6 hrs.
MODALITY	Classroom.

TITLE	DEVELOPMENT AND IMPLEMENTATION OF A MOBILITY PLAN TO THE WORKPLACE.
PROFESSORATE	Rafael López Arredondo, Atarfe Mobility Manager MoMa.BIZ Project. Chance of a collaborator.
DESCRIPTION	The measure will consist in teaching an introductory course in 6 hours to employers and workers concerned in the profile of mobility manager or coordinator.
OBJECTIVE	The aim is to learn how to develop a mobility plan and manage its implementation for businesses in industrial estates in the north of Granada.
CONTENTS	1. Introduction 2. Mobility plan as part of the solution 3. Key elements of a mobility plan 4. Applicable measures 5. Implementation of a mobility plan 6. Case Studies
PARTICIPANTS	All businesses in the industrial and commercial of Granada area north, in addition to general users, interested in developing and implementing mobility plan in their companies.
HOURS	**6 hrs.**
MODALITY	**Classroom.**

TITLE	PROGRESS ON THE DEVELOPMENT AND IMPLEMENTATION OF THE MOBILITY PLAN IN ATARFE.
PROFESSORATE	Rafael López Arredondo, Atarfe Mobility Manager MoMa.BIZ Project. Chance of a collaborator.
DESCRIPTION	The measure will consist in teaching an introductory course in 4 hours to politicians and other public officials involved in the management of labour mobility in Atarfe.
OBJECTIVE	The aim is to show how it has developed the mobility plan of industrial areas in Atarfe to put it in value, and to foster their future management and implementation.
CONTENTS	1. Introduction 2. Mobility plans as part of the solution 3. Development and key elements of the mobility plan 4. Measures in the Atarfe mobility plan 5. Implementation of the mobility plan
PARTICIPANTS	All the political and public office Atarfe, in addition to any citizen in general, interested in the future implementation of the mobility plan in the industrial area of Atarfe.
HOURS	4 hrs.
MODALITY	Classroom.

The cost of the measure is zero for workers, given that it is implementing a number of simple guidelines, which are covered in several manuals. Regarding the financing of the measure will be developed through for account for training courses of the project, but we want that it was reflected as a further measure given its importance.

Indicator	How to Measure	Responsible for Measuring	Expected Result/Target
1. Number of employees attending the training courses.	Counting people who attending training courses and who are working in the industrial area.	ALTERnet	60% Course attendance of total attendees are workers in the industrial area.
2. Measurement of CO2 emissions	Measurement based on the decrease in the number of employees who go to work and using an Excel file named "CO2Emission_EnergySaving_Calculation"	ALTERnet	5% decrease CO2 in the home-work mobility

2.2.3 BOX: CARPOOLING

2.2.3.a Development of a platform for suppliers and demanders of Carpooling users

To develop the next step would be necessary to make a change in the budget to change the Car sharing activation system, which offers the possibility of using a vehicle when it is needed without having to own it, for activation of an initiative of Carpooling, a carpool system.

The carpooling consists of coordinate and encourage employees who have their residence next to each other, to reach an agreement and come together to go work using the car of one of them.

Major benefits of carpooling could include:

- Reducing the number of cars in circulation and in the parking area.
- Reduced overall cost of transportation, to share the costs among several users.
- Decreased stress, because occupants do turn to drive.
- Reduction of the space devoted to parking (saving rental places, etc.).
- Reduced investment in more infrastructures.
- Reduction of accidents by up to 30% less.

This measure is appropriate for companies located in areas with parking problems and / or a large number of employees, industrial estates and business and technology parks, where most workers have their own vehicle.

There are several ways to accomplish this:

• By connecting employees with similar work journey and residence next to each other. Depending on each case, it can use more or less sophisticated mechanisms, such as a web platform through a database in charge of selecting the best people to carpool. In other cases, it can simply get in touch with each other.

• Coordination of schedules: another possibility for employees to share the vehicle is to coordinate the times of entry and exit. In this, it influence logically the different work shifts.

• Company car: Sometimes, the company may have vehicles available to workers, so that one of them acts as a "driver" collecting en route to other employees.

This measure should be favoured by other complementary

• Reserving car park to vehicles which come with two or more occupants.

• Bonus to workers who provide vehicle, for example, gasoline bonds depending on the number of occupants.

Users could have a problem for back home. Several reasons may be preventing that carpooling is a popular measure, but the more probably is because it is not guaranteed the work arrival (by unpunctuality of driver, for example) or, especially, the return to home (the driver, for whatever reason, goes before or after to his regular hours: personal emergencies, overtime, etc.). In these cases, the best way to encourage carpooling

is ensure that if the driver fails, the other occupant have an available alternative (another employee, a company car, taxi, etc.). There can be several possibilities:

- Car available for such contingencies.
- Immediately contact with platform manager who, through the database, could find a replacement.
- That the company pays the amount of the return to home, if the worker has opted for a taxi.

Only in these cases (and with a possible bonus for providing the vehicle), car sharing can be a real expenditure for the company, fully compensable by the elimination of several parking spaces, which if they are to let, represent savings cash, and if they are owned, allowing the possibility of recovering an asset as valuable as land for more productive uses (storages, for example).

Regarding the measure of carpooling, we believe the best option is to partner with existing web platforms. Granada comparte is a project of the Provincial Council of Granada and the Provincial Energy Agency of Granada to promote shared use of private vehicles in the province, and particularly when travelling to and from the metropolitan area of Granada, through placement meeting points in the municipalities, where any citizen can meet with the service users who have registered on the platform to do the trip together. By sharing the car not only gets an environmental improvement, but any citizen can also save money on their daily commute.

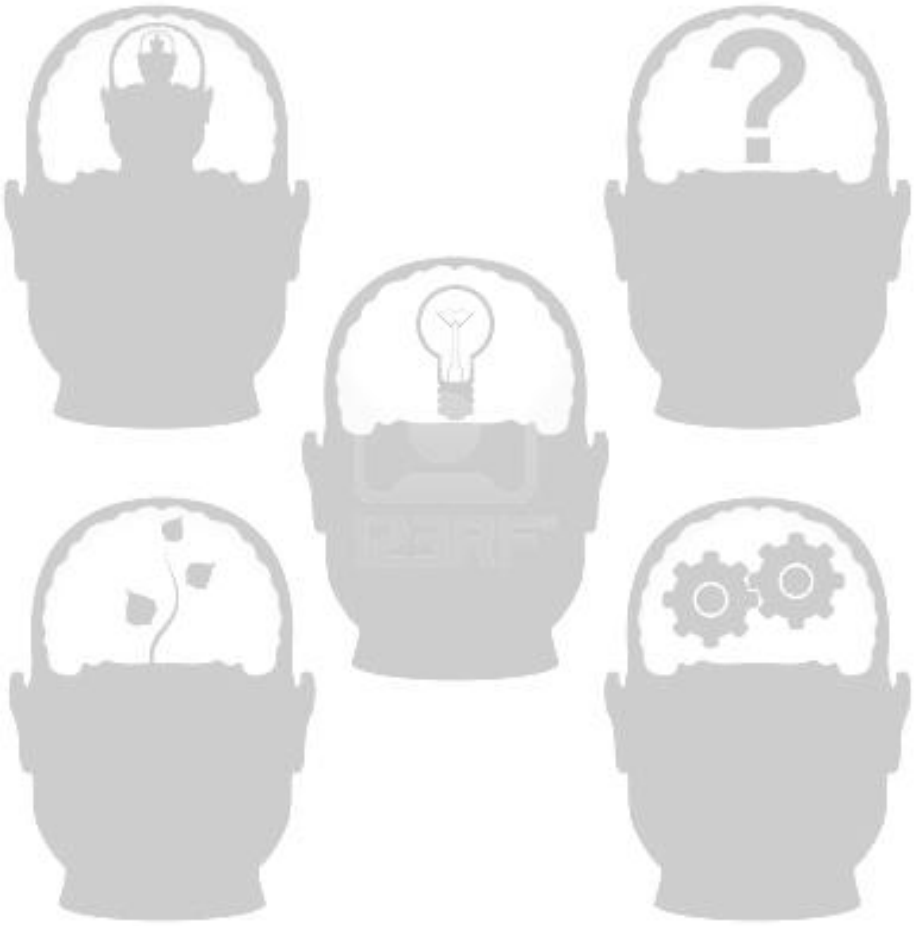
For the trips of workers living outside the metropolitan area of Granada we will recommend the web page: amovens, as it is better suited to this type of trip.

The collaboration consists in the meeting points placement in the industrial area of Atarfe and creates a specific section on the web for labour mobility in this area, and then workers could be connected. We took advantage of the promotion and dissemination of this page because we will not start from the beginning and have far greater chance of success in less time. This way, it is assured the continuity of the page and we save the maintenance costs. In return, the page obtained a larger number of potential users and part of funding for doing the project improvements in this area.

In our case we have a budget we can spend 4.000 Euros to create such a platform, or partner with an existing one that already works in Granada, as in the case of granadacomparte.com, to create a specific section for labour mobility in this industrial area and around, thus extending the catchment area and the number of potential users. Also you could use part of these funds to be distributed among the participants about fuel bonds worth 20 Euros, so the page will acquire popularity quickly.

Indicator	How to Measure	Responsible for Measuring	Expected Result/Target
1. Number of employees who will go to work using the carpooling platform.	To measure the penetration of this measure will be counted workers who are actually sharing car to go to work, between the total of people registered in the database of carpooling, using the platform as a tool.	ALTERnet	20% of total of workers in the industrial area who effectively share car between the total platform users.
2. Measuring energy consumption for labour mobility	Measurement based on the decrease in the number of employees who go to work and using an Excel file named "CO2Emission_EnergySaving_Calculation"	ALTERnet	5% decrease in energy consumption for labour mobility in the BIZ.
3. Measurement of CO2 emissions	Measurement based on the decrease in the number of employees who go to work and using an Excel file named "CO2Emission_EnergySaving_Calculation"	ALTERnet	5% decrease CO2 in the home-work mobility
4. The investment destined	This indicator refers to the budget of the project to implement the Local Mobility Plans. This indicator can be measured by comparing the initial amount of the budget for the implementation of the Local Mobility Plan and the budget amount actually invested.	ALTERnet	100% of the budget destined is invested in the Local Mobility Plan.

2.2.4 BOX: RAISE AWARENESS



2.2.4.a Contracting Advertising

Advertising campaigns on billboards circuits allow rapid penetration of the advertising and extensive coverage within its geographical area. They generate a great impact on the receiver, as workers have usually contact with the billboards more than once and in more than one place, thus promoting understanding and recall of the message. Additionally, outdoor advertising displays the advertisement permanently.

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Advertising on billboards circuits, because of its versatility, it is indicated for promotional campaigns and mass communications and campaigns to reinforce and complement other means. The advertising through billboards or billboards achieves great notoriety, and allows getting great coverage and a high number of hits, leads to a high rate of audience at a very economical cost by impact compared to other advertising media.

The contract duration is 14 days usually in promotional campaigns and one year in the signal and image campaigns. Currently the ads that are placed on billboards are made on paper in cases of promotion campaigns, and on vinyl canvas or paint to ensure optimum durability in cases of signal and image campaigns.

Graphic production vinyl + fixation: between 750 and 985 Euros, depending on area.
The measure: 8x3 meters (24 m2) is the most widespread to achieve notoriety. The campaign can be hired either by local or regional circuits.

In addition to the outdoor advertising, we can have advertising on street furniture. These are facilities that use or incorporate a communication space for advertising on street furniture existing in public roads on populations that are specifically designed to provide advertising space and which are integrated with other existing furniture in the streets.

To complement these actions continue to be implemented as static advertising measures in the BIZ of promotional campaigns with flyers and posters, the use of profiles on the major social networks (Facebook and Twitter), and uploading videos on YouTube, creating channels with temporalized messages...

For this dissemination plan is allocated a budget of 3.000 Euros, which transmit messages based on route planning, the benefits of using public transport and advertise the carpooling platform.

Indicator	How to Measure	Responsible for Measuring	Expected Result/Target
1. Impact of the campaign which is produced in workers.	Survey about the advertisement campaign to check the effectiveness of the message and see if it has an impact on behaviour change.	ALTERnet	20% of people who have an impact with the ads, they change their mode of transportation, or they use it more efficiently.
2. The investment destined	This indicator refers to the budget of the project to implement the Local Mobility Plans. This indicator can be measured by comparing the initial amount of the budget for the implementation of the Local Mobility Plan and the budget amount actually invested.	ALTERnet	100% of the budget destined is invested in the Local Mobility Plan.

2.2.4.b Signage and delineation of different industrial estates

This measure consists of signage and delineation of the different industrial estates that make up the industrial area because according to the questionnaires it is curious that a high number of workers do not know in which industrial estate they work, causing confusion.

Besides, in these signs will show the mark with the kilometric distances between that point and the cities of Atarfe and Granada, and the time that would be used to reach through other alternative means of transport

such as bus, bicycle or on foot, as well as the benefits involved in their use compared with private vehicles. Thus, workers will realize the distance and will promote other means. This signal could be used with an image like following in addition to the MoMa.BIZ logo of the project and funding from the European agency, with a slogan like this: You're not stuck in traffic ... traffic is you!, Accompanied by the slogan project: move with your mind.

To develop this measure we will use for the amount of 4.000 Euros in the budget for the implementation of the Mobility Plan.

Indicator	How to Measure	Responsible for Measuring	Expected Result/Target
1. Impact occurred in workers by the signals	Survey about whether the delimitation of industrial estates has resulted in a change in behaviour.	ALTERnet	10% of total people who have an impact, changing their mode of transportation or using it more efficiently.
2. The investment destined	This indicator refers to the budget of the project to implement the Local Mobility Plans. This indicator can be measured by comparing the initial amount of the budget for the implementation of the Local Mobility Plan and the budget amount actually invested.	ALTERnet	100% of the budget destined is invested in the Local Mobility Plan.

2.2.5 BOX: BICYCLE

2.2.5.a Facilitate the purchase of 32 bicycles

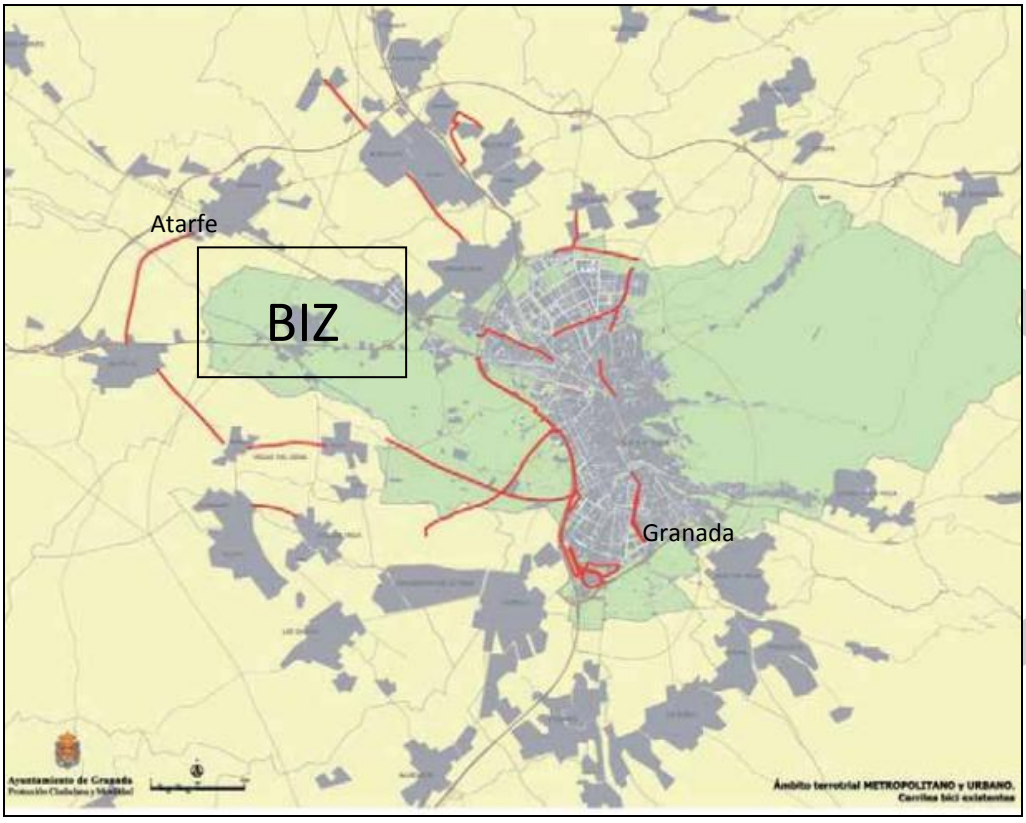
We want to promote healthier ways to arrival at work, and it is an appropriate measure for employees who live in areas not too isolated.

However, not always it is easy the access to the workplace in this way, as there may be bad lighting, access lines in poor condition or nonexistent, etc.

We must specify that one of the problems is the lack of existence of bike lanes in Granada and its metropolitan area, and its poor condition, but we cannot address this problem by the lack of funds in the project, plus it cannot be financed infrastructures.

Currently there is a total supply of approximately 37 km of bike lanes in Granada and its metropolitan area (in the image can be identified), which 17 km are located within the city and 20 km are connections in the metropolitan area. Of the 17 km of the capital, 50% is around the city ring, and no communication with the BIZ.

To encourage the use, it will need the following measures, considering that there is a spacious road network and ways for slow vehicles which connect the BIZ with municipalities. Therefore, from the Local Mobility Group have proposed the following measures for the Atarfe BIZ.



To promoting the use of bicycles, this measure will consist to the grant for the purchase of bicycles for workers in the industrial area for use them by on his way to work. Moreover this measure will promote the use of bicycles on weekends and free time, so that workers can acquire the necessary physical tone. This measure is based on that Andalusia is the region with the most hours of sunshine in Europe, so it is a region with ideal weather conditions for the exercise. Also it will be promoted so as to associate the bike to go to work with health, and use this exercise if work does not leave time for the gym.

Since we believe that it is essential standardizing the use of bicycles in the area, to start this fact the project MoMa.BIZ will provide funding of up to 50% of acquisition costs, with a maximum of 60 Euros per bike. We estimate that we can fund the purchase of 32 to 40 bikes.

For this measure it will be allocated a total of 2,000 Euros of the budget for execution of the Mobility Plan. These bikes will have the hallmark of the project and the grant could be handled through the City Council or the local companies.

Indicator	How to Measure	Responsible for Measuring	Expected Result/Target
1. Number of employees who acquire a subsidized bike.	Counting grant applications for the purchase of bicycles made by workers in the industrial area.	ALTERnet	10% increase in cyclists.
2. The investment destined	This indicator refers to the budget of the project to implement the Local Mobility Plans. This indicator can be measured by comparing the initial amount of the budget for the implementation of the Local Mobility Plan and the budget amount actually invested.	ALTERnet	100% of the budget destined is invested in the Local Mobility Plan.

2.2.5.b Facilitate the purchase of 8 to 10 electric bicycles.

Continuing the bet of the MoMa.BIZ project for saving and energy efficiency facilities, we propose give facilities to the purchase of electric bicycles as an alternative for workers who living at a greater distance, or who find terrain variations in their path. This system allows doing journeys with longer distance and less effort, which is an ideal alternative for workers who do not have the option to change their clothes.

With an approximate weight of 17.5 kg, electric bicycle models have a removable battery integrated, which has a range of up to 100 km. Its gearbox is the most appropriate mechanism to respond to any kind of level with maximum agility.

The MoMa.BIZ project will provide funding up to 50%, with a maximum of 600 euros per bike, to the acquisition costs of any electric bike models that will be offered after negotiations with a provider in the area (this financing implies between 40% and 50% of the bicycle actual cost).

We estimate that we can finance the purchase of 8 or 10 electric bikes. This can standardize their use in the area and promote the use of alternative routes to work, as this type of vehicle are more suitable for use on the road.

For this measure it will be allocated a total of 5,000 Euros of the budget for execution of the Mobility Plan.

Why choose an electric bike? For its main features:

- It has an integrated digital panel to control at all times the main variables (speed, range, charge level of the battery, clock, stopwatch, etc.).

- Offer between 2 and 3 years warranty.

- There are electric foldable bikes, allowing easy storage and transporting.

- They are perfect for everyday use.

- The battery is perfectly integrated inside the box, with the advantage of being able to extracting to recharge anytime, anywhere.

- The electronic control is fully integrated inside the box.

- The gearbox is integrated into the rear hub to facilitating extraordinarily handling because it has not gears or derailleur changes through. All this, allows offering a maximum level of integration while it will be reduce the bike weight and dimensions.

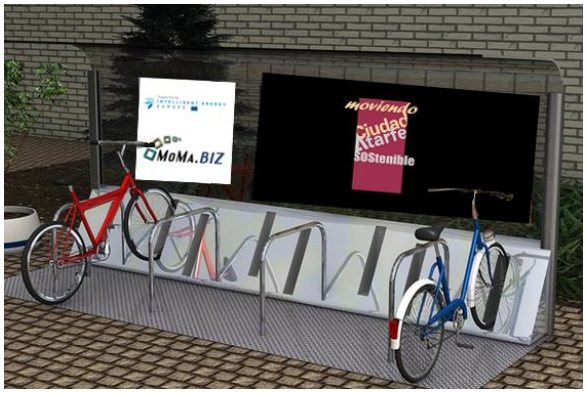
Examples of pricing and financing:

Proposed Models and Price (VAT included)	Price resulting of financing
Quipplan Matra LX - 990 €	**990 € - 495 € (50%) = 495 €**
Quipplan Matra SX - 1.290 €	**1.290 € - 600 € (47%) = 690 €**
Quipplan q10 sport (foldable) - 1.395 €	**1.395 € - 600 € (43%) = 795 €**
Quipplan q10 city (foldable) - 1.495 €	**1495 € - 600 € (40%) = 895 €**

Indicator	How to Measure	Responsible for Measuring	Expected Result/Target
1. Number of employees who acquire a subsidized electric bike.	Counting grant applications for the purchase of bicycles made by workers in the industrial area.	ALTERnet	10% increase in cyclists.
2. The investment destined	This indicator refers to the budget of the project to implement the Local Mobility Plans. This indicator can be measured by comparing the initial amount of the budget for the implementation of the Local Mobility Plan and the budget amount actually invested.	ALTERnet	100% of the budget destined is invested in the Local Mobility Plan.

2.2.5.c Provision of equipment for bicycles: 2-3 bicycle parkings

To complete the previous measure it is necessary installing bicycle parkings protected from the weather. These points will be installed at industrial zones closer to the urban area, because in these areas workers will be more likely to adopt this alternative mean of transport. We want to install 3 bicycle parkings initially as minimal infrastructure with capacity for 8 bikes each one.



To develop this measure will be used 3,000 Euros in the budget for the implementation of the mobility plan.

Indicator	How to Measure	Responsible for Measuring	Expected Result/Target
1. Number of cyclists who use the bicycle parks.	Counting bikes on three consecutive days (Tuesday-Thursday) after installation. The screening will take place during the peak hours of the day: from 7:00 to 10:00 12:30 to 14:30 16:30 to 18:30 It provides for two counts: First count: 2-4/10/2012 Second count: 4-6/12/2012 The above dates are indicative as we will pay attention to the weather conditions in order to avoid any impact on the data collected.	ALTERnet	5% increase in cyclists.
2. The investment destined	This indicator refers to the budget of the project to implement the Local Mobility Plans. This indicator can be measured by comparing the initial amount of the budget for the implementation of the Local Mobility Plan and the budget amount actually invested.	ALTERnet	100% of the budget destined is invested in the Local Mobility Plan.

2.3 SUMMARY

A Mobility Plan is not made at once: it is a dynamic process that must grow and develop over time, which is only possible if you can "measure" the process with a clear monitoring program. In other words, the impact of each new measure or strategy must be systematically verified.

Monitoring or tracking is used to evaluate how the situation has changed after the introduction of the Mobility Plan and, ultimately, the extent to which the desired objectives have been achieved.
The monitoring begins, actually, while the Mobility Plan is developed, where targets are set, and then it should be clear that:
- What aspects should be checked regularly.
- Who should conduct such verification (it will normally do the mobility coordinator).
- Often do.
- How to accomplish.
- How to influence the results in the review of the mobility plan.

For monitoring and evaluation of the mobility plan must use the most appropriate method. It can be very useful to have regularly the number of cars in the parking lot, or bicycle, or the number of people who alight at the next bus stop. This evidenced, quickly, if the template has changed its displacement mode.
This system can be completed with regular surveys, conducted randomly, providing a "snapshot" of how workers have gone to the company that day. Surveys should be simple, anonymous and into working hours.

Finally, monitoring should be established with a frequency depending on the case, but it would be advisable to at least 2 times a year. It is advisable to publish the results of the monitoring process to encourage workers to follow the Mobility Plan.

The test will compare the values of the indicators in each moment about which he had at the start of the Mobility Plan. The results of the Mobility Plan will be positive if comparing with the previous situation resulting after the implementation of the measures, the indicators show that the objectives sought with the Mobility Plan have been achieved. For example, if you have reduced the number of drivers travelling alone in his own car in the targeted percentage.

If the objectives are reached, the Mobility Plan need not improve, at least in this respect; on the contrary, if the achievements are well below expectations, we must correct the action plan for the next step.

Below is a table summarizing all the solutions and their costs. The priority of the column indicates the importance of the actions and, therefore, what will be implemented first.

Mobility Solution	Cost in €
Funding transit line to connect remote areas without access to it (annexed and districts)	33000
Funding the cost of transport tickets	3150
Imparting eco-driving courses (training specific budget)	2000
Development of a platform for Carpooling users	4000
Advertising	3000
Signage and delineation of the different industrial estates	4000
Facilitate the purchase of 32 to 40 bicycles	2000
Facilitate the purchase of 8 to 10 electric bicycles	5000
Provision of equipment for bicycles: 3 bicycle parkings	3000
Total Cost	**59150**

NOTES ON THE BUDGET:

(36,150 of heading for Transport Innovation flexible)

(4,000 of heading for implementation of car sharing, we switched it to carpooling)

(3,000 of heading for the promotion of flexible transport)

(16,000 of which to run the Mobility Plan)

Despite its obvious advantages, mobility plans often face a number of obstacles to its implementation. Among them, we highlight the following:

- Barriers to implementation.

- Car Culture.

- Not only workers prefer the car; employers also tend to believe that the appeal of the car to its employees is so great that, if they intervene, they can provoke disputes.

- Lack of regulation.

- No legal or tax support for mobility plans where most plans are carried out.

- Lack of alternatives to car use.

- Little or no public transport provision, hard to access, etc.

- Deficiencies of the public transport system

- Lack of overall service quality, low frequencies, lack of information about existing services, poor adjustment of the stops, etc..

- Lack of examples: novelty of the concept

In Spain these mobility plans are still something new and there are very few examples to encourage other companies to follow. Also, the employer does not see, a priori, improved image for your business that will adopting a Mobility Plan.

The expected benefits to the agents involved are:

The employer

- Reduced absenteeism and increased productivity, decrease stress because the template will improve your performance.

- Improved timeliness of staff time.

- Improved corporate image: the best Public Relationships campaign of the enterprise may be itself Mobility Plan.

- Less space for the parking.

- Improved accessibility for all employees, visitors, vendors, etc.

The worker

- Disappears anxiety caused by congestion.

- Walking and cycling have positive health effects.

- Savings in transportation (car maintenance costs are high), more savings if you share the car.

- Saves time if there is any infrastructure reserved for high-occupancy vehicles, or preference to public transport.

- Reduction of accidents.

- In short: improved quality of life.

Society

- Decreased traffic jams and road congestion effects.

- Reduced energy consumption.

- Reducing emissions.

- Increased public space (less space devoted to traffic and transport infrastructure).

- Improved accessibility conditions for people.

- Increasing attractiveness of cities as centres business, services, trade and tourism.

- Savings in infrastructure investments, which can lead to the improvement of social services.

- It promotes social inclusion and access to the labour market.

- This, in turn, affects a significant increase in quality of life.