

# I European Conference on Sustainable Mobility at Universities

Universitat Autònoma de Barcelona



8, 9, 10 March 2017



The conference is in the Framework of the European Project about sustainable Mobility: U-MOB LIFE.



UNIVERSITAT AUTÒNOMA DE BARCELONA

**Speaker: Dr. Leticia Chico Santamart**

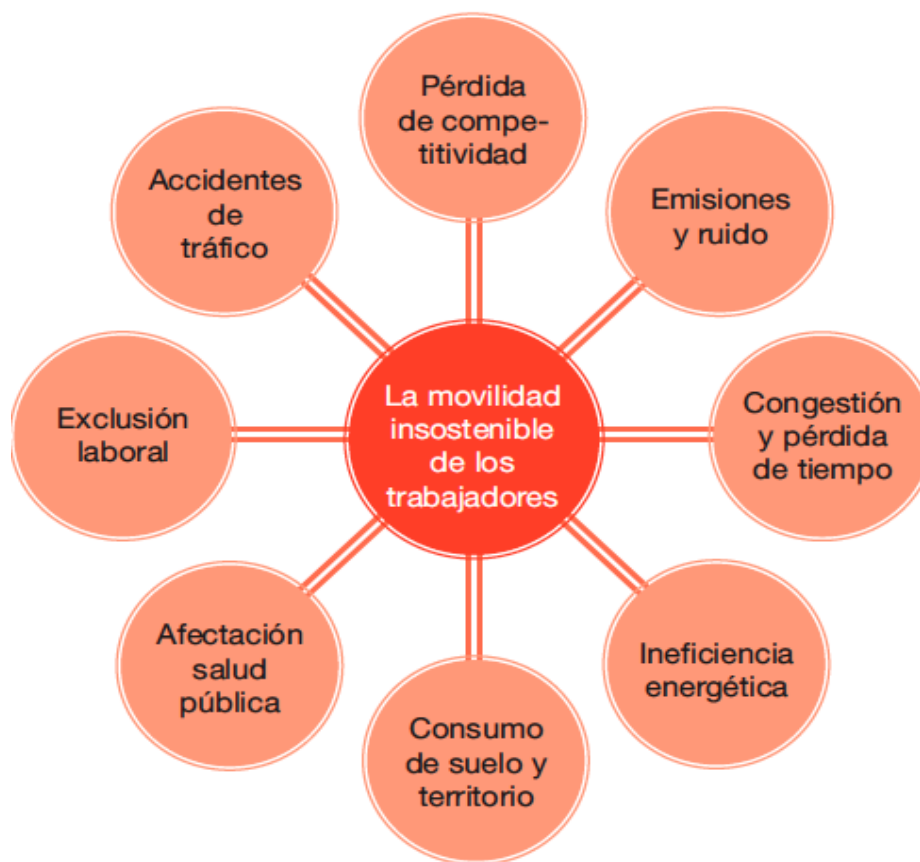
Oficina de Calidad Ambiental y Sostenibilidad

**Universidad de Valladolid**

**Topic: Mobility Management from a**  
**holitic point of view at Valladolid**  
**University**

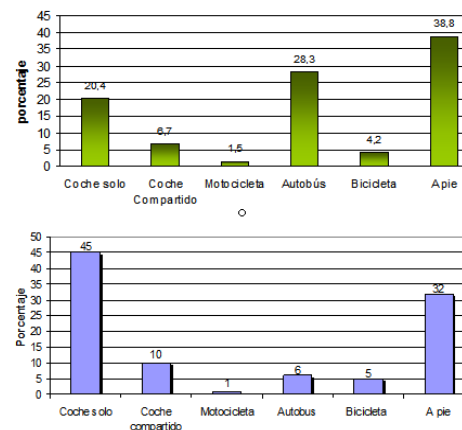
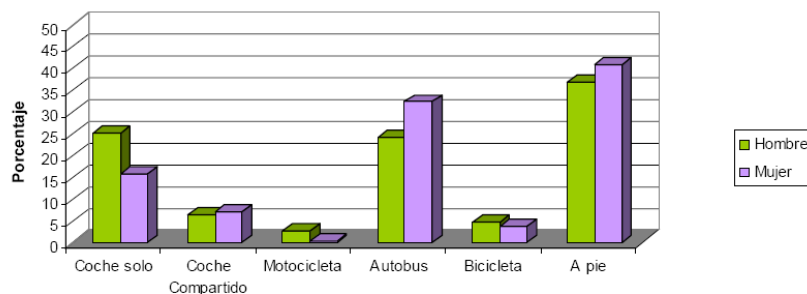
LIFE project number LIFE15 GIC/ES/000056 This is funded by the European Union. It reflects the author's view and the agency is not responsible for the use that may be made of the information it contains.

## Associated Impacts to the Mobility Traditional Model

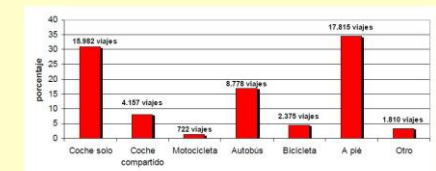


## Some relevant mobility data at Valladolid University:

- 51000 daily trips on average: 40% of which by car
- 55% of the staff and 27% of the students travel by car to the University
- 2,4 trips per person with a predominant duration between 10 to 20 minutes.
- The general users satisfaction with the means of transportation is high, but there is a wish to use the bus or bicycle more, and walk more frequently.



1. ¿Qué medio de transporte utiliza más frecuentemente para desplazarse hacia la Universidad de Valladolid?



En total 51.639 viajes de media al día.

21.946 personas de la Comunidad Universitaria.

ESTUDIO DE MOVILIDAD EN LA UNIVERSIDAD DE VALLADOLID



## Objectives:

- To know the mobility problems at the different University locations with City Campuses of Valladolid University (Valladolid, Palencia, Segovia y Soria)
- Achieve feasible and effective proposals to improve mobility and access to pedestrians, public transport and people with reduced mobility
- To make the University community aware of the environmental, social and economic problems of using private cars in an indiscriminate way
- To stress in the individual responsibility about this problem and encourage the citizens participation.
- Encourage walking and the use of bicycles and public transport instead of the car.



## Mobility Study at Valladolid University. Structure.

### Phase I. Diagnosis of the current situation.

#### Pre-diagnosis

- Preliminary/starting information analysis

- Identification of the agents involved

#### Supply Analysis

- Analysis of the infrastructures for: Pedestrians, Cyclists, Public Transport, Private vehicles and parking.

#### Demand Analysis

- Analysis of the characteristics of the university population

- Analysis of all the Movements, parking demand, etc

#### External Factors Analysis

- Road/traffic safety analysis

- Energy and atmospheric aspect analysis

- Analysis of noise, traffic jams etc

### Phase II. Action Plan

### Phase III. Evaluation and follow-up.

## Phase I. Pre-Diagnosis

### Description of Valladolid University

#### Valladolid Campus

City Centre Campus

Huerta del Rey Campus

Esgueva Campus

Miguel Delibes Campus

Other Instalations

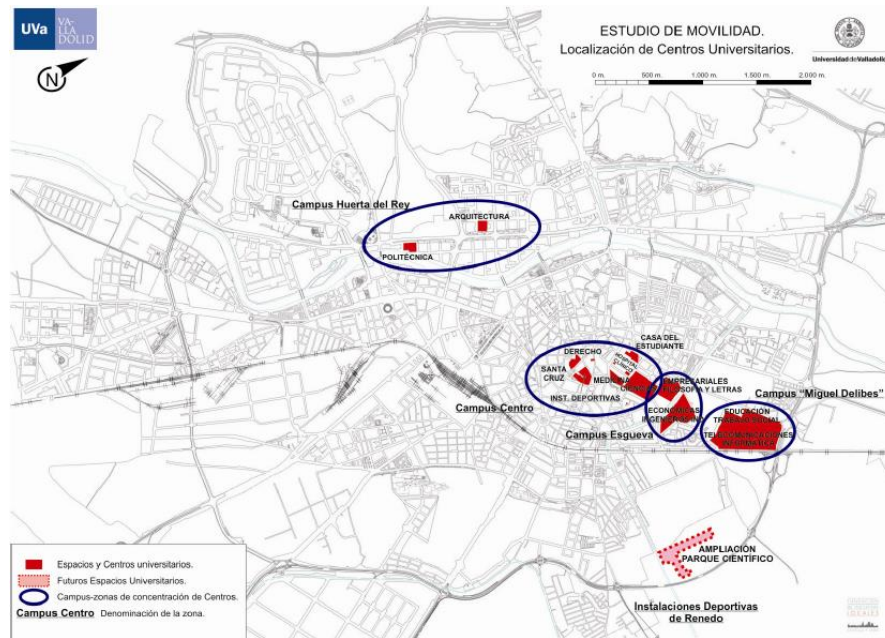
<b>Alumnos</b> (1º y 2º ciclo, centros propios)	24.781
<b>Alumnos intercambio Erasmus-Sócrates</b> (curso 2006-2007)	950
<b>Profesores/as</b>	2.609
<b>Personal de Administración y Servicios</b>	978





## Phase I. Pre-Diagnosis

### Description of Valladolid University



### Description of the city of Valladolid

PIMUVA. Proposals:  
Pedestrians Mobility  
Public Transport Improvement  
Mobility Management  
Road Planning  
Parking



Viajes según motivo prioritario y relación con el domicilio					
Motivo	Basados en el domicilio		No Basados en el domicilio		Total
	Viajes	%	Viajes	%	Viajes %
Trabajo	286.522	34,9%	5.872	24,0%	292.394 34,6%
Asuntos trabajo	6.458	0,8%	1.447	5,9%	7.906 0,9%
Estudios	176.490	21,5%	1.885	7,7%	178.375 21,1%
Compra diaria	81.582	9,9%	2.603	10,6%	84.185 10,0%
Compra no diaria	28.729	3,5%	2.076	8,5%	30.805 3,6%
Asuntos personales	76.194	9,3%	4.261	17,4%	80.455 9,5%
Ocio	118.005	14,4%	3.130	12,8%	121.134 14,3%
Llevar a un acompañante	25.179	3,1%	1.739	7,1%	26.918 3,2%
Otros	20.984	2,6%	1.501	6,1%	22.484 2,7%
<b>Total</b>	<b>820.143</b>	<b>100,0%</b>	<b>24.514</b>	<b>100,0%</b>	<b>844.656 100,0%</b>

Fuente: PIMUVA, documento de Noviembre de 2003.

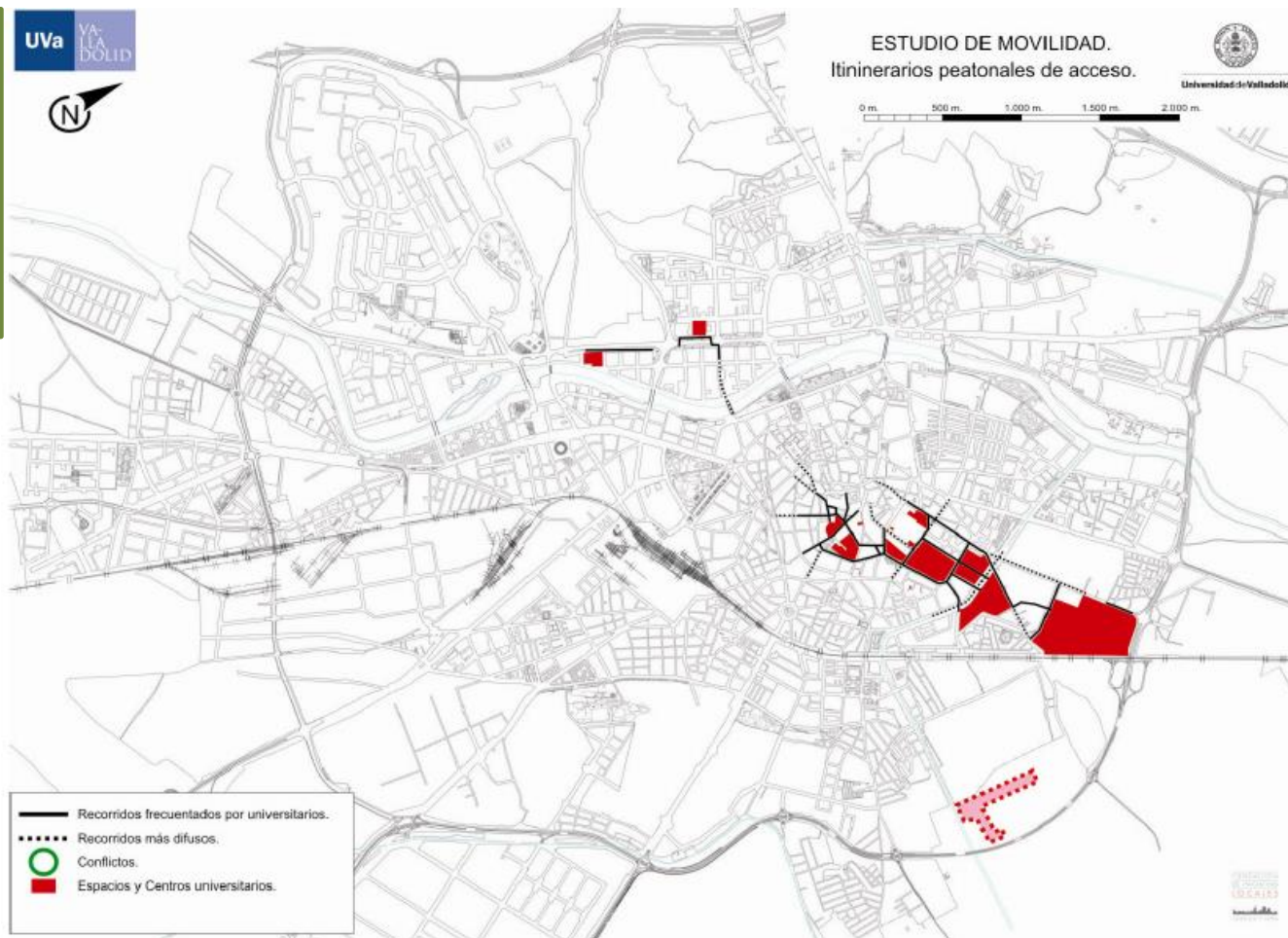
Viajes según Modo Básico				
Modo	Viajes	%	Viajes/Persona	Viajes/Hogar
A pie	452.082	53,5%	1,33	3,73
Transporte Público	108.168	12,8%	0,32	0,89
Transporte Privado	245.678	29,1%	0,72	2,03
Otros	38.728	4,6%	0,11	0,32
<b>Total</b>	<b>844.656</b>	<b>100,0%</b>	<b>2,48</b>	<b>6,97</b>

Fuente: PIMUVA, documento de Noviembre de 2003.

## Phase I. Supply Analysis

### Walking:

- Description of the situation
- Reasons to go walking
- Difficulties

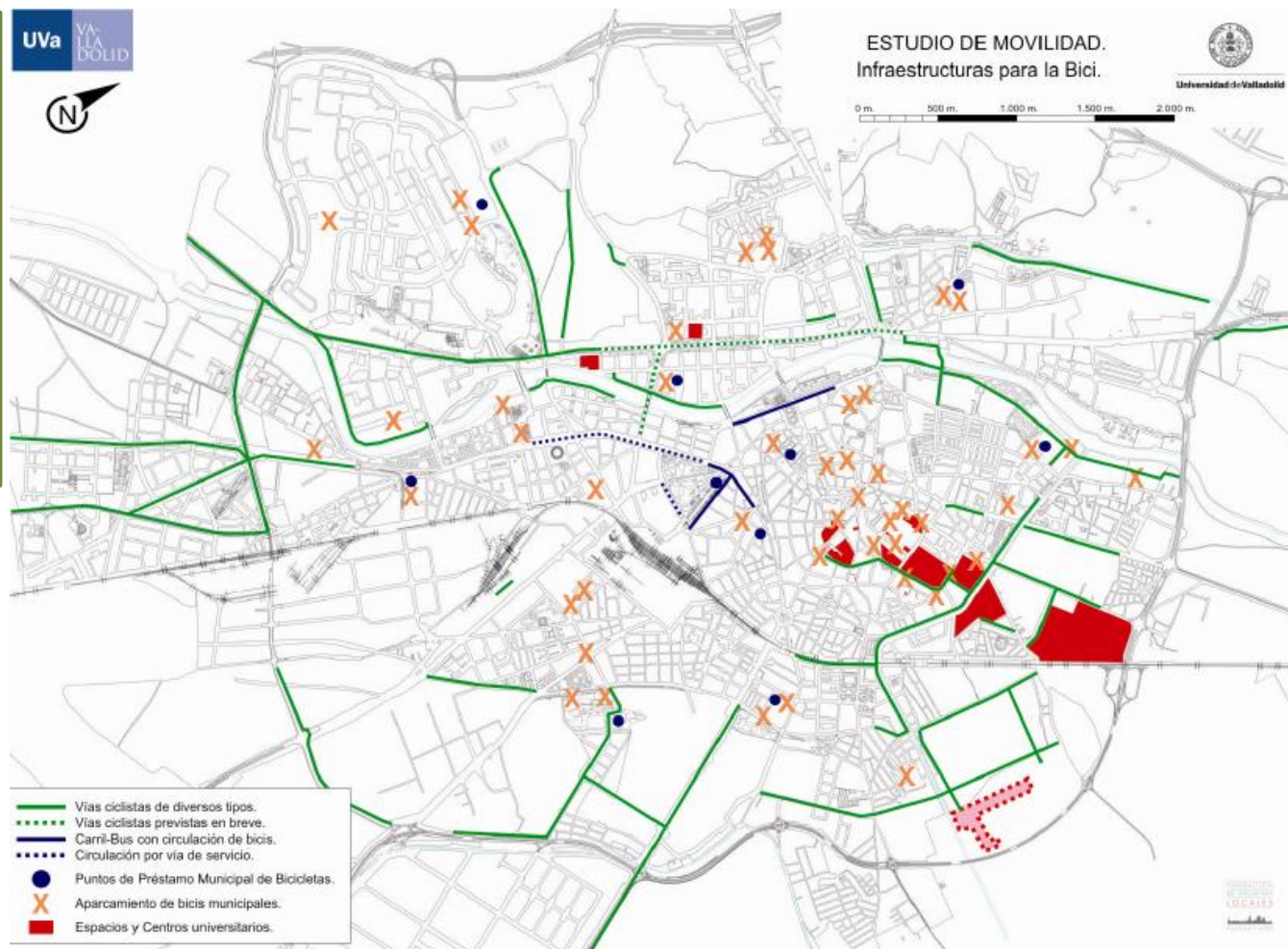




## Phase I. Analysis of the Supply

### Bycycles:

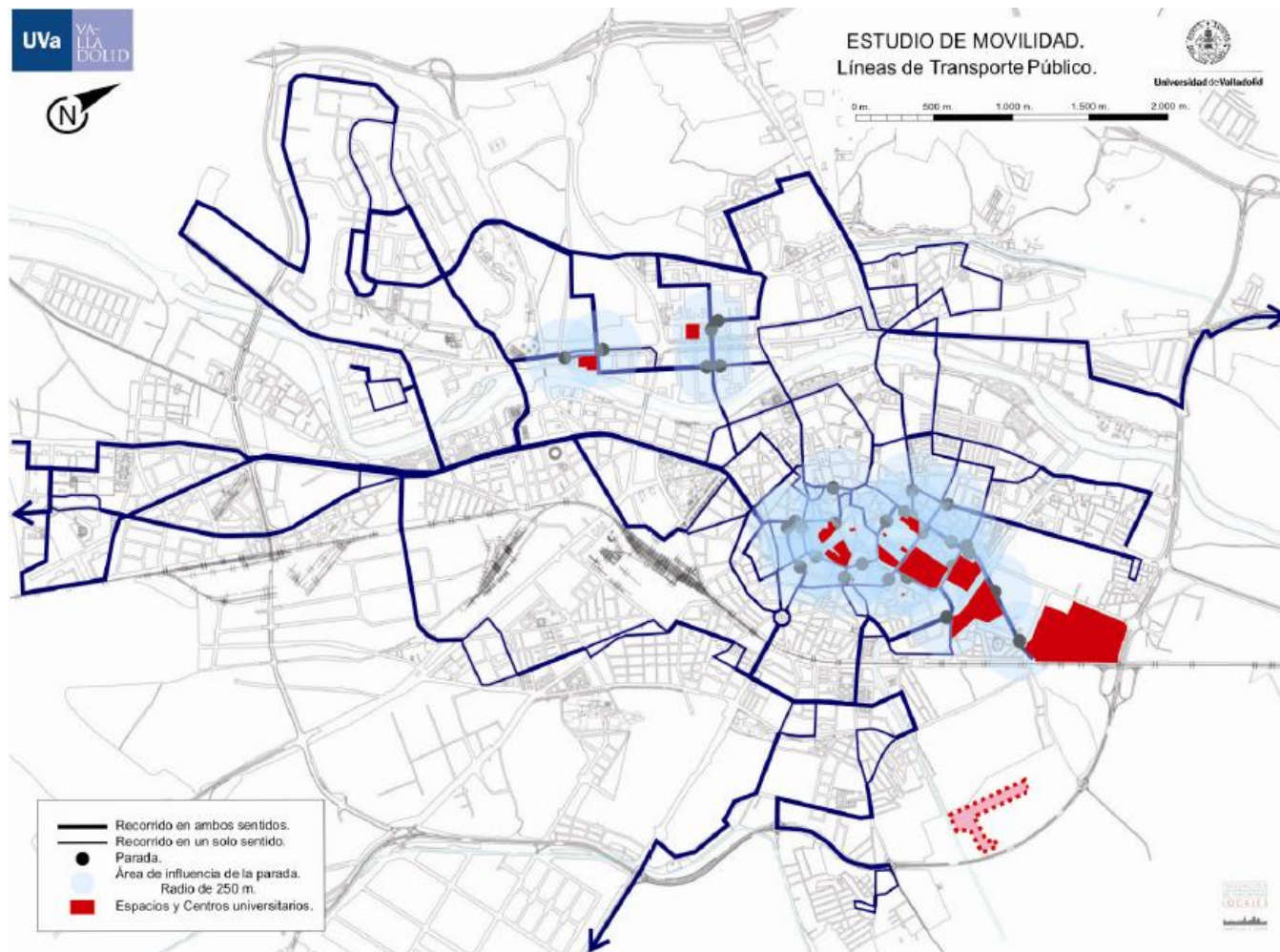
- Description of the situation
- Reasons to go by bike.
- Difficulties
- Bike Lanes
- Parkings
- Bike Loan system



## Phase I. Supply Analysis

### Car:

- Description of the car situation at the University
- Parking
- Difficulties



## Phase I. Demand Analysis

### Quantitative Study:

#### ESTUDIANTES.

**Universo:**

Estudiantes universitarios de la Universidad de Valladolid.

**Tamaño de la muestra:**

Diseñada: 700 entrevistas.

Realizada: 668 entrevistas.

**Muestreo:**

Aleatorio estratificado.

**Afijación:**

Proporcional.

**Puntos de muestreo:**

20 Centros de estudios de la Universidad de Valladolid.

**Procedimiento de muestreo:**

Los cuestionarios se han aplicado mediante entrevista personal.



ESTUDIO DE MOVILIDAD EN LA UNIVERSIDAD DE VALLADOLID

#### TRABAJADORES.

**Universo:**

Personal trabajador de la Universidad de Valladolid.

**Tamaño de la muestra:**

Diseñada: 200 entrevistas.

Realizada: 159 entrevistas.

**Muestreo:**

Aleatorio simple.

**Afijación:**

No procede.

**Puntos de muestreo:**

20 Centros de estudios de la Universidad de Valladolid.

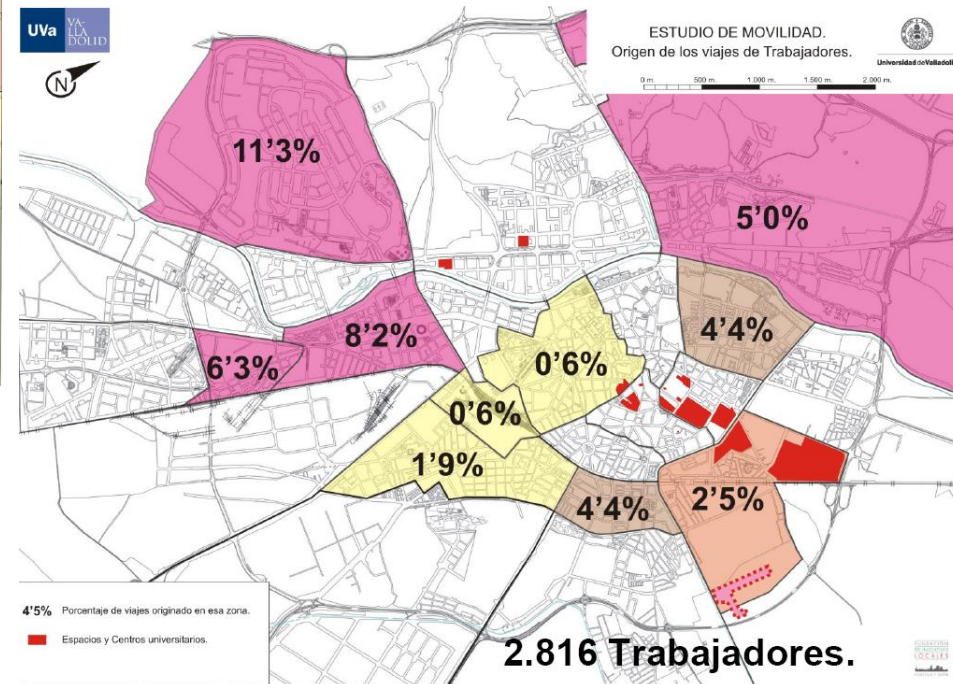
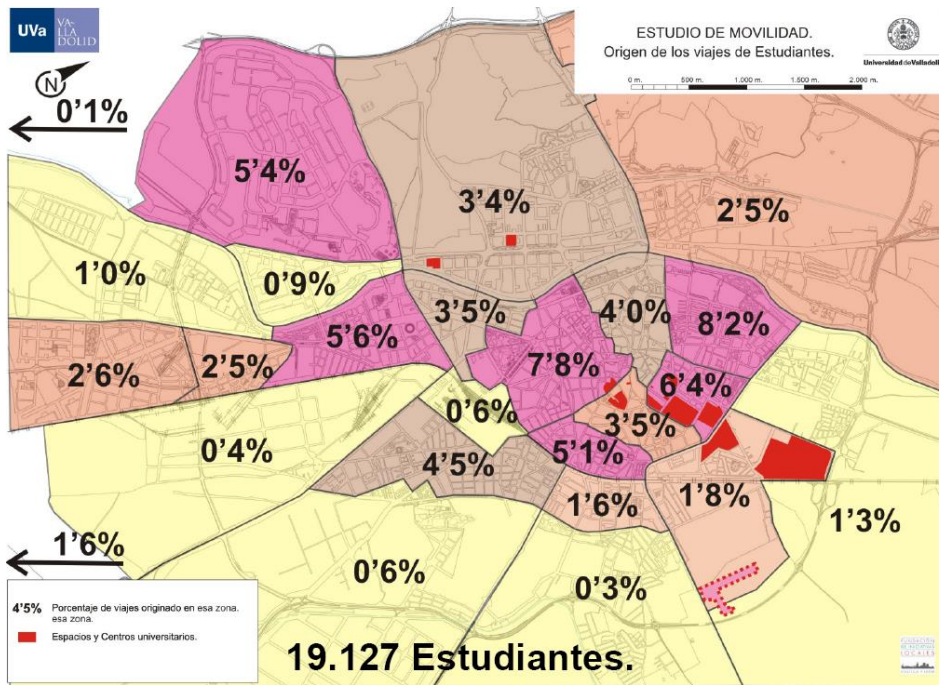
**Procedimiento de muestreo:**

La encuesta se envió a la muestra por correo electrónico.

Qualitative Study: 9 interviews and 3 discussion/focus groups were done



## Phase I. Demand Analysis

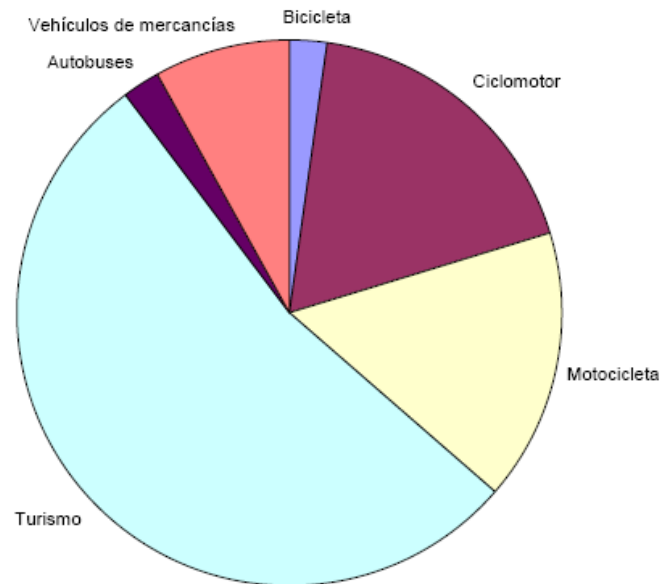


## Phase I. External Factors Analysis

- **Atmospheric Pollution:**
  - Nitrogen Dioxide
  - Suspended Particles
  - Tropospheric Ozone
  - Sulphur Dioxide
  - Carbon Monoxide
  - Carbon Dioxide: Contribution to Climate Change
- **Accidents:** Comparison of the accidents that occurred with the different means of transport

**Valladolid University emit 7.350,225 kg CO<sub>2</sub>/day in all the daily mobility**

Accidentalidad con víctimas en zonas urbanas



## Phase I. External Factors Analysis

- Noise:**

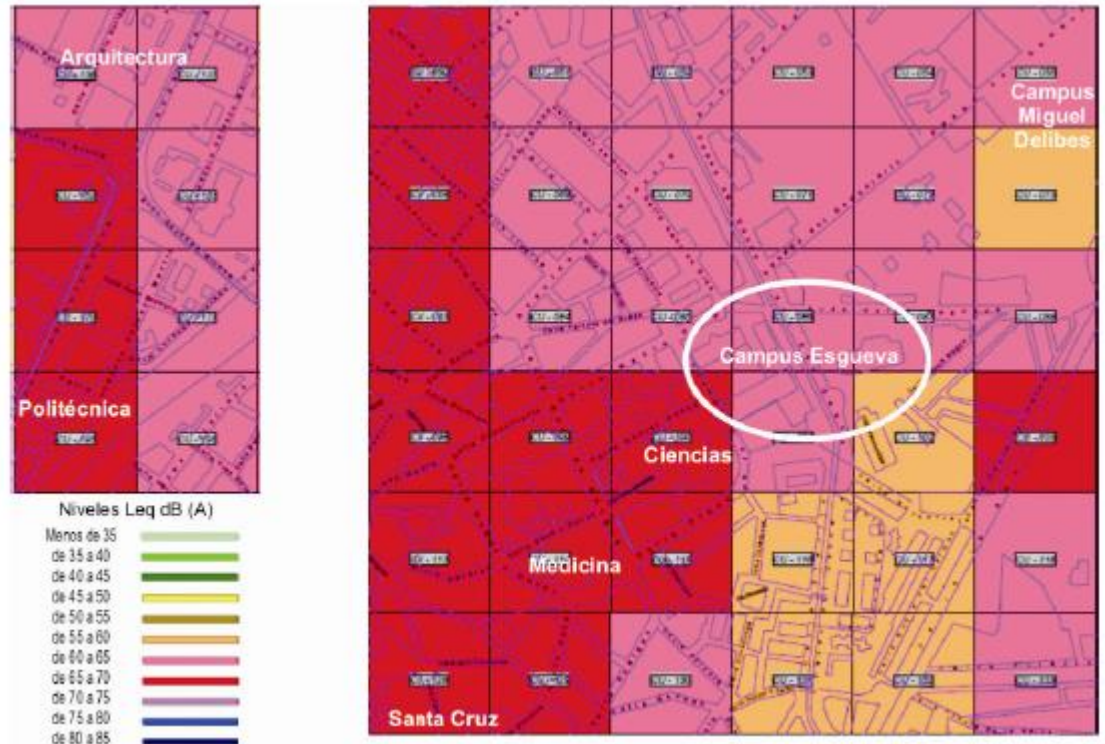
**High Impact Zones:** Rectorado, Medicina, Escuela Ingenierías Industriales sede Mergelina, Escuela Ingenierías Industriales sede Francisco Mendizábal

**Low Impact Zones:**

Arquitectura, Empresariales, Económicas

**Very Low Impact Zones:**

Escuela Ingenierías Industriales sede Paseo del Cauce, Campus Miguel Delibes



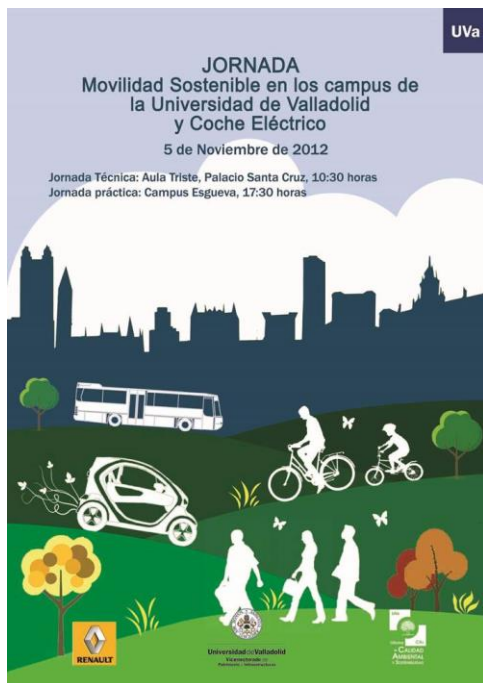


## Phase II. Action Plan

### Mobility awareness and communication


With the aim of informing about the Mobility Report and Sustainable Mobility Plan at Uva and the associated actions, **awareness activities and Participatory Communications** are done periodically:

Talks, Workshops, Courses, bike guided tours, electrical bike trials, Learning how to ride a bike courses, Cycle of 'cinema and bike' etc are done.

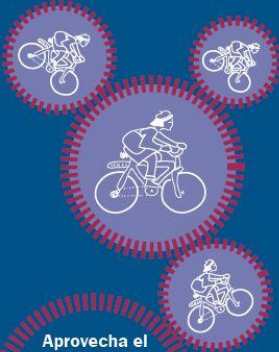


## Phase II. Action Plan

### Free Bike Loan System



**¡Muévete con la UVa!**



Aprovecha el préstamo gratuito de bicicletas de larga duración que la UVa pone a tu disposición

Puedes informarte e inscribirte en:  
 Oficina de Calidad Ambiental y Sostenibilidad  
 Teléfono: 983184937/983184978; www.uva.es,  
 acceso directo de Calidad Ambiental:  
 oficina.calidad.ambiental@uva.es  
 Centro de Información y servicios al estudiante CISEE  
 www.au.uva.es/cisse.htm  
 Teléfono: 983423967  
 cisse@uva.es

Universidad de Valladolid



- A **long duration bike loan system** for the whole University community was created, in all the Campuses
- 200 bikes are available
- Loan period could be for the whole academic year or on demand.
- **Short duration bike loans** are also available for visitors and different events.
- Huge success, the demand was doubled by the supply on the first inscription

## Phase II. Action Plan

### Share car and bus system



- This programme allows to connect different university members for whom the travel routes are compatible, not only for daily routes but also for longer trips (students that come from a different city and go home at the weekends)
- **Share Bus** Initiative is a complementary programme to the car share and has the main objective of encouraging the use of a bus for extraordinary transport travel, and also to reduce the costs of users that use it frequently; it aims to put in contact people that will travel by bus but they don't feel the coach and those who would like to take advantage of those free places in the bus.



## Phase II. Action Plan

### Efficient driving courses

Free practical courses developed in conjunction with Ente Regional de la Energía, offered to the whole university community.

The purpose of this efficient driving courses is to **reduce energy consumption associated to the use of private vehicles**. With the simple application of easy techniques it is possible to save 15% of fuel.



#### Course Structure:

Overview of the course (5-10 min)

First round of driving with the own driving skills and habits (20 min)

Theoretical class where basic concepts of effective driving are explained.  
(1 hour and 30 min)

Instructors demonstration lesson (20 min)

Second round of efficient driving: (20 min)

Analysis of the results and conclusions: (15 a 40 min)

## Phase II. Action Plan

### Electrical Vehicles Promotion/Presentation

- Substitution of combustion vehicles by **electric vehicles**
- Incorporation of 4 **own charging points**, at Valladolid and Palencia campuses.
- System of **Free electric bikes loan** to be used



## Phase II. Action Plan

### Mobility Innovation: European Projects

A very innovative Project on Sustainable Mobility is in the process of approval under the INTERREG Spain-Portugal Programme (POCTEP), and Valladolid University is the main recipient of the project. The Project is called **URBAN AIR**

The partners of the Project are:

- Valladolid University (E)
- Fundación CARTIF (E)
- GMV, Grupo Mecánica del Vuelo Sistemas, S.A.U. (E)
- Ente Regional de la Energía de Castilla y León (EREN) (E)
- Universidade da Beira Interior (P)
- ENFORCE - Engenharia da Energia, S.A. (P)
- Agência Regional de Energia e Ambiente do Centro (P)



## Phase II. Action Plan

### Mobility Innovation: INTERREG POCTEP

#### General Objective:

- Design and apply innovative alternatives to improve urban mobility which are viable and able to show how Universities can become an example of development of sustainable mobility proposals.

#### Specific Objectives:

- Development of innovative systems for sustainable mobility.
- Development of a demonstrator with new ICT technologies to be used for the correct management of sustainable mobility: Deslocalised bikes pick up system and real time location follow up.
- Measurement of air quality on current time through supports that incorporate sensor that measure established parameters. These devices will send data on real time to the control centre which can make quick decisions to improve the air quality.
- Health improvement through the improvement of air quality.
- Development of urban noise maps and improvement of noise levels in cities.
- Measure in real time and reduction of carbon footprint associated to the urban mobility activities.
- Achieve collective citizen awareness towards sustainable mobility.

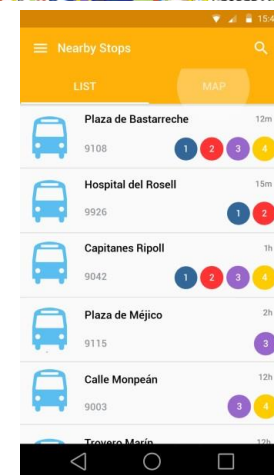
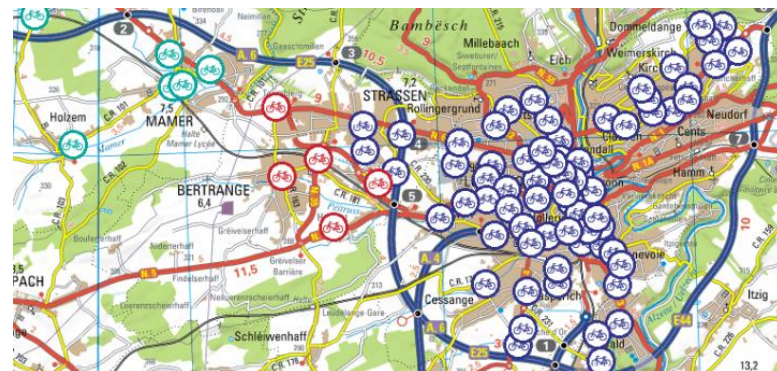
## Phase II. Action Plan

### Mobility Innovation: INTERREG POCTEP

#### Actions: **Development of Sustainable Mobility Programmes**

Bike loan system 4.0 for the whole of the University Community

- Based on the **community use** (other than in pick up and return stations)
  - **Possibility to leave the bikes in any conventional parking inside a georeferenced area**
  - Ecological navigation system
  - Based in the **use of an intelligent lock + a Smartphone App**
  - **Gamification Techniques**
- **Operative and Innovative Technology**

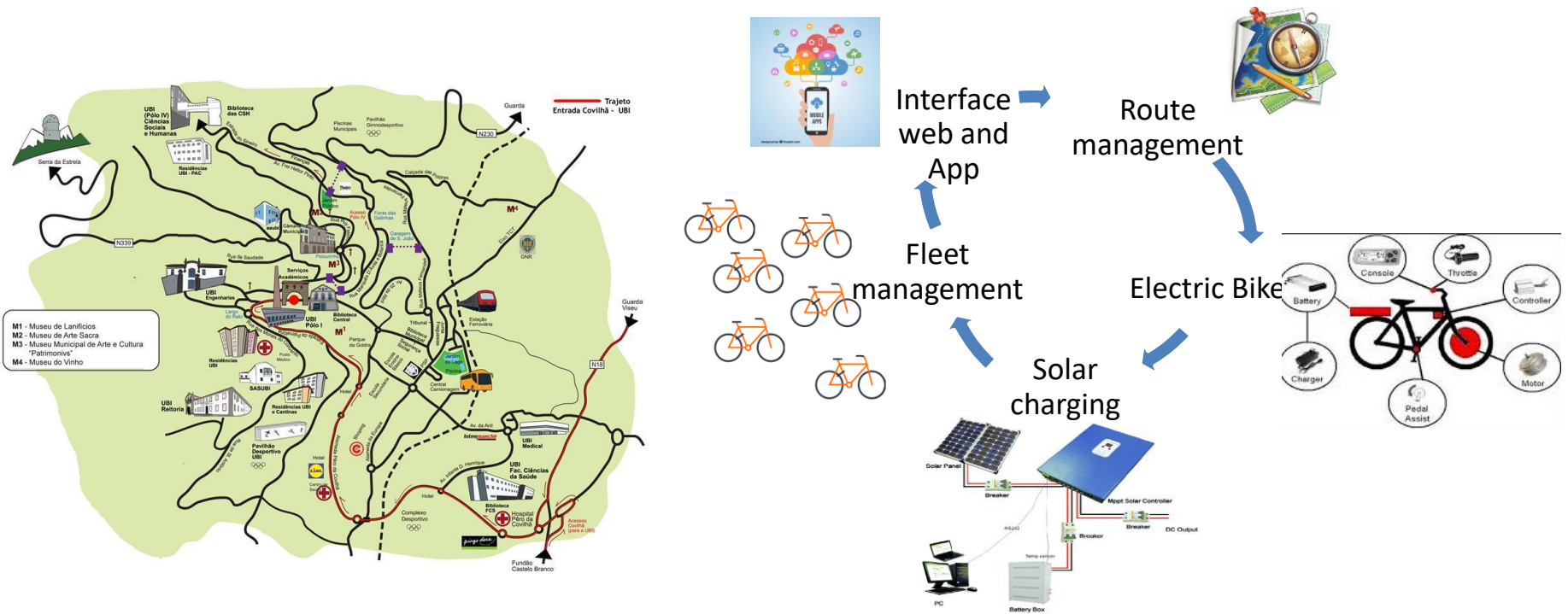


## Phase II. Action Plan

## Mobility Innovation: INTERREG POCTEP

## Actions: Development of sustainable mobility programmes

# Loan system for electric bikes with solar photovoltaic recharge

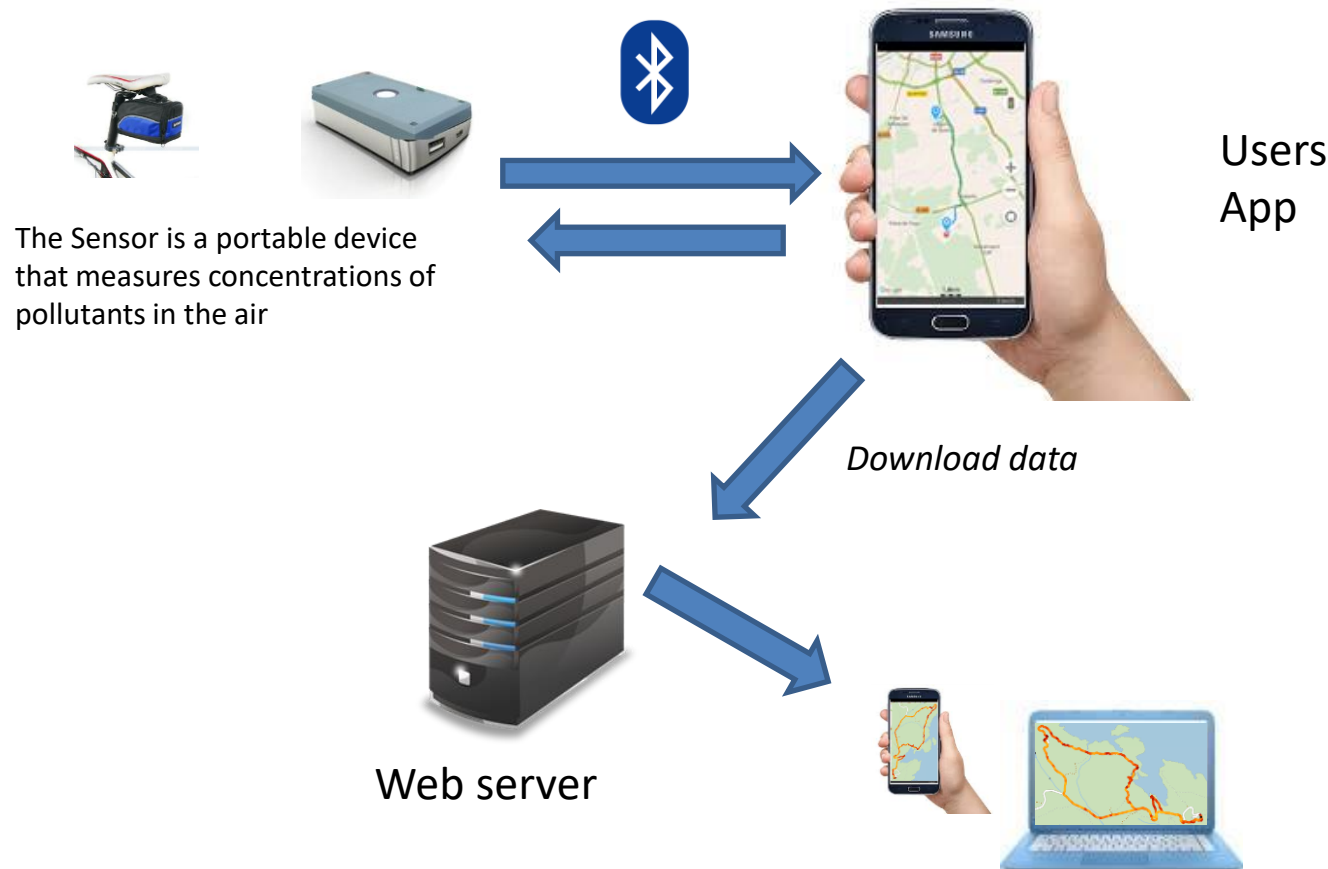




## Phase II. Action Plan

### Mobility Innovation: INTERREG POCTEP

Actions: **Sensors network to measure pollution and noise**

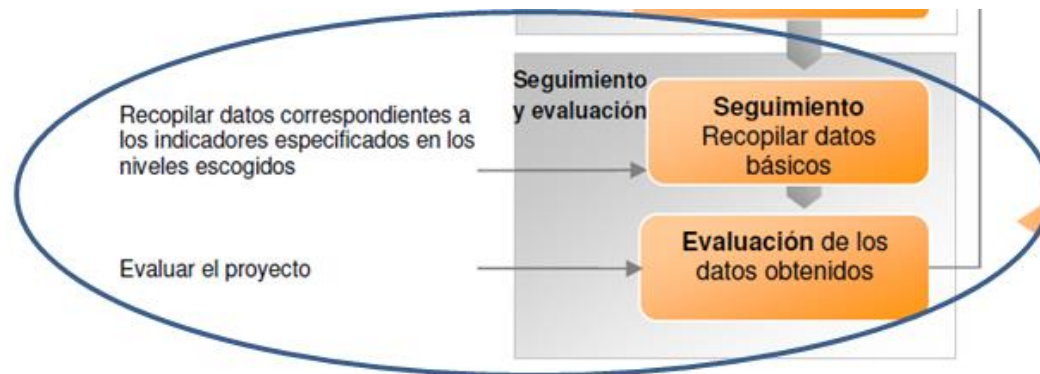


## Phase III. Evaluation and follow-up

It is the last phase of a mobility plan but not for that, the least important one. A sustainable mobility study it is not done at once: it is a dynamic process that should grow and develop with time.

The impact of each new strategy or measure has to be verified in a systematic way through indicators.

Once the indicators have been defined, it is crucial to calculate the initial situation and estimations for the objectives should be done in the different scenarios based on the implementation and development of ideas measures.



## Phase III. Evaluation and follow-up

Things to be considered in the evaluation stage.

- Which aspects should be verified regularly.
- Who should do these verifications
- How frequent
- How they will be delivered
- How do the staff will get the results
- How the results will influence the revision of the study

### Indicators

Each of the marked specific objectives should have an indicator able to measure the level of achievement of the measure, i.e. how the objectives have been covered. As an EXAMPLE:

Indicators referred to the demand: Reduction of kms done by a private car, reduction of greenhouse gases emissions, use of the measures decided, satisfaction, long term behaviour...

Indicators referred to the supply: Number of adopted measures, Bikes available for staff, infractustures inventory...





**Universidad de Valladolid**

**Vicerrectorado de  
Patrimonio e Infraestructuras**



## Many thanks for your attention

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