

## 1.2.

### USO DE VEHÍCULOS ELÉCTRICOS EN LA FLOTA DE CESPA – Murcia (España)

#### Objetivos de la Práctica

El objetivo de la práctica es estudiar el uso de la flota de vehículos eléctricos de CESPA para la limpieza de calles, recogida y tratamiento de residuos de la ciudad de Murcia. Las entidades participantes son el Ayuntamiento de Murcia y CESPA.

#### Descripción de la Práctica

El origen de esta iniciativa es el pliego de condiciones del concurso público para el contrato de limpieza viaria, recogida y tratamiento de residuos, en el cual había tasas de emisión máximas especificadas que tenían que ser cumplidas. Ello significaba tener que incorporar entre los distintos servicios los vehículos eléctricos que redujesen los valores de CO<sub>2</sub>. Los vehículos eléctricos son utilizados por el personal de servicio de CESPA para la limpieza y la recogida y gestión de residuos.

Los principales objetivos de la introducción de los vehículos eléctricos son:

- Cumplir con los requisitos de las especificaciones del concurso
- Disminuir las emisiones (flota más limpia)
- Reducción de la contaminación acústica
- Reducción de los costes de combustible

CESPA, por lo tanto, al igual que en otros contratos de servicios municipales en otras ciudades de España, adquirió vehículos eléctricos para su flota en Murcia.

Estos vehículos funcionan en el centro histórico de Murcia y en sus jardines. El centro histórico de Murcia se caracteriza por ser una zona con muchas calles peatonales y una gran cantidad de personas. Aparte de evitar las emisiones de CO<sub>2</sub>, NOx y CO, también se evitan las emisiones de partículas, al mismo tiempo que el ruido en el área se reduce al mínimo. Veinticuatro trabajadores participan cada año en los servicios prestados por estos vehículos eléctricos.

En cuanto a la propuesta inicial, la flota de vehículos se ha incrementado hasta los 19 debido a la reciente incorporación de 3 nuevos vehículos.

La intención es aumentar el número de vehículos eléctricos en los próximos 20 años, lo cual tiene que venir por la renovación de la flota y por la adaptación a las mejoras en el suministro y en el rendimiento de los vehículos eléctricos en el futuro.



## Resultados, evidencias de éxito y transferibilidad

No hay indicadores para evaluar los resultados, pero hay estudios disponibles en el sector, datos técnicos de los vehículos y cálculos realizados en la presentación del proyecto.

El Instituto de Estudio de la Energía Eléctrica ha calculado, como media, que la sustitución de otros vehículos convencionales por los eléctricos reducían en más de un 90% las emisiones urbanas de NOx y CO, y que la cantidad total de CO<sub>2</sub> emitido disminuía en un 50%.

La eficiencia energética de los vehículos eléctricos en comparación con la combustión diésel tradicional, mejoraba los valores alrededor de 10%, de modo que el uso de estas soluciones es ideal para flotas de vehículos eléctricos utilizados para realizar servicios públicos.

La cantidad total de vehículos eléctricos que funcionan actualmente en el municipio de Murcia es de 19. De acuerdo con esto, se evitan 225 toneladas de emisiones de CO<sub>2</sub> a la atmósfera cada año, si comparamos un vehículo eléctrico con un vehículo diésel de similares características.

La vida útil de estos vehículos se estima en 10 años, así que al final de su vida operativa se habrá evitado la emisión de 2.250 toneladas de CO<sub>2</sub>.

**+ info**

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El estudio completo se puede descargar [aquí](#)

SUSTAINABLE  
URBAN  
MOBILITY

# **REGIONAL ESTUDY OF SUSTAINABLE MOBILITY**

**THEMATIC: ELECTRIC MOBILITY**

**REGION: MURCIA (SPAIN)**



**European Union**

European Regional Development Fund

# **BEST PRACTICE 3**

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**CESPA**

## **STUDY OF SUSTAINABLE URBAN MOBILITY**

### **+ Name of practice or project**

#### **CESPA**

Cespa group is owned by Grupo Ferrovial (through the General Directorate of Services) and dedicated to providing environmental services and waste management and treatment in Spain and Portugal.

Since 2010 is the company contracted by the city of Murcia for street cleaning, waste collection and treatment of the municipality, and it has a 20-year contract with the City.

### **+ Topic addressed by practice**

Use of electric vehicles in the fleet of CESPA in Murcia

### **+ Contact person**

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### **+ Title of the contact person**

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### **Objectives of the practice:**

The aim of the practice is to study the use of electric vehicle fleet CESPA for street cleaning, waste collection and treatment of the city of Murcia.

The main objectives of the introduction of electric vehicles are:

- Comply with the requirements of the specifications of the contest
- Decrease d emissions (cleaner fleet)
- Reduction of noise pollution
- Reducing fuel costs

**Process and detailed content of the practice (Description):**

CESPA, belonging to the Directorate General of Grupo Ferrovial Services, was created in 1970 to provide environmental services, waste collection, street cleaning and gardening to municipalities. Throughout these 40 years of history, the activities provided by the company have expanded to offer today a catalog of environmental services for the management and treatment of all types of waste.

Being one of the leading companies in the waste management and gardening in Spain, CESPA extends not only throughout the Spanish state, but is also present in Portugal and Andorra. Also, in 2007 began to tender in the UK.

In 2010 the city of Murcia awarded by public contest Cespa a contract for 20 years of street cleaning, waste collection and treatment of the municipality.

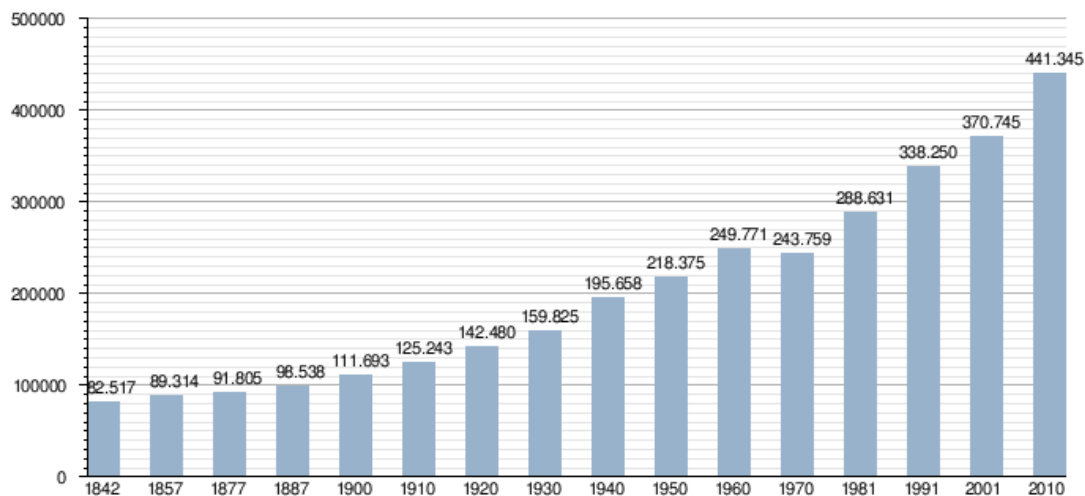
The city of Murcia is located in the southern part of the region of the same name, which is capital, at 38 ° 2 'N and 2 ° 32' east longitude meridian of Madrid, with an approximate area of 881 '860 km<sup>2</sup>

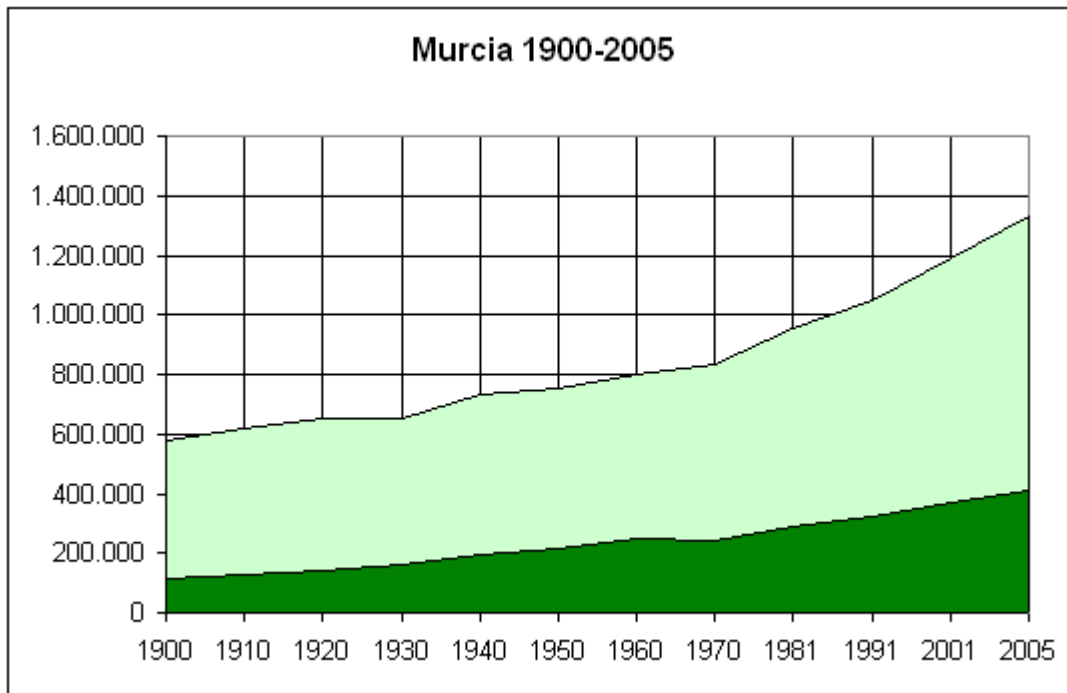
With 442,203 inhabitants (INE 2011) Murcia occupies the 7th place in the list of municipalities in Spain by population.

This is an important city of services in which the tertiary sector has followed its former condition by antonomasia, agricultural exporter, with its famous and fertile lands, which was known by the nickname of the Garden of Europe. Among its most important industries are food processing, textiles, chemicals, distillation and manufacture of furniture and building materials.

Murcia also has an important university tradition since its first university was founded in 1272. It is currently home to two universities, the University of Murcia public and private UCAM, attracting about 50,000 students to the municipality.

**Demographic development of Murcia**





Comparison of the Capital (dark green) and Region (Light Green)

### Origin:

In the specifications of the public contest for the contract for street cleaning, waste collection and treatment, there were specified maximum emission rates which had to be complied with. This meant having to incorporate among the various services, electric vehicles that would reduce the values of CO<sub>2</sub>. CESPA Therefore, as in other municipal service contracts in other cities of Spain, acquired electric vehicles for its fleet in Murcia.

### Bodies involved/Implementation

The bodies have been involved in the deployment of electric vehicles in the fleet have been:

- His Excellency President Mayor. Ayuntamiento de Murcia
- Department of Environment
- Department of Urban Cleaning and Waste Management
- Department of Procurement

### **Financial framework (Funding):**

Funding for the purchase of electric vehicles has been:

#### **public**

- Entity IDAE
- Amount

There is no specific data but fits the aid provided in the decree applicable law

#### **private**

- Company CESPAS Entity
- Amount Remaining cost of vehicles

### **Legal Framework (current law and incentives system):**

Currently the system of subsidies for the purchase of electric vehicles in Spain is governed by Royal Decree 648/2011 which regulates the direct granting of subsidies for the purchase of electric vehicles in 2011, under the Action Plan 2010-2012 of the Integral Plan to Promote Electric Vehicle in Spain 2010-2014.

Subsequently, the Royal Decree 417/2012, of 24th February was published. It modifies the previous one to extend the terms of validity of the financial assistance and the expected fund. Financial assistance is granted for all requests produced after its entry into force and registered in the electronic grant management before December 16th, 2011 and January 1st to November 30th, 2012, or until the exhaustion of funds if this situation occurred before. The maximum planned fund is 10 million euros.

#### **Subsidies for the purchase of electric vehicles 2011 – 2012**

|  |  |
|--|--|
| Financial assistance limit for the first vehicle | Autonomy in electric mode              |
| 0 €  | Less than 15 kms.                      |
| 2.000,00 €                                       | Between 15 - 40 kms.                   |
| 4.000,00 €                                       | Between 40 - 90 kms.                   |
| 6.000,00 €                                       | More than 90 kms.                      |
| 15.000,00 €                                      | More than 60 kms. M2 and N2 Categories |
| 30.000,00 €                                      | More than 60 kms. M3 Category          |

#### **Subsidies for electric vehicles multiple purchase**



| Units purchased    | Vehicle with batteries   | Vehicle without batteries  |
|--------------------|--|--|
| 1                  | 25% on PFF   | 35% on PFF   |
| From 2 to 5 units  | Additional 15% on first unit<br>(Average help: up to 28,75% PFF) | Additional 15% on first unit<br>(Average help: up to 40,25% PFF) |
| From 6 to 10 units | Additional 20% on first unit<br>(Average help: up to 30% PFF)    | Additional 15% on first unit<br>(Average help: up to 42% PFF)    |
| More than 10 units | Additional 25% on first unit<br>(Average help: up to 31,25% PFF) | Additional 15% on first unit<br>(Average help: up to 43,75% PFF) |

#### Target group addressed by the practice:

Electric vehicles are used by service personnel of CESPA for the purpose of cleaning and waste collection and management.

#### Communication and awareness campaigns:

There have been no specific communication campaigns conducted by CESPA. The City of Murcia did perform a communication action at the time of the presentation of the new fleet. However, when dealing with vehicles traveling on public roads usually have high visibility from the public, which is considered the best communication and image campaign.

#### Geographic and population scope:

📍 Geographic position (country, region or district or metropolitan area or municipality)

| MURCIA - SPAIN |              |                   |
|----------------|--------------|-------------------|
| North Latitude | Northern end | 38° 45' 43" 48'   |
|                | Southern end | 37° 23' 27" 38'   |
| Longitude      | Far East     | 0° 41' W 4° 20'E  |
|                | Far West     | 2° 21' W 18° 10'W |

### ✚ Extension

SURFACE AREA 11.313 Km<sup>2</sup>  
Corresponds to the 2,9 % of Spain

### ✚ Climatology

|                           | 2001  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>Temperatures. (°C)</b> |       |       |       |       |       |       |       |       |       |       |       |
| Maximum Absolute          | 41,8  | 37,1  | 41,0  | 41,5  | 39,5  | 41,6  | 40,0  | 39,6  | 45,0  | 42,5  | 39,8  |
| Minimum Absolute          | -1,0  | 2,0   | -1,0  | -1,5  | -3,8  | -2,4  | 0,2   | 0,4   | -1,6  | -2,7  | -2,6  |
| Annual Average            | 19,2  | 18,8  | 19,2  | 18,8  | 18,4  | 19,4  | 18,8  | 18,9  | 19,4  | 18,4  | 19,6  |
| Maximum Average           | 25,3  | 25,0  | 25,0  | 24,7  | 24,7  | 25,3  | 24,8  | 25,0  | 25,5  | 24,2  | 25,7  |
| Minimum Average           | 13,1  | 12,7  | 13,4  | 12,9  | 12,3  | 13,5  | 12,8  | 12,9  | 13,2  | 12,6  | 13,4  |
| <b>Rainfall (Lit.)</b>    |       |       |       |       |       |       |       |       |       |       |       |
|                           | 330,9 | 237,4 | 295,2 | 348,3 | 199,3 | 241,8 | 397,0 | 261,4 | 402,9 | 458,2 | 224,3 |
| <b>Sun hours (h)</b>      |       |       |       |       |       |       |       |       |       |       |       |
|                           | 2.962 | 2.968 | 3.014 | 2.931 | 3.115 | 2.869 | 2.970 | 2.874 | 3.069 | 2.892 | 3.066 |

### ✚ Orography

|                       |                       |
|-----------------------|-----------------------|
| Up to 200 m           | 1.692 Km <sup>2</sup> |
| From 201 to 600 m     | 4.850 Km <sup>2</sup> |
| From 601 to 1.000 m   | 3.641 Km <sup>2</sup> |
| From 1.001 to 2.000 m | 1.130 Km <sup>2</sup> |
| More than 2.000 m     | 0 Km <sup>2</sup>     |

✚ Population densities

Population Density Evolution

|      | inhabitants/km <sup>2</sup> |
|------|-----------------------------|
| 2001 | 105,2                       |
| 2002 | 108,4                       |
| 2003 | 112,2                       |
| 2004 | 114,4                       |
| 2005 | 118,1                       |
| 2006 | 121,1                       |
| 2007 | 123,0                       |
| 2008 | 126,0                       |
| 2009 | 127,9                       |
| 2010 | 129,2                       |
| 2011 | 129,9                       |

✚ Urban Characteristics

Total registered inhabitants in 2011 in the region of Murcia is 1,461,979 pop.

The 4 largest municipalities account for 55.87% of the total population.

|                         |         |
|-------------------------|---------|
| <u>Murcia</u>           | 442.203 |
| <u>Cartagena</u>        | 214.918 |
| <u>Lorca</u>            | 92.869  |
| <u>Molina de Segura</u> | 66.775  |

✚ Urban growth trends

## Demographic development of the most populated municipalities



Demographical evolution of the 3 main municipalities of the region.  
Lorca (dark blue), Cartagena (medium blue) y Murcia (Light blue), 1900-2005.

## Socioeconomic characteristics:

### 📍 Spatial distribution of the population

The Murcia region has a population of 1,470,069 inhabitants. Almost one third (30.2%) lives in the town of Murcia. This represents 3.09% of the Spanish population. Moreover, after Ceuta and Melilla, has the highest natural balance and birth rate in the country.

### **Most populated municipalities (2011):**

| Rank | Municipality                  | Population |
|------|-------------------------------|------------|
| 1st  | <u>Murcia</u>                 | 442.203    |
| 2nd  | <u>Cartagena</u>              | 214.918    |
| 3th  | <u>Lorca</u>                  | 92.869     |
| 4th  | <u>Molina de Segura</u>       | 66.775     |
| 5th  | <u>Alcantarilla</u>           | 41.568     |
| 6th  | <u>Mazarrón</u>               | 35.473     |
| 7th  | <u>Cieza</u>                  | 35.425     |
| 8th  | <u>Águilas</u>                | 34.990     |
| 9th  | <u>Yecla</u>                  | 34.813     |
| 10th | <u>Torre-Pacheco</u>          | 33.218     |
| 11th | <u>San Javier</u>             | 32.366     |
| 12th | <u>Totana</u>                 | 29.961     |
| 13th | <u>Caravaca de la Cruz</u>    | 26.438     |
| 14th | <u>Jumilla</u>                | 25.926     |
| 15th | <u>San Pedro del Pinatar</u>  | 24.093     |
| 16th | <u>Las Torres de Cotillas</u> | 21.443     |

|                 |                         |        |
|-----------------|-------------------------|--------|
| 17th            | <u>Alhama de Murcia</u> | 20.725 |
| 18 <sup>a</sup> | <u>La Unión</u>         | 18.825 |
| 19 <sup>a</sup> | <u>Archena</u>          | 18.083 |
| 20 <sup>a</sup> | <u>Mula</u>             | 17.067 |

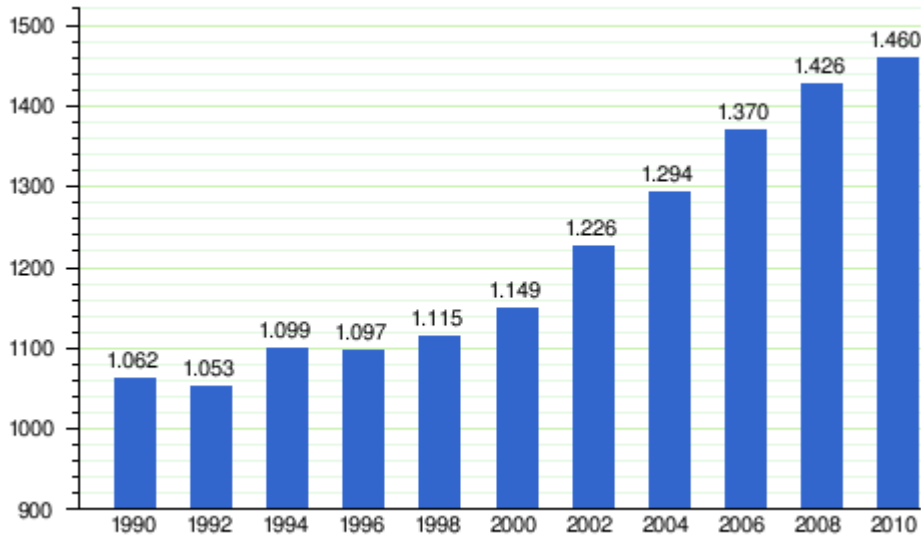
#### 🚦 Population Density

(2011) 129.94 hab/km<sup>2</sup>

#### 🚦 Population growth rates

##### Population evolution

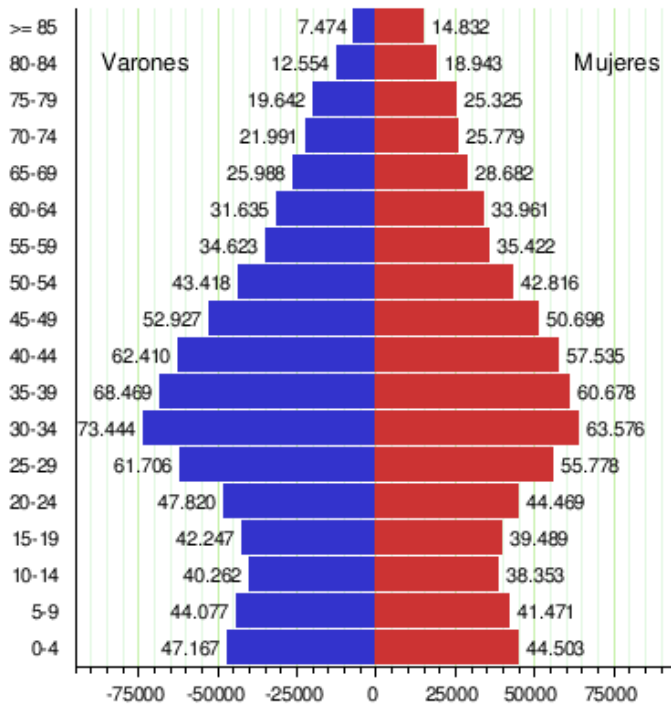
|      | TOTAL     | Men     | Women   |
|------|-----------|---------|---------|
| 2002 | 1.226.993 | 616.236 | 610.757 |
| 2003 | 1.269.230 | 639.795 | 629.435 |
| 2004 | 1.294.694 | 652.057 | 642.637 |
| 2005 | 1.335.792 | 677.049 | 658.743 |
| 2006 | 1.370.306 | 697.027 | 673.279 |
| 2007 | 1.392.117 | 706.326 | 685.791 |
| 2008 | 1.426.109 | 722.999 | 703.110 |
| 2009 | 1.446.520 | 731.609 | 714.911 |
| 2010 | 1.461.979 | 738.627 | 723.352 |
| 2011 | 1.470.069 | 741.581 | 728.488 |



#### ✚ Distribution of family units

|  |        |
|--|--------|
| Natural balance per 1000 population        | 6,09   |
| Crude death rate per 1000 population       | 7,28   |
| Infant mortality rate per 1000 live births | 3,49   |
| Life expectancy at birth (years)           | 79,6   |
| Life expectancy at birth for men (years)   | 76,5   |
| Life expectancy at birth for women (years) | 82,75  |
| Crude birth rate per 1000 population       | 13,37  |
| Average number of children per 1000 women  | 1,645  |
| Mean age at childbearing (years)           | 30,21  |
| Born to unmarried mother                   | 0,2586 |
| Total fertility rate per 1000 women        | 51,41  |

#### ✚ Age groups, aging index



|                          | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|--------------------------|------|------|------|------|------|------|------|------|------|------|
| <b>AGE STRUCTURE (%)</b> |      |      |      |      |      |      |      |      |      |      |
| Under 20 years           | 23,8 | 23,5 | 23,4 | 23,1 | 23,0 | 23,0 | 23,0 | 23,1 | 23,1 | 23,1 |
| Between 20 - 64          | 62,0 | 62,4 | 62,5 | 63,2 | 63,3 | 63,3 | 63,4 | 63,3 | 63,1 | 62,9 |
| From 65 and over         | 14,2 | 14,1 | 14,1 | 13,8 | 13,8 | 13,8 | 13,6 | 13,7 | 13,8 | 14,1 |
| <b>OLD AGE INDEX</b>     |      |      |      |      |      |      |      |      |      |      |
| From 65 years and over   | 60,0 | 60,0 | 60,3 | 59,6 | 60,1 | 59,9 | 59,2 | 59,1 | 59,5 | 60,8 |

📊 Economical activity. Unemployment and employment rates. Laboral Market.

✓ Unemployed (total/women/men)

|                | TOTAL   |                |                     |                   |
|----------------|---------|----------------|---------------------|-------------------|
|                | TOTAL   | Under 25 years | From 25 to 44 years | 45 years and over |
| <b>2012</b>    |         |                |                     |                   |
| September 2012 | 149.569 | 14.932         | 82.429              | 52.208            |
| August 2012    | 148.120 | 13.636         | 82.441              | 52.043            |
| July 2012      | 144.548 | 13.474         | 80.141              | 50.933            |

|                |              |                       |                            |                          |
|----------------|--------------|-----------------------|----------------------------|--------------------------|
| June 2012      | 145.223      | 15.594                | 79.156                     | 50.473                   |
| May 2012       | 147.873      | 16.964                | 80.576                     | 50.333                   |
| April 2012     | 150.161      | 17.782                | 82.350                     | 50.029                   |
| March 2012     | 151.749      | 18.342                | 83.549                     | 49.858                   |
| February 2012  | 151.232      | 18.279                | 83.699                     | 49.254                   |
| January 2012   | 147.220      | 17.331                | 81.758                     | 48.131                   |
| 2011           | 135.572      | 16.267                | 76.365                     | 42.940                   |
| December 2011  | 142.921      | 17.101                | 79.187                     | 46.633                   |
| November 2011  | 141.718      | 17.664                | 78.409                     | 45.645                   |
| October 2011   | 138.865      | 17.022                | 77.055                     | 44.788                   |
| September 2011 | 136.294      | 16.134                | 76.422                     | 43.738                   |
| August 2011    | 133.089      | 14.612                | 75.308                     | 43.169                   |
| July 2011      | 130.260      | 14.451                | 73.567                     | 42.242                   |
| June 2011      | 130.027      | 14.750                | 73.379                     | 41.898                   |
| May 2011       | 131.027      | 15.518                | 73.940                     | 41.569                   |
| April 2011     | 135.299      | 16.735                | 76.788                     | 41.776                   |
| March 2011     | 137.495      | 17.499                | 78.070                     | 41.926                   |
| February 2011  | 136.739      | 17.517                | 77.907                     | 41.315                   |
| January 2011   | 133.127      | 16.196                | 76.349                     | 40.582                   |
| 2010           | 128.157      | 16.329                | 74.397                     | 37.431                   |
| December 2010  | 128.935      | 15.698                | 73.837                     | 39.400                   |
| November 2010  | 129.202      | 16.660                | 73.711                     | 38.831                   |
| October 2010   | 128.743      | 16.463                | 73.947                     | 38.333                   |
| September 2010 | 129.231      | 16.364                | 74.750                     | 38.117                   |
| August 2010    | 127.535      | 14.832                | 74.679                     | 38.024                   |
| July 2010      | 124.382      | 14.606                | 72.549                     | 37.227                   |
| June 2010      | 125.109      | 15.167                | 72.885                     | 37.057                   |
| May 2010       | 128.402      | 16.566                | 74.760                     | 37.076                   |
| April 2010     | 129.828      | 17.257                | 75.577                     | 36.994                   |
| March 2010     | 130.755      | 17.726                | 76.200                     | 36.829                   |
| February 2010  | 129.443      | 17.711                | 75.671                     | 36.061                   |
| January 2010   | 126.313      | 16.893                | 74.203                     | 35.217                   |
| 2009           | 110.170      | 15.483                | 64.832                     | 29.855                   |
| December 2009  | 122.285      | 16.721                | 71.715                     | 33.849                   |
| November 2009  | 119.433      | 16.988                | 69.543                     | 32.902                   |
| October 2009   | 118.286      | 16.820                | 69.062                     | 32.404                   |
| September 2009 | 115.268      | 15.929                | 67.821                     | 31.518                   |
| August 2009    | 112.649      | 14.630                | 67.041                     | 30.978                   |
| July 2009      | 108.019      | 13.999                | 64.078                     | 29.942                   |
| June 2009      | 106.148      | 14.188                | 62.745                     | 29.215                   |
| May 2009       | 106.737      | 15.233                | 62.835                     | 28.669                   |
| April 2009     | 107.773      | 15.845                | 63.314                     | 28.614                   |
| March 2009     | 105.889      | 15.743                | 62.368                     | 27.778                   |
| February 2009  | 101.894      | 15.228                | 59.885                     | 26.781                   |
| January 2009   | 97.659       | 14.469                | 57.579                     | 25.611                   |
|                | <b>Men</b>   |                       |                            |                          |
|                | <b>TOTAL</b> | <b>Under 25 years</b> | <b>From 25 to 44 years</b> | <b>45 years and over</b> |
| 2012           |              |                       |                            |                          |
| September 2012 | 74.938       | 7.836                 | 40.467                     | 26.635                   |



|                |                       |                            |                          |        |
|----------------|-----------------------|----------------------------|--------------------------|--------|
| August 2012    | 74.916                | 7.281                      | 40.857                   | 26.778 |
| July 2012      | 72.607                | 7.188                      | 39.475                   | 25.944 |
| June 2012      | 72.913                | 8.357                      | 39.040                   | 25.516 |
| May 2012       | 74.154                | 8.986                      | 39.794                   | 25.374 |
| April 2012     | 75.965                | 9.499                      | 41.106                   | 25.360 |
| March 2012     | 76.956                | 9.819                      | 41.772                   | 25.365 |
| February 2012  | 77.052                | 9.763                      | 42.071                   | 25.218 |
| January 2012   | 74.830                | 9.253                      | 40.933                   | 24.644 |
| 2011           | 69.236                | 8.825                      | 38.289                   | 22.121 |
| December 2011  | 72.959                | 9.179                      | 39.880                   | 23.900 |
| November 2011  | 71.406                | 9.436                      | 38.810                   | 23.160 |
| October 2011   | 70.032                | 9.051                      | 38.184                   | 22.797 |
| September 2011 | 69.464                | 8.661                      | 38.283                   | 22.520 |
| August 2011    | 68.811                | 8.015                      | 38.335                   | 22.461 |
| July 2011      | 66.881                | 7.950                      | 37.103                   | 21.828 |
| June 2011      | 66.229                | 8.106                      | 36.582                   | 21.541 |
| May 2011       | 66.891                | 8.483                      | 36.963                   | 21.445 |
| April 2011     | 69.409                | 9.069                      | 38.680                   | 21.660 |
| March 2011     | 70.353                | 9.519                      | 39.144                   | 21.690 |
| February 2011  | 69.933                | 9.539                      | 39.004                   | 21.390 |
| January 2011   | 68.459                | 8.890                      | 38.505                   | 21.064 |
| 2010           | 68.104                | 9.270                      | 38.975                   | 19.859 |
| December 2010  | 66.869                | 8.642                      | 37.699                   | 20.528 |
| November 2010  | 66.378                | 9.120                      | 37.245                   | 20.013 |
| October 2010   | 66.985                | 9.058                      | 37.930                   | 19.997 |
| September 2010 | 68.269                | 9.102                      | 38.969                   | 20.198 |
| August 2010    | 68.595                | 8.537                      | 39.611                   | 20.447 |
| July 2010      | 66.418                | 8.439                      | 38.172                   | 19.807 |
| June 2010      | 66.422                | 8.743                      | 38.007                   | 19.672 |
| May 2010       | 68.529                | 9.470                      | 39.293                   | 19.766 |
| April 2010     | 69.531                | 9.884                      | 39.866                   | 19.781 |
| March 2010     | 70.393                | 10.167                     | 40.506                   | 19.720 |
| February 2010  | 70.117                | 10.224                     | 40.508                   | 19.385 |
| January 2010   | 68.743                | 9.858                      | 39.890                   | 18.995 |
| 2009           | 60.470                | 9.298                      | 34.855                   | 16.317 |
| December 2009  | 66.663                | 9.788                      | 38.592                   | 18.283 |
| November 2009  | 63.984                | 9.802                      | 36.627                   | 17.555 |
| October 2009   | 63.638                | 9.643                      | 36.587                   | 17.408 |
| September 2009 | 63.100                | 9.334                      | 36.460                   | 17.306 |
| August 2009    | 62.576                | 8.811                      | 36.620                   | 17.145 |
| July 2009      | 59.439                | 8.468                      | 34.559                   | 16.412 |
| June 2009      | 58.172                | 8.738                      | 33.604                   | 15.830 |
| May 2009       | 58.747                | 9.312                      | 33.743                   | 15.692 |
| April 2009     | 59.734                | 9.684                      | 34.238                   | 15.812 |
| March 2009     | 58.752                | 9.652                      | 33.740                   | 15.360 |
| February 2009  | 56.523                | 9.342                      | 32.324                   | 14.857 |
| January 2009   | 54.314                | 9.002                      | 31.171                   | 14.141 |
| <b>Women</b>   |                       |                            |                          |        |
| <b>TOTAL</b>   | <b>Under 25 years</b> | <b>From 25 to 44 years</b> | <b>45 years and over</b> |        |

|                |        |       |        |        |
|----------------|--------|-------|--------|--------|
| <b>2012</b>    |        |       |        |        |
| September 2012 | 74.631 | 7.096 | 41.962 | 25.573 |
| August 2012    | 73.204 | 6.355 | 41.584 | 25.265 |
| July 2012      | 71.941 | 6.286 | 40.666 | 24.989 |
| June 2012      | 72.310 | 7.237 | 40.116 | 24.957 |
| May 2012       | 73.719 | 7.978 | 40.782 | 24.959 |
| April 2012     | 74.196 | 8.283 | 41.244 | 24.669 |
| March 2012     | 74.793 | 8.523 | 41.777 | 24.493 |
| February 2012  | 74.180 | 8.516 | 41.628 | 24.036 |
| January 2012   | 72.390 | 8.078 | 40.825 | 23.487 |
| <b>2011</b>    | 66.336 | 7.442 | 38.076 | 20.819 |
| December 2011  | 69.962 | 7.922 | 39.307 | 22.733 |
| November 2011  | 70.312 | 8.228 | 39.599 | 22.485 |
| October 2011   | 68.833 | 7.971 | 38.871 | 21.991 |
| September 2011 | 66.830 | 7.473 | 38.139 | 21.218 |
| August 2011    | 64.278 | 6.597 | 36.973 | 20.708 |
| July 2011      | 63.379 | 6.501 | 36.464 | 20.414 |
| June 2011      | 63.798 | 6.644 | 36.797 | 20.357 |
| May 2011       | 64.136 | 7.035 | 36.977 | 20.124 |
| April 2011     | 65.890 | 7.666 | 38.108 | 20.116 |
| March 2011     | 67.142 | 7.980 | 38.926 | 20.236 |
| February 2011  | 66.806 | 7.978 | 38.903 | 19.925 |
| January 2011   | 64.668 | 7.306 | 37.844 | 19.518 |
| <b>2010</b>    | 60.052 | 7.058 | 35.423 | 17.571 |
| December 2010  | 62.066 | 7.056 | 36.138 | 18.872 |
| November 2010  | 62.824 | 7.540 | 36.466 | 18.818 |
| October 2010   | 61.758 | 7.405 | 36.017 | 18.336 |
| September 2010 | 60.962 | 7.262 | 35.781 | 17.919 |
| August 2010    | 58.940 | 6.295 | 35.068 | 17.577 |
| July 2010      | 57.964 | 6.167 | 34.377 | 17.420 |
| June 2010      | 58.687 | 6.424 | 34.878 | 17.385 |
| May 2010       | 59.873 | 7.096 | 35.467 | 17.310 |
| April 2010     | 60.297 | 7.373 | 35.711 | 17.213 |
| March 2010     | 60.362 | 7.559 | 35.694 | 17.109 |
| February 2010  | 59.326 | 7.487 | 35.163 | 16.676 |
| January 2010   | 57.570 | 7.035 | 34.313 | 16.222 |
| <b>2009</b>    | 49.700 | 6.185 | 29.977 | 13.538 |
| December 2009  | 55.622 | 6.933 | 33.123 | 15.566 |
| November 2009  | 55.449 | 7.186 | 32.916 | 15.347 |
| October 2009   | 54.648 | 7.177 | 32.475 | 14.996 |
| September 2009 | 52.168 | 6.595 | 31.361 | 14.212 |
| August 2009    | 50.073 | 5.819 | 30.421 | 13.833 |
| July 2009      | 48.580 | 5.531 | 29.519 | 13.530 |
| June 2009      | 47.976 | 5.450 | 29.141 | 13.385 |
| May 2009       | 47.990 | 5.921 | 29.092 | 12.977 |
| April 2009     | 48.039 | 6.161 | 29.076 | 12.802 |
| March 2009     | 47.137 | 6.091 | 28.628 | 12.418 |
| February 2009  | 45.371 | 5.886 | 27.561 | 11.924 |
| January 2009   | 43.345 | 5.467 | 26.408 | 11.470 |

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|--|--|--|--|--|

- ✓ Situation of the workers (private/ public / individual entrepreneur / entrepreneur with employees / other situations).

- ✓ Employment and unemployment rate% (total/women/men)

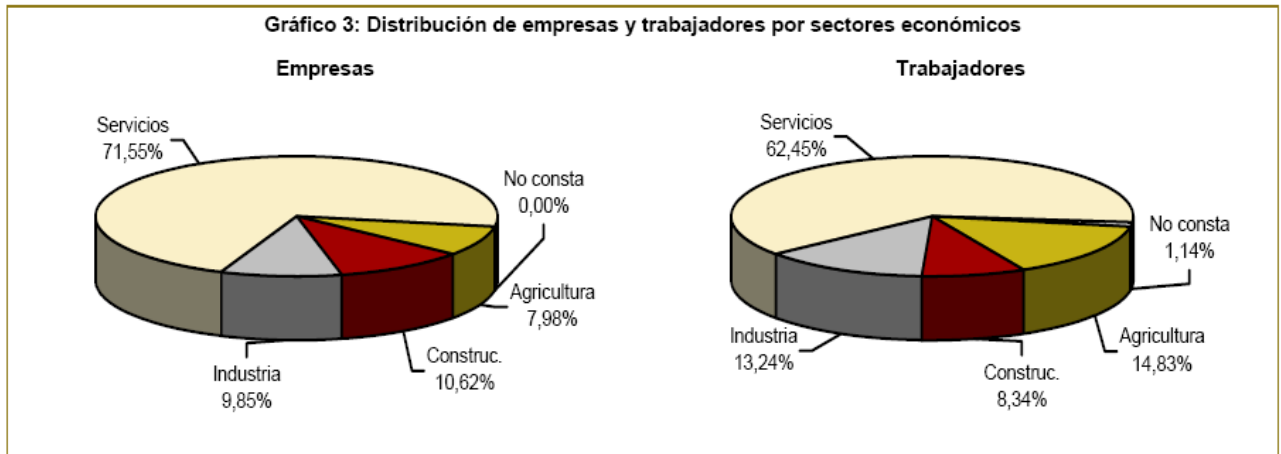
**Tabla 2: EVOLUCIÓN DE LA POBLACIÓN ACTIVA POR SEXO**

| <b>Activos (en miles)</b>  |              |      |              |      |              |      |              |      |              |      |
|----------------------------|--------------|------|--------------|------|--------------|------|--------------|------|--------------|------|
| Hombres                    | 398,6        | 2006 | 419,5        | 2007 | 429,4        | 2008 | 419,5        | 2009 | 429,3        | 2010 |
| Mujeres                    | 259,3        |      | 273,6        |      | 295,8        |      | 299,4        |      | 318,0        |      |
| <b>Total</b>               | <b>657,9</b> |      | <b>693,1</b> |      | <b>725,2</b> |      | <b>718,9</b> |      | <b>747,4</b> |      |
| <b>Ocupados (en miles)</b> |              |      |              |      |              |      |              |      |              |      |
| Hombres                    | 374,4        |      | 390,7        |      | 361,1        |      | 321,1        |      | 320,0        |      |
| Mujeres                    | 231,4        |      | 245,1        |      | 251,5        |      | 236,2        |      | 240,7        |      |
| <b>Total</b>               | <b>605,8</b> |      | <b>635,8</b> |      | <b>612,6</b> |      | <b>557,4</b> |      | <b>560,6</b> |      |
| <b>Parados (en miles)</b>  |              |      |              |      |              |      |              |      |              |      |
| Hombres                    | 24,2         |      | 28,8         |      | 68,3         |      | 98,4         |      | 109,4        |      |
| Mujeres                    | 27,9         |      | 28,5         |      | 44,3         |      | 63,1         |      | 77,3         |      |
| <b>Total</b>               | <b>52,0</b>  |      | <b>57,3</b>  |      | <b>112,6</b> |      | <b>161,5</b> |      | <b>186,7</b> |      |
| <b>Tasa de Actividad</b>   |              |      |              |      |              |      |              |      |              |      |
| Hombres                    | 71,34        |      | 72,64        |      | 72,55        |      | 70,20        |      | 71,69        |      |
| Mujeres                    | 46,97        |      | 48,25        |      | 51,05        |      | 51,09        |      | 53,95        |      |
| <b>Total</b>               | <b>59,24</b> |      | <b>60,56</b> |      | <b>61,91</b> |      | <b>60,74</b> |      | <b>62,90</b> |      |
| <b>Tasa de Empleo</b>      |              |      |              |      |              |      |              |      |              |      |
| Hombres                    | 67,01        |      | 67,65        |      | 61,01        |      | 53,73        |      | 53,44        |      |
| Mujeres                    | 41,92        |      | 43,23        |      | 43,41        |      | 40,31        |      | 40,84        |      |
| <b>Total</b>               | <b>54,55</b> |      | <b>55,55</b> |      | <b>52,30</b> |      | <b>47,09</b> |      | <b>47,18</b> |      |
| <b>Tasa de Paro</b>        |              |      |              |      |              |      |              |      |              |      |
| Hombres                    | 6,07         |      | 6,87         |      | 15,91        |      | 23,46        |      | 25,48        |      |
| Mujeres                    | 10,76        |      | 10,42        |      | 14,98        |      | 21,08        |      | 24,31        |      |
| <b>Total</b>               | <b>7,90</b>  |      | <b>8,27</b>  |      | <b>15,53</b> |      | <b>22,46</b> |      | <b>24,98</b> |      |

Tabla 4: PERFIL DE LOS TRABAJADORES SEGÚN RÉGIMEN DE AFILIACIÓN A LA SEGURIDAD SOCIAL

|                |         | General | Agrario | Hogar | Mar | Carbón | Autónomos | Total   |
|----------------|---------|---------|---------|-------|-----|--------|-----------|---------|
| Sexo           | Hombres | 189.660 | 45.849  | 374   | 813 | 0      | 61.985    | 298.681 |
|                | Mujeres | 161.190 | 19.736  | 8.489 | 33  | 0      | 30.473    | 219.921 |
| Tramos de edad | 16 a 24 | 27.920  | 6.254   | 309   | 42  | 0      | 2.544     | 37.069  |
|                | 25 a 34 | 108.043 | 23.089  | 1.949 | 204 | 0      | 17.752    | 151.037 |
|                | 35 a 44 | 105.440 | 19.814  | 2.240 | 309 | 0      | 28.944    | 156.747 |
|                | 45 a 54 | 75.908  | 11.101  | 2.492 | 215 | 0      | 25.872    | 115.588 |
|                | >=55    | 33.534  | 5.326   | 1.874 | 76  | 0      | 17.346    | 58.156  |
| No consta      |         | 5       | 1       | 0     | 0   | 0      | 0         | 6       |
| Total          |         | 350.850 | 65.585  | 8.864 | 846 | 0      | 92.458    | 518.603 |

Gráfico 3: Distribución de empresas y trabajadores por sectores económicos

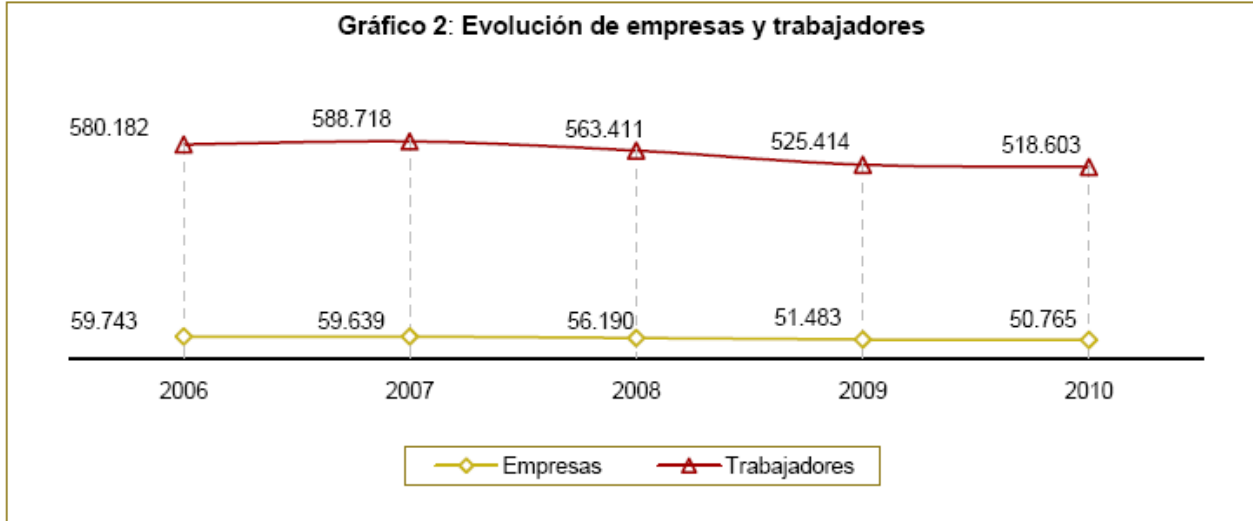


✓ Sectors (agriculture/construction/industry/services)

|                | Total   | Agriculture | Industry | Construction | Services |
|----------------|---------|-------------|----------|--------------|----------|
| <b>2012</b>    |         |             |          |              |          |
| September 2012 | 149.569 | 10.278      | 18.833   | 25.454       | 84.731   |
| August 2012    | 148.120 | 10.367      | 18.869   | 25.806       | 83.341   |
| July 2012      | 144.548 | 9.842       | 18.243   | 25.357       | 81.175   |
| June 2012      | 145.223 | 9.379       | 18.483   | 25.675       | 80.701   |
| May 2012       | 147.873 | 9.159       | 18.709   | 26.325       | 82.338   |
| April 2012     | 150.161 | 9.848       | 18.647   | 27.298       | 82.963   |
| March 2012     | 151.749 | 10.158      | 19.089   | 27.490       | 83.705   |
| February 2012  | 151.232 | 10.209      | 19.129   | 27.639       | 83.311   |
| January 2012   | 147.220 | 9.347       | 18.775   | 27.416       | 81.266   |
| <b>2011</b>    | 135.572 | 8.639       | 17.283   | 26.331       | 73.930   |
| December 2011  | 142.921 | 9.212       | 18.326   | 27.062       | 78.087   |
| November 2011  | 141.718 | 9.068       | 18.228   | 26.226       | 77.845   |
| October 2011   | 138.865 | 9.167       | 17.864   | 25.740       | 76.113   |

|                |         |       |        |        |        |
|----------------|---------|-------|--------|--------|--------|
| September 2011 | 136.294 | 8.857 | 17.362 | 25.818 | 74.644 |
| August 2011    | 133.089 | 9.197 | 17.267 | 25.892 | 71.807 |
| July 2011      | 130.260 | 8.957 | 16.576 | 25.346 | 70.336 |
| June 2011      | 130.027 | 8.215 | 16.591 | 25.400 | 70.823 |
| May 2011       | 131.027 | 7.710 | 16.707 | 26.071 | 71.406 |
| April 2011     | 135.299 | 8.267 | 16.988 | 27.175 | 73.494 |
| March 2011     | 137.495 | 8.453 | 17.382 | 27.154 | 75.141 |
| February 2011  | 136.739 | 8.365 | 17.284 | 27.115 | 74.797 |
| January 2011   | 133.127 | 8.203 | 16.815 | 26.973 | 72.666 |
| 2010           | 128.157 | 8.063 | 16.952 | 28.285 | 67.119 |
| December 2010  | 128.935 | 8.158 | 16.587 | 26.917 | 69.031 |
| November 2010  | 129.202 | 8.362 | 16.406 | 26.364 | 69.602 |
| October 2010   | 128.743 | 8.468 | 16.479 | 26.797 | 68.779 |
| September 2010 | 129.231 | 8.602 | 16.522 | 27.554 | 68.440 |
| August 2010    | 127.535 | 8.744 | 16.734 | 28.409 | 66.104 |
| July 2010      | 124.382 | 8.288 | 16.345 | 27.564 | 64.626 |
| June 2010      | 125.109 | 7.873 | 16.606 | 27.934 | 65.026 |
| May 2010       | 128.402 | 7.793 | 17.176 | 28.914 | 66.764 |
| April 2010     | 129.828 | 7.979 | 17.310 | 29.357 | 67.413 |
| March 2010     | 130.755 | 7.859 | 17.810 | 29.841 | 67.641 |
| February 2010  | 129.443 | 7.476 | 17.844 | 29.951 | 67.010 |
| January 2010   | 126.313 | 7.153 | 17.602 | 29.822 | 64.992 |
| 2009           | 110.170 | 5.261 | 16.355 | 27.584 | 55.696 |
| December 2009  | 122.285 | 6.797 | 17.395 | 29.148 | 62.437 |
| November 2009  | 119.433 | 6.663 | 16.942 | 27.552 | 61.736 |
| October 2009   | 118.286 | 6.251 | 16.901 | 27.476 | 61.392 |
| September 2009 | 115.268 | 5.912 | 16.622 | 27.794 | 59.162 |
| August 2009    | 112.649 | 5.796 | 16.685 | 28.344 | 56.444 |
| July 2009      | 108.019 | 5.333 | 16.172 | 26.852 | 54.353 |
| June 2009      | 106.148 | 4.731 | 15.992 | 26.717 | 53.437 |
| May 2009       | 106.737 | 4.331 | 16.196 | 27.267 | 53.523 |
| April 2009     | 107.773 | 4.389 | 16.260 | 28.253 | 53.743 |
| March 2009     | 105.889 | 4.287 | 16.281 | 28.146 | 52.736 |
| February 2009  | 101.894 | 4.215 | 15.856 | 27.249 | 50.772 |
| January 2009   | 97.659  | 4.425 | 14.956 | 26.205 | 48.620 |

✓ Employment generation



**Use of private vehicles. Motorisation:**

**Analysis of the mobility:**

- ✚ Mechanized and non-mechanized mobility

**Vehicles per 1.000 pop.**

|      | MURCIA (Region of) | SPAIN |
|------|--------------------|-------|
| 1992 | 456,0              | 443,2 |
| 1993 | 466,0              | 447,6 |
| 1994 | 475,0              | 452,9 |
| 1995 | 490,0              | 465,8 |
| 1996 | 498,0              | 492,8 |
| 1997 | 519,0              | 515,9 |
| 1998 | 540,0              | 534,6 |
| 1999 | 578,0              | 568,0 |
| 2000 | 605,0              | 590,0 |
| 2001 | 617,0              | 600,0 |
| 2002 | 636,6              | 616,1 |
| 2003 | 603,0              | 596,0 |
| 2004 | 621,2              | 614,2 |
| 2005 | 648,8              | 614,2 |
| 2006 | 669,9              | 648,7 |
| 2007 | 702,0              | 684,9 |
| 2008 | 689,9              | 683,9 |
| 2009 | 675,2              | 673,3 |
| 2010 | 671,0              | 675,9 |
| 2011 | 670,3              | 677,5 |

✚ Public and private transport mobility.

### Public transport evolution

|                | Viajeros transportados (miles) | Variación anual |
|----------------|--------------------------------|-----------------|
| <b>2012</b>    |                                |                 |
| August 2012    | 837,0                          | -2,9            |
| July 2012      | 1.067,0                        | -2,4            |
| June 2012      | 1.527,0                        | -2,7            |
| May 2012       | 1.831,0                        | 6,1             |
| April 2012     | 1.556,0                        | 3,5             |
| March 2012     | 1.769,0                        | -0,5            |
| February 2012  | 1.755,0                        | 8,6             |
| January 2012   | 1.792,0                        | 14,8            |
| <b>2011</b>    |                                |                 |
| December 2011  | 1.396,0                        | -2,7            |
| November 2011  | 1.696,0                        | -0,1            |
| October 2011   | 1.667,0                        | -2,0            |
| September 2011 | 1.565,0                        | 3,3             |
| August 2011    | 863,0                          | 0,7             |
| July 2011      | 1.093,0                        | -6,2            |
| June 2011      | 1.569,0                        | 10,7            |
| May 2011       | 1.726,0                        | 12,5            |
| April 2011     | 1.503,0                        | 0,8             |
| March 2011     | 1.777,0                        | 10,6            |
| February 2011  | 1.616,0                        | 9,8             |
| January 2011   | 1.562,0                        | 8,4             |
| <b>2010</b>    |                                |                 |
| December 2010  | 1.436,0                        | 0,1             |
| November 2010  | 1.698,0                        | 3,9             |
| October 2010   | 1.701,0                        | 0,1             |
| September 2010 | 1.515,0                        | 4,9             |
| August 2010    | 786,0                          | 2,1             |
| July 2010      | 1.166,0                        | -6,5            |
| June 2010      | 1.417,0                        | -1,3            |
| May 2010       | 1.535,0                        | -0,4            |
| April 2010     | 1.491,0                        | 5,0             |
| March 2010     | 1.606,0                        | 1,8             |
| February 2010  | 1.472,0                        | 0,2             |
| January 2010   | 1.440,0                        | -3,1            |
| <b>2009</b>    |                                |                 |
| December 2009  | 1.435,0                        | -3,1            |
| November 2009  | 1.634,0                        | 4,7             |
| October 2009   | 1.700,0                        | -2,6            |
| September 2009 | 1.444,0                        | -6,4            |
| August 2009    | 769,0                          | -12,5           |
| July 2009      | 1.247,0                        | -4,3            |

|                |         |       |
|----------------|---------|-------|
| June 2009      | 1.435,0 | -6,9  |
| May 2009       | 1.541,0 | -8,5  |
| April 2009     | 1.420,0 | -20,3 |
| March 2009     | 1.579,0 | 9,7   |
| February 2009  | 1.468,0 | -19,5 |
| January 2009   | 1.485,0 | -21,7 |
| <b>2008</b>    |         |       |
| December 2008  | 1.480,0 | -12,0 |
| November 2008  | 1.560,0 | -21,6 |
| October 2008   | 1.746,0 | -9,0  |
| September 2008 | 1.542,0 | -3,8  |
| August 2008    | 880,0   | -22,2 |
| July 2008      | 1.304,0 | -17,2 |
| June 2008      | 1.542,0 | -7,8  |
| May 2008       | 1.684,0 | -9,0  |
| April 2008     | 1.783,0 | 7,5   |
| March 2008     | 1.439,0 | -26,5 |
| February 2008  | 1.825,0 | 2,8   |
| January 2008   | 1.897,0 | 1,4   |
| <b>2007</b>    |         |       |
| December 2007  | 1.683,0 | 6,9   |
| November 2007  | 1.991,0 | 8,3   |
| October 2007   | 1.918,0 | -0,7  |
| September 2007 | 1.603,0 | -7,8  |
| August 2007    | 1.131,0 | -5,1  |
| July 2007      | 1.574,0 | -1,0  |
| June 2007      | 1.673,0 | -1,8  |
| May 2007       | 1.851,0 | -9,4  |
| April 2007     | 1.659,0 | 8,0   |
| March 2007     | 1.959,0 | -3,5  |
| February 2007  | 1.775,0 | 0,5   |
| January 2007   | 1.871,0 | -0,7  |
| <b>2006</b>    |         |       |
| December 2006  | 1.574,0 | -12,1 |
| November 2006  | 1.838,0 | -8,4  |
| October 2006   | 1.931,0 | -4,0  |
| September 2006 | 1.739,0 | -9,8  |
| August 2006    | 1.191,0 | -1,4  |
| July 2006      | 1.590,0 | 16,5  |
| June 2006      | 1.704,0 | -6,3  |
| May 2006       | 2.045,0 | 1,9   |
| April 2006     | 1.536,0 | -23,0 |
| March 2006     | 2.031,0 | 15,1  |
| February 2006  | 1.766,0 | 2,2   |
| January 2006   | 1.884,0 | -18,0 |
| <b>2005</b>    |         |       |
| December 2005  | 1.792,0 | -12,4 |
| November 2005  | 2.006,0 | -17,7 |
| October 2005   | 2.011,0 | -16,2 |



|                |         |       |
|----------------|---------|-------|
| September 2005 | 1.928,0 | -12,4 |
| August 2005    | 1.208,0 | -10,7 |
| July 2005      | 1.365,0 | -28,8 |
| June 2005      | 1.819,0 | -14,6 |
| May 2005       | 2.007,0 | -15,6 |
| April 2005     | 1.993,0 | -3,2  |
| March 2005     | 1.764,0 | -27,2 |
| February 2005  | 1.728,0 | -19,4 |
| January 2005   | 2.298,0 | 5,9   |
| <b>2004</b>    |         |       |
| December 2004  | 2.046,0 | -1,1  |
| November 2004  | 2.439,0 | 8,8   |
| October 2004   | 2.398,0 | -2,2  |
| September 2004 | 2.202,0 | 5,3   |
| August 2004    | 1.352,0 | 30,1  |
| July 2004      | 1.917,0 | 10,4  |
| June 2004      | 2.131,0 | 1,9   |
| May 2004       | 2.377,0 | 7,5   |
| April 2004     | 2.060,0 | 7,7   |
| March 2004     | 2.423,0 | 11,1  |
| February 2004  | 2.145,0 | 8,4   |
| January 2004   | 2.169,0 | 3,7   |

#### Timescale:

##### Duration of practice or project

Having CESPA granted cleaning and waste management for 20 years, this project has a minimum term of that long.

##### Execution phase in which is

The intention is to increase the number of electric vehicles over the next 20 years, as they have to go by fleet renewals and adapting to improvements in supply and performance of electric vehicles in the future

### **Necessary Human / economic / technological resources and skills to realize and to manage the Best Practice:**

Electric vehicles have the same characteristics as conventional ones and require minimal maintenance. These vehicles are very reliable and robust. Therefore do not require specific resources for proper operation

### **Monitoring and results:**

#### **Results demonstrated (through indicators)**

Indicators are not available to evaluate results but there are available studies in the sector, technical data of the vehicles and calculations made in the presentation of the project.

"Electric Power Research Institute" calculated, as an average, that substitution of other conventional vehicles to electrical ones reduced by more than 90% urban emissions of NOx and CO and that the total amount of CO2 emitted decreases by 50%.

From the standpoint of energy efficiency, the energy efficiency of electric vehicles against the traditional diesel combustion, improved values around 10%, so that the use of these solutions is ideal for electrical fleets of vehicles used for performing public services.

#### **Dificultes encountered:**

No difficulties have been encountered on the fleet of electric vehicles

### **Remarks:**

The experience in the use of electric vehicles by CESPAs is highly satisfactory. It is valued mainly by:

- Reliability
- Reduced maintenance costs
- Reducing fuel costs
- Reduction of emissions
- The reduction of noise pollution

## ANNEX 1: ELECTRIC MOBILITY

### TYPE OF VEHICLE:

CESPA currently has in its fleet:

|            |   |                                  |         |
|------------|---|----------------------------------|---------|
| Eléctricos | 1 | Barredora eléctrica              | Tennant |
|            | 1 | Fregadora eléctrica              | Tennant |
|            | 7 | Vehículo caja abierta basculante | Piaggio |
|            | 4 | Vehículo caja cerrada            | Piaggio |
|            | 1 | Vehículo caja con hidrolimpiador | Piaggio |
|            | 1 | Vehículo abierto basculante      | Grau    |



## TECHNICAL CHARACTERISTICS OF VEHICLES:

### Furgone Porter Electric Power - Standard

|               |  |
|---------------|--|
| Motor         | Recharge: electric current and series excitation |
| Power         | electrical                                       |
| Maximum power | 10,5 kW a 96 Volt                                |
| Autonomy      | 110 Km (urbano + extraurbano)                    |
| Traction      | Rear   |
| Maximum speed | 57 Km/h  |
| Tires         | 155 R 12 C 86/88 N                               |
| Total weight  | 1.850 kg   |

### Sweeper and Scrubber Tennant 500 ZE

#### 500ze MACHINE SPECIFICATIONS \*

##### SCANNING SYSTEM

Type Suction Sweeper

Clearing width: minimum (brushes retracted) 1,300 mm

Maximum (brushes fully deployed) 1,900 mm

Volume capacity of 0.75 m<sup>3</sup> hopper

##### DUST CONTROL SYSTEM

Filtering system of three-stage dust filtering

Stage 1 side entry Turntables

Stage 2 Screen stainless steel filter

Stage 3 Dual Dust Collector

Dust suppression system

CloudMaker ® Standard

Suction impeller 10 steel alloy sheets

##### PROPULSION SYSTEM

Motor drive AC induction motor of 15kW (max.)

Suspension: front and rear coilover suspension with damper

Travel speed up to 25 km / h

Sweep speed 0-12 km / h

## SUPPLY MODALITIES

### ⚡ Recharging points:

CESPA has in its main grounds 15 recharging points for all electric vehicles in its fleet

## ENERGY SOURCES

CESPA out in the Treatment Center Cañada Hermosa has a cogeneration system that allows it to produce electricity.

With the electricity produced by the three existing cogeneration engines sufficiency energy is produced to power the Treatment Center. Additionally, the installation of future wind energy turbines will help increase energy surplus. This self-provisioning involves a reduction of CO<sub>2</sub> emissions and eliminates the power consumption of the network and, therefore, emissions associated therewith.

| Produccion Energetica de Planta de Biogas |           |         |         |                 |                 |           |           |             |                |
|---|-----------|---------|---------|-----------------|-----------------|-----------|-----------|-------------|----------------|
| Año                                       | Horas Año |         |         | Total Horas Año | Kw/h Producidos |           |           | Autoconsumo | Total Kw/h Año |
|   | Motor 1   | Motor 2 | Motor 3 |                 | Motor 1         | Motor 2   | Motor 3   |             |                |
| 2006                                      | 4.377     | 4.729   | 7.348   | 16.454          | 3.005.187       | 3.184.851 | 7.551.625 | 5.060.747   | 13.741.663     |
| 2007                                      | 4.461     | 5.048   | 7.251   | 16.760          | 3.333.558       | 4.022.891 | 8.518.675 | 4.812.287   | 15.875.124     |
| 2008                                      | 5.511     | 6.723   | 7.688   | 19.922          | 4.219.777       | 5.096.233 | 8.019.375 | 5.289.033   | 17.335.385     |
| 2009                                      | 5.236     | 4.905   | 7.001   | 17.142          | 4.182.726       | 3.736.275 | 7.555.375 | 4.517.278   | 15.474.376     |
| 2010                                      | 6.846     | 2.676   | 7.144   | 16.666          | 5.947.261       | 2.333.045 | 8.145.375 | 4.159.342   | 16.425.681     |

| Reduccion de Emisiones de CO <sub>2</sub> , por captacion de Biogas y Produccion Electrica |                                  |          |  |                                       |                          |   |
|--|----------------------------------|----------|--|---------------------------------------|--------------------------|---|
| Año  | Biogas Captado (m <sup>3</sup> ) |          | Total Biogas Captado (m <sup>3</sup> ) | Ahorro Emisiones CO <sub>2</sub> - Tm |                          | Total Ahorro Emisiones CO <sub>2</sub> - Tm |
|  | Motores                          | Antorcha |  | Por Biogas Captado                    | Por Produccion Electrica |   |
| 2006   | 10.040.170                       | 528.430  | 10.568.600                             | 61.801,58                             | 6.733,41                 | 68.534,99                                   |
| 2007   | 10.919.300                       | 574.700  | 11.494.000                             | 67.213,00                             | 7.778,81                 | 74.991,81                                   |
| 2008   | 11.140.080                       | 586.320  | 11.726.400                             | 68.572,00                             | 8.494,34                 | 77.066,34                                   |
| 2009   | 10.671.920                       | 561.680  | 11.233.600                             | 65.690,27                             | 7.582,44                 | 73.272,72                                   |
| 2010   | 10.693.200                       | 562.800  | 11.256.000                             | 65.821,26                             | 8.048,58                 | 73.869,84                                   |



## **ELECTRICAL LOCAL POLICIES WHICH ARE ADOPTED IN THE MUNICIPALITY/REGION/COUNTRY:**

### **Super Valle Electricity Rate for electric vehicle charging**

The **Royal Decree** approved by the Government and published on Monday 20th May in the Government Gazette in which also regulates the activity of loading managers, the new **Rate of last resort (TUR)**, which includes the supervalle schedule, includes an access "toll" to supplies with voltages not exceeding 1 kV and with a contracted power higher than 10 kW and equal or less than 15 kW.

These are the different **periods** that regulate the rates:

- P1, 10 hours / day (higher rate).
- P2, 8 hours / day.
- P3, 6 hours / day (Rate Supervalle).

Winter and summer:

- P1, 13:00 to 23:00 (higher rate).
- P2, 0:00 - 1:00, 7:00 - 13:00, 23:00 - 24:00.
- P3, 1:00 to 7:00 (Rate Supervalle).