



European Green Capital Award 2016

3. Green urban areas incorporating Sustainable Land Use



An initiative of the European Commission

2016



Spain

3. GREEN URBAN AREAS INCORPORATING SUSTAINABLE LAND USE

3A. Present Situation

Describe the present situation in relation to green urban areas incorporating sustainable land use, including any relevant disadvantages or constraints resulting from historical, geographical and/or socio-economic factors which may have influenced this indicator area. Where available, information/data should be provided from previous years (5 – 10) to show trends.

Include information on the indicators mentioned below for both the inner city area and the overall city area:

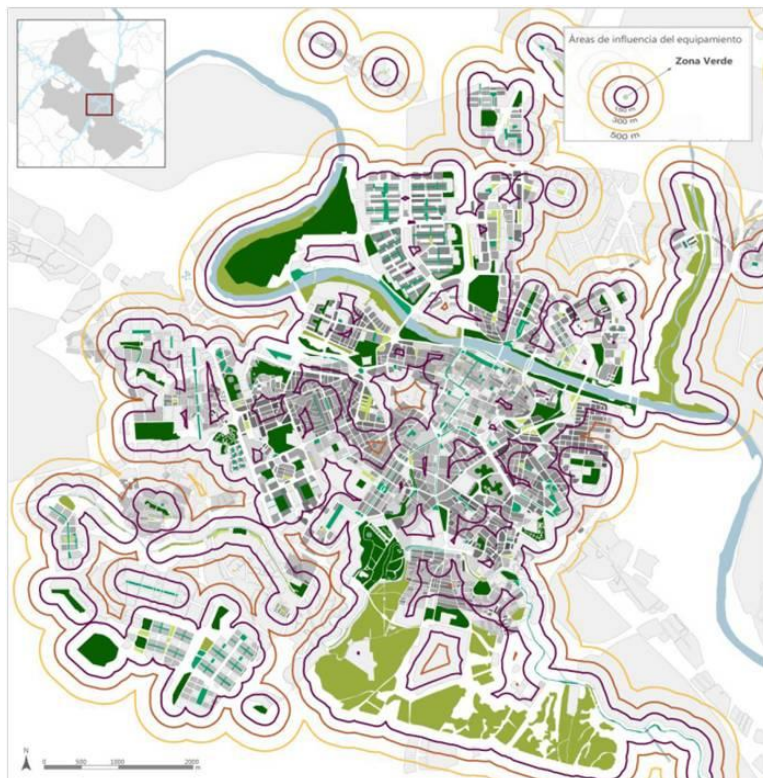
1. The percentage of citizens living within 300m of public green urban areas > 5000m² and public green urban areas of any size;
2. The percentage of green areas, blue areas (water areas), residential areas, industrial or economic areas, mixed areas, brownfields (this will provide important background information on the character of the city and is not an evaluation criterion itself);
3. New developments: proportion of brownfield sites, densification in the inner-city or urban cores, greenfields;
4. Population density (inhabitants per hectare) in built-up areas (city area minus green and blue areas);
5. Population density (inhabitants per hectare) for new developments;
6. Quality of green and blue areas;
7. Investments in green infrastructures (e.g. sustainable urban drainage, green rooftops...).

Maps:

- Provide a land use map that indicates 1) the municipality boundaries delineating the overall city area and 2) the inner city area.
- Provide the percentage of green and blue areas (public and private) and soil sealing in relation to 1) the overall city area and 2) the inner city area, including trends over the past five to ten years.
- Provide additional maps showing city parks, the scale of green and blue areas in the city and their connectivity and coherence.

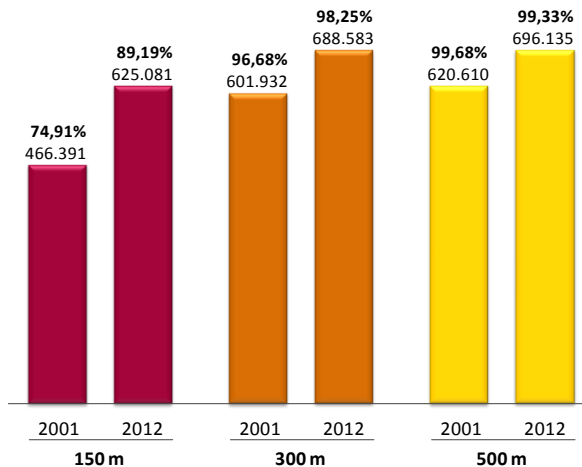
(1)

100% of the population is less 300 metres from a green area (*graphic 1*)



Graphic 1. Accessibility of the population by distances

This situation was also positive in 2001 even though in the last years there has been an increase in absolute values as a consequence of the important investments made in the river banks and new parks (*Graphic 2*)



Graphic 2. Accessibility of the population to green areas. Variation 2001-2012

The most important improvement has taken place in accessibility. Citizens with a reduced mobility (children, elderly and handicapped people) are only 150 metres from public areas.

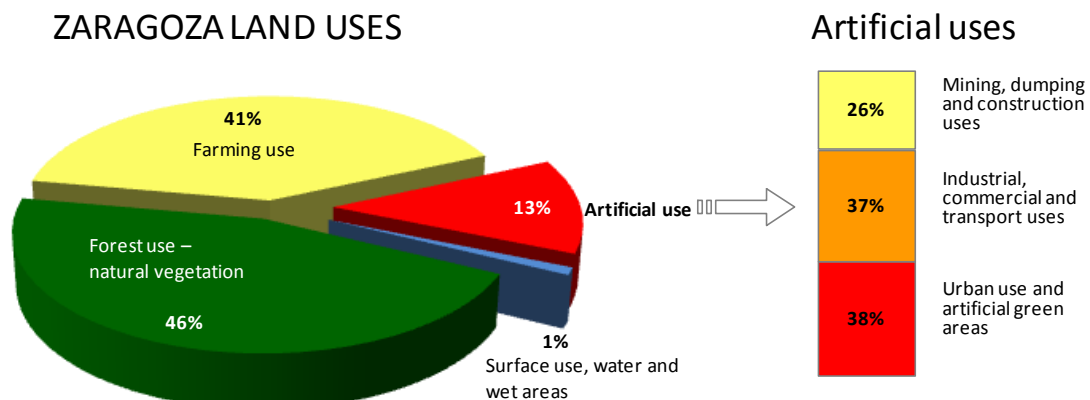
(2)

Distribution of land uses (*Graphic 3*)

ZARAGOZA LAND USES	ha	% municipality
ARTIFICIAL USES	12.165	13%
Urban use and artificial green areas	4.614	
Industrial, commercial and transport uses	4.448	
Mining, dumping and construction uses	3.103	
FARMING USES	39.719	41%
FOREST USES IN NATURAL AREAS	44.306	46%
WET AREAS AND WATER	679	1%

Graphic 3. Land uses

An 87% of the municipal territory is covered by forest, natural vegetation or farm uses. Artificial uses represent a 13% of the surface (*Graphic 4*). This reflects the special configuration of this territory and the high level of compactness of its urban area.



Graphic 4. Artificial uses

(3)

Metropolitan area: a few very important supra-municipal projects have been implemented in periurban surroundings:

- ✓ Zaragoza Logistics Platform (2008) with 1,083,76 has (275 has of green areas and a park of 67.8 has).
- ✓ Recycling Technological Park with 835.09 has (215.47 has of green area including the sealing of the old municipal dumping site).
- ✓ Empresarium industrial area, with 350 has.

Puerto Venecia Mall, with 52 has.

All this represents a total of 2,320,85 new planned hectares and sealed land, a 2.3% of the municipal surface and a 33.2m² of sealed land/person.

Urban area: the residential enlargement of the city is taking place mainly in its North and South poles, with the promotion of new neighbourhoods already consolidated such as those of Valdespartera (South) and Parque Goya (North).

The proposal of new developments focuses on two areas in the South of the city with the fourth ring road as its natural limit:

- ✓ Arcosur: 21,148 new homes in a surface of 435 ha around a vast park with more than 150 ha.
- ✓ Parque Venecia: 4,103 new households in a surface of 95.8 ha composed of 221 ha of green and reforested areas.

Parks and Gardens: The city has 778.73 ha of green area (parks and gardens) and 67.8 ha of park placed in its periurban surroundings (*Graphic 5*).

This makes a total of 846.53 ha representing a 18.34 % of the artificial surfaces and a ratio of 12.1 m²/person.

Zaragoza has the highest ratio of green area per person among the big Spanish cities:



Graphic 5. Water Park, Parque Grande, River Promenade

(4)

The territorial structure of Zaragoza is complex since 96% of its population lives in less than a 25% of the surface. It is a compact population living in a wide municipal territory that corresponds to many of the criteria of compactness and continuity being set out as a sustainable urban model.

The gross density is 7.21 inhabitants per hectare. The net density on urban land is 151.46 inhab/ha

(5) (see map)

Density in new developments:

- ✓ Arcosur: 21,148 new households in a surface of 435 ha.
- ✓ Parque Venecia: 4,103 new households in a surface of 95.8 ha.

Estimating an average size of 2.58 persons/household, it means a density of 122.7 inhab/ha in these new housing projects.

(6)

Zaragoza Strategy on Biodiversity and the new Zaragoza Green Infrastructure of Zaragoza project have structured the city's natural wealth around three elements:

- Blue matrix: rivers, humid areas, pools, gullies, ditches and canals
- Green matrix: LIC, ZEPA and singular areas; green urban layout
- Connections: Zaragoza green ring (60 km), network of rural paths (410 km) network of ditches.

Green areas

Red Natura 2000:

- LIC (Place of Community Importance): 24,652 ha, 25% of the territory.
- ZEPA (Zone of Special Bird Protection): 11,359 ha, 12% of the territory.
- 24,421 hectares of habitats of community interest

It is added the inventory of the municipal natural areas (13,200 ha) and the General Plan of Urban Planning and its 52,806 hectares of special protection.

Therefore, a 38% of Zaragoza territory is protected.

Land uses corresponding to forest areas and open spaces represent a 44% of the territory and 46% of farming land.

In this sense, the City of Zaragoza has started many actions for the conservation of this large and valuable natural territory such as the Strategy for the Conservation of Biodiversity of Zaragoza or in the framework of the General Plan or Urban Planning, the Special Plan of the Steppe and the undevelopable land at the South of the municipality.

Blue areas

The municipal territory of Zaragoza is crossed by three rivers (Ebro, Gállego and Huerva) and the Canal Imperial de Aragón, with river banks that form true shelters of biodiversity and of special environmental interest for the enjoyment of its citizens, such as groves, abandoned meanders, river bank linear paths with trees, etc.

Apart from the river ways, there are green zones such as the Galacho de Juslibol, abandoned meander of the river Ebro that forms part of the LIC "Groves and small isles of the Ebro".

Blue areas represent 679 ha.

(7)

Zaragoza suffers extreme weather conditions that limit the use of determined green infrastructures due to its high maintenance cost and water consumption. Nevertheless, the investment made in the last eight years has produced an increase of green areas, from 5.73m²/inhab to the current 12.1 m²/inhab.:

- vertical garden at Delicias district: public building 14.40 metres high with a vertical surface of 800 m² for gardening, with 84 different species (*graphic 6*)



Graphic 6. Delicias Vertical Garden, Ebro Environmental Centre (detail of vegetation and photovoltaic panels on the cover)

- Ebro Environmental Centre: it integrates constructive and energy solutions by the use of ecological and gardened covers, and solar photovoltaic panels. It has been awarded as the Best Mediterranean Architecture
- Action for the reform and improvement of city squares and parks with new trees and green areas, services and the improvement of accessibility for children, handicapped and old people.
- Green paths of the Canal Imperial and Huerva river banks
- Zaragoza Green Ring. With a length of 60 km, it is the backbone of the connections of the city and its surrounding area for the citizens (*graphic 7*)



Graphic 7. Green Ring along river Gállego, Oliver-Valdefierro Green Corridor.

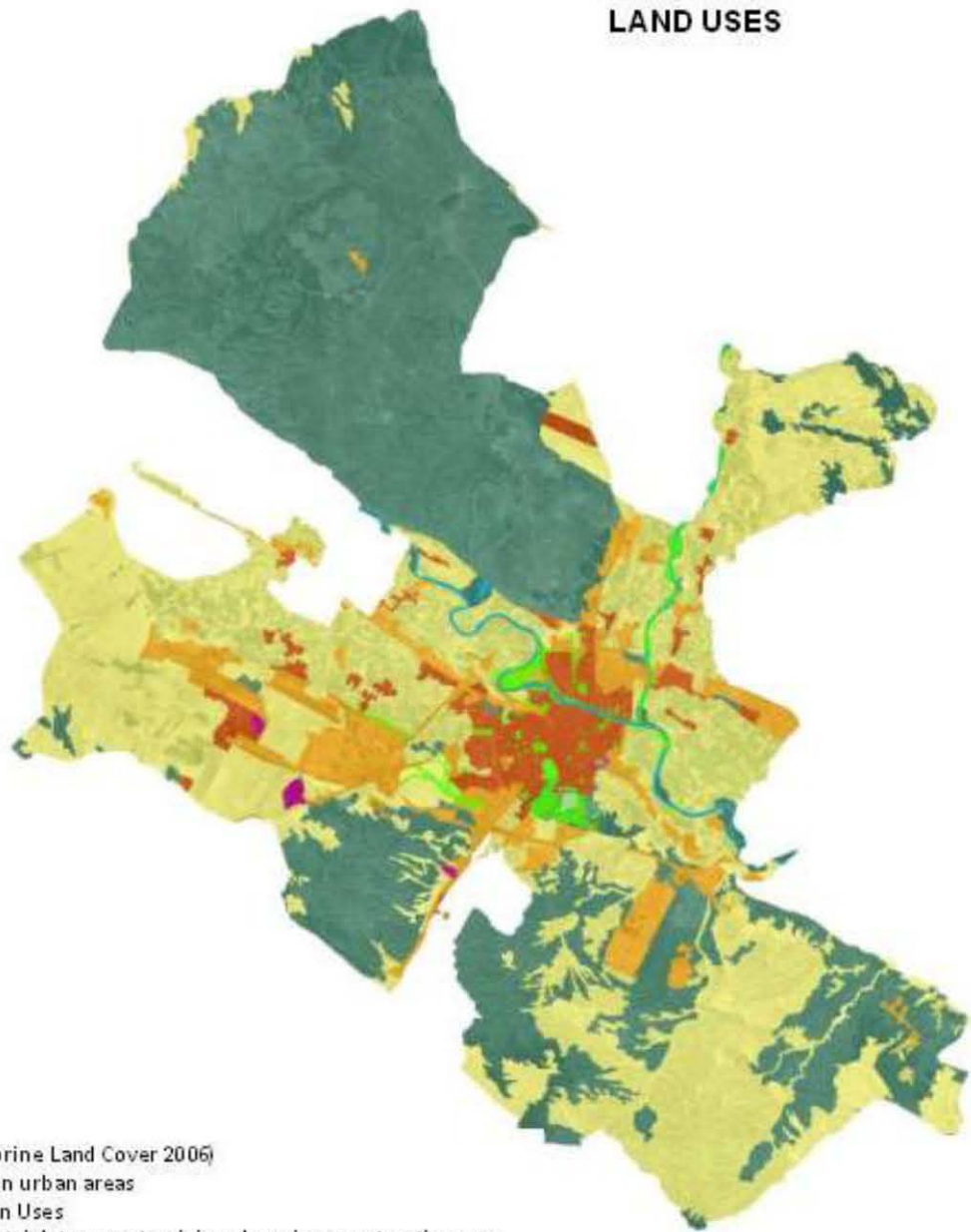
- Integration of Zaragoza's tram:
 - canopies with self-sufficient gardens with plants adapted to dry and scarce soil, "sedums", protecting from sunrays
 - "Green carpet" of natural lawn in different stretches.

The EC has passed two projects LIFE+2012 for Zaragoza, with a total cost of 3.9 million euros for the city aiming to deep into the improvement and sustainability of its natural surrounding area.


MAPS

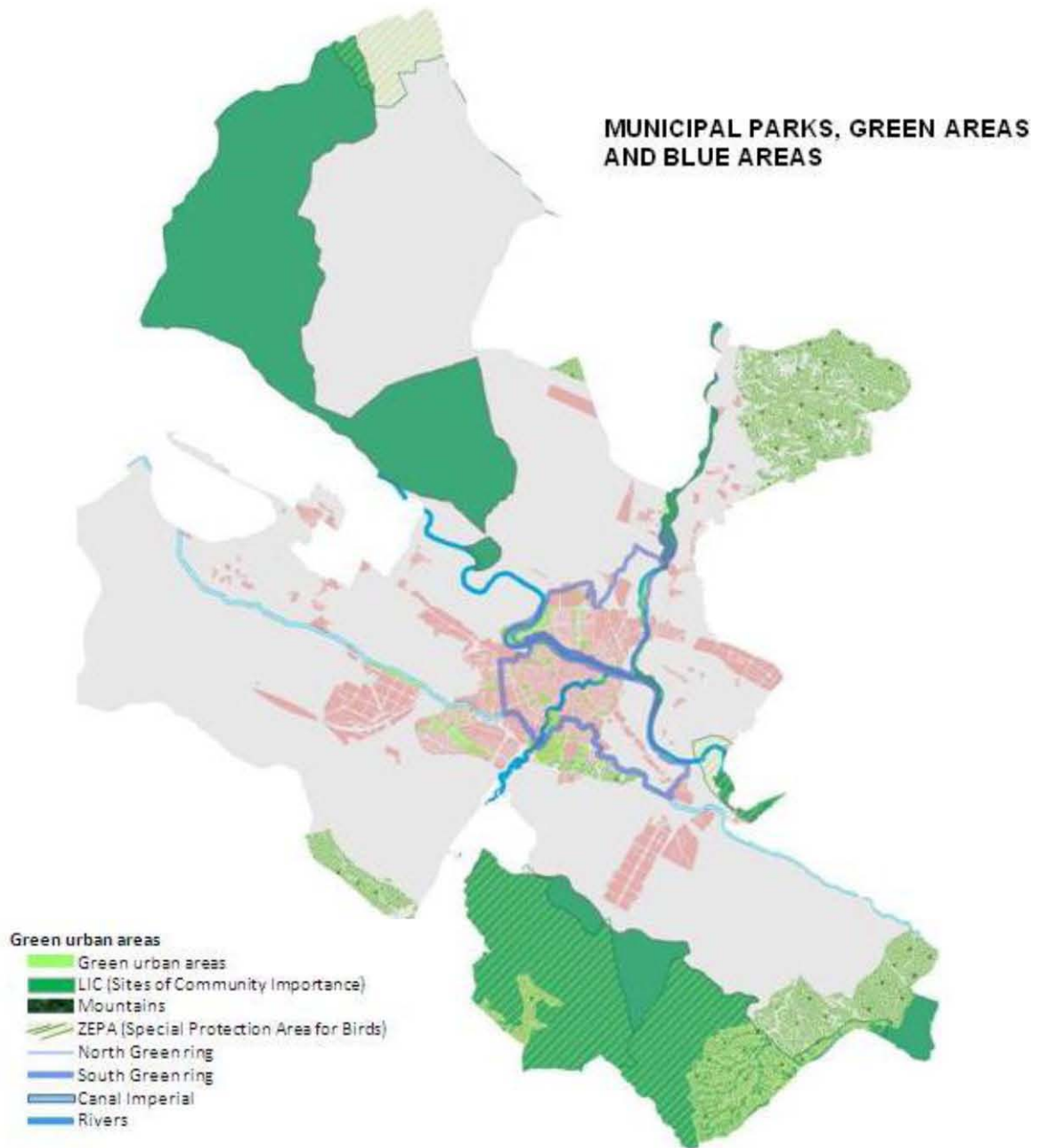
- ✓ Map of land use
- ✓ Map of green and blues zones and municipal parks
- ✓ Map of population densities by districts
- ✓ Map of territory density 2008-2013

LAND USES

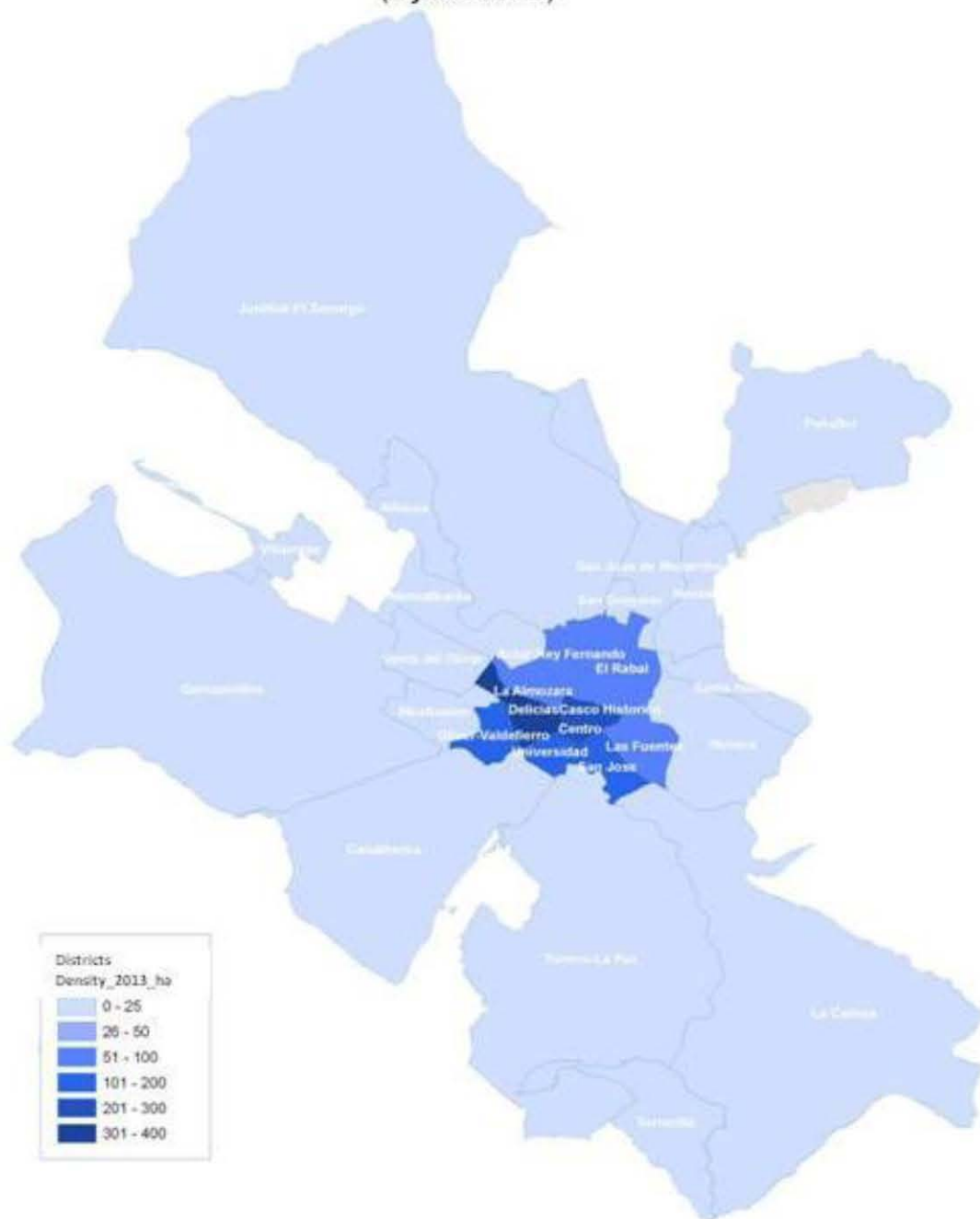


Land Uses (Corine Land Cover 2006)

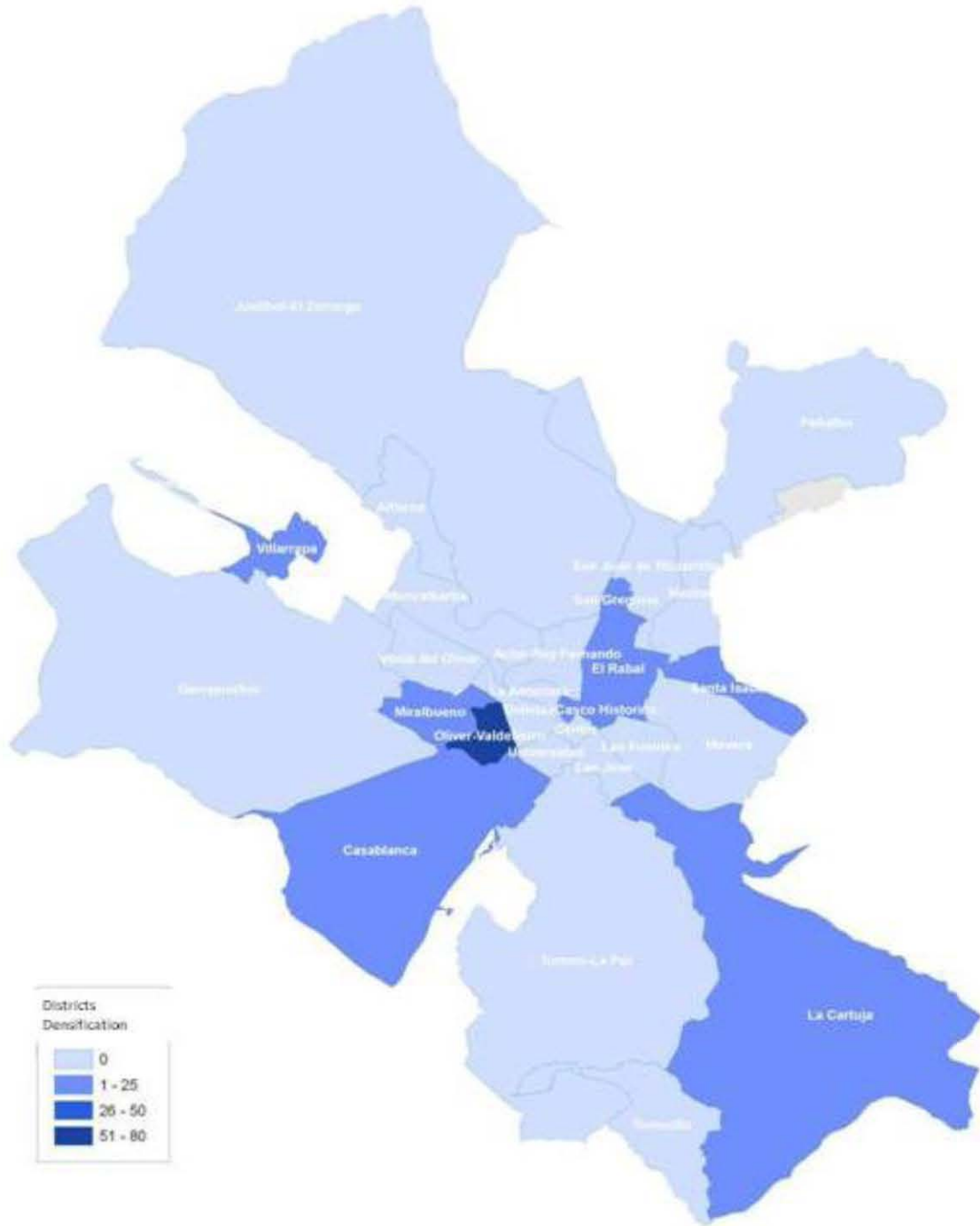
-  Green urban areas
-  Urban Uses
-  Industrial, transport ,mining, dumping, construction uses
-  Sport and recreational facilities
-  Water surface
-  Farming use
-  Forest-natural use



**POPULATION DENSITY 2013 (inhab/ha)
(By Districts)**



TERRITORY DENSIFICATION 2008-2013 (inhab/ha)



3B. Past Performance

Describe the measures implemented over the last five to ten years. Comment on which measures have been most effective.

Make reference to:

1. Regenerating formerly developed sites (brownfields); inventorying and minimising the total area of fallow, derelict and contaminated land;
2. Increasing or sustaining population density in built-up areas while protecting green areas and providing a high quality of life within densely populated areas;
3. Renovating urban land and renewing urban design (involving stakeholders) to make city living attractive and enable a more sustainable lifestyle (e.g. short distances to services and facilities reduce the transport demand and promote walking and cycling; multi-apartment houses save energy for heating, cooling, reduce infrastructural needs);
4. Limiting urban sprawl by cooperating with the neighbouring municipalities;
5. Limiting, mitigating or compensation environmental impacts of soil sealing;
6. Integrating current and future changes such as economic growth, demographic or climate change through sustainable land use planning;
7. Monitoring the effectiveness of management measures.
8. Quality of green and blue areas

(1)

In the framework of the PGOU, the City, by using the Urban Planning Agreements, has allowed local companies to move from the city centre to new industrial areas. This has made it possible the construction of new households and equipments in different city districts, avoiding nuisances and improving the quality of life of the citizens.

Zaragoza has also been traditionally headquarters of many military institutions. An Agreement signed with the Ministry of Defense has allowed the city to recover 36 hectares for green areas and the availability of several buildings for public activities.

These actions have meant the regeneration of 137.95 ha of land.

Industrial Activity	City Area	Surface (Has)	Period	Target
Zaragoza Chemical Industry	Almozara	9,00	1980-1990	Housing, La Aljafería Palace garden
Tudor Batteries	Almozara	7,00	1995-1996	Mall, green areas
Sugar Factory, Patria Biscuits, North Station		18,00	1998-200	Viviendas, zonas verdes, edificios históricos, uso público
Old intermodal Station	Almozara	42,00	2004-2013	New intermodal station, green areas, Digital Mile project (Smart Cities Project)
Schindler	Las Fuentes	3,24	2007-2010	Housing, equipments
Filters Mann	La Jota	6,85	2007-2010	Housing
Aceralia	Picarral	15,86	2013 (in process)	Housing
Most significant Military Facilities	City Area	Surface (Has)	Target	
Hernán Cortés Barracs	Centre	1,00	Housing, public use, green areas	
Pontoneros Barracs	Centre	2,00	Public building, future Erasmus residence	
Valdespartera Barracs	South	24,00	Housing, public use, green areas	

Expo Zaragoza 2008 was used to regenerate the rivers and natural areas:

<i>Environment</i>	<i>Surface</i>	<i>Investment</i>
River Ebro	83 ha	147 million euro
River Gállego	8 km	8,5 million euro
River Huerva	5 ha	4 million euro
Canal Imperial de Aragón	14 ha	21 million euro

The urban program “*Esto no es un solar*” (“*This is not a Vacant Lot*”) has implemented since 2009 actions in nearly 70 unused vacant lots with a double goal, social (create employment), and environmental and urban development (recovery and integration of the city’s vacant lots). This initiative has obtained the award “*Innovazione e Qualità Urbana*” (Ferrara, Italy) and that of the Netherlands Architecture Institute (*graphic 8*).



Graphic 8. Example of the program “Esto no es un solar” for the recovery of abandoned urban areas

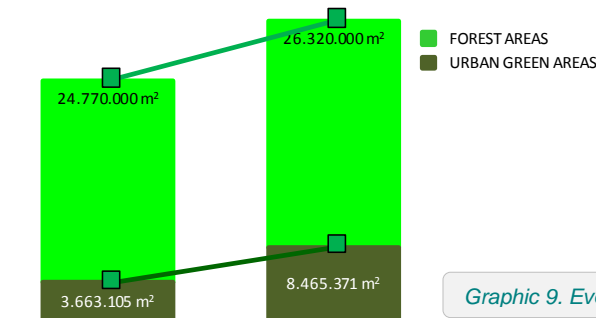
(2)

Zaragoza is the city with a biggest increase of population among the big Spanish cities (12.48% between 2000-2013).

The new population is moving to the new districts at South and North of the city.

In the metropolitan area, The City has reforested more than 1,600 has that, added to the 1,000 has of natural mount make 2,632 has of municipal forest, with a ratio of 37.6 m² /inhab.

Green areas have multiplied by 2.5 in the last 10 years, reaching a ratio of 12.1 m²/inhab (*graphic 9*).



Graphic 9. Evolution of new urban and periurban green areas

The city has 117,069 trees registered in streets and alignments, apart from wood lands included in parks and gardens.

Zaragoza has reached important achievements related to urban sustainability in aspects of proximity and accessibility: almost all of its population lives less than 150 m of a green area with a minimum of equipment.

(3)

Important projects of urban land renovation and recovery have been carried out:

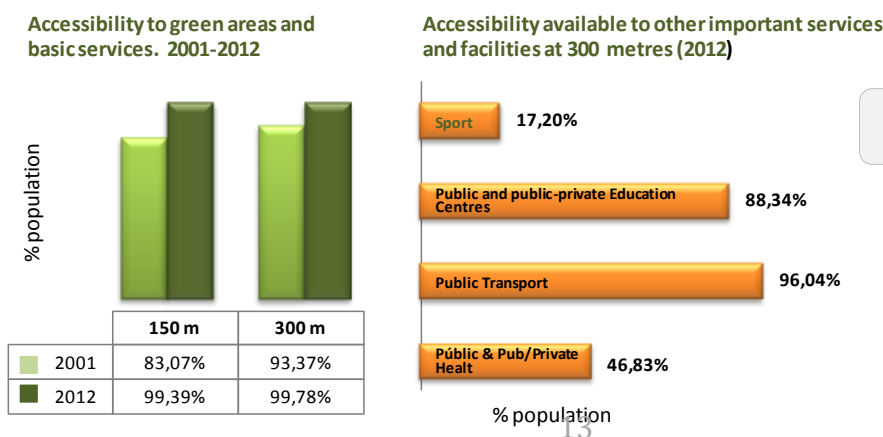
- Zaragoza Comprehensive Plan for the Old Town 2005-2012. Actions on 190 has of its old quartet with a budget of 120 million euros
- Urban program “Esto no es un solar”, above mentioned
- Plan of sustainable development of Oliver district
- Plan for the River Ebro Banks. Restoration of Ebro banks that were suffering from an unhealthy withdrawal, favouring marginality in the same centre of the old town.
- New Byelaw over urban trees

The Strategy for a Sustainable Management of Energy in Zaragoza, the Municipal Bylaw on Energy Eco-efficiency and the use of renewable energies in buildings and facilities are the tools for a new city planning.

As a result of all this has born Ecociudad Valdespartera, a new district at the South of the city that fully reflect criteria of sustainable development and bioclimatic architecture and urbanism.

The **Plan of Sustainable Mobility** is the answer to the mobility problems of the city by using a combination of different means of transport (railway, tram, bus, bike), that reduce the use of fuel, polluting emissions and the levels of urban noise.

With reference to accessibility to green areas and basic services, the following graphics show the increasing evolution to achieve a city more and more sustainable (*graphic 10*)



Graphic 10. Accessibility to green areas and basic services.

(4)

Zaragoza and its nearby municipalities have established coordination organs to improve the provision of services to the citizens:

Transport Consortium of the Area of Zaragoza (CTAZ): with 31 municipalities.

Shared management of waste by the Complex for Urban Waste Treatment of Zaragoza that gives service to Zaragoza and 61 municipalities.

Comprehensive management of upstream supply of drinking water for Zaragoza and its metropolitan area, guaranteeing water of quality from the Pyrennees.

Zaragoza and its area of influence have a new Strategic Framework 2020 that presents the big lines that should mark the future of the city and its region.

(5)

Zaragoza Strategy for Adaptation to Climate Change demands between a 20 and a 30% of permeable green areas in every new development project for refilling its aquifers.

Nevertheless, underground waters are refilled in a natural way by the water systems with gravel bed bottoms and the aquifers are kept alive by the network of ditches for irrigation through its loses.

These aquifers have a stable quantity of water and temperature since its water, once its function From more than 20 years, the City has been carrying out an active reforestation, planting 1,632,5 ha of new forest areas, contributing in a direct way on the mitigation of climate change, land conservation and water resources, and improving the quality of life of its citizens.

(6)

The city model proposed by the General Urban Plan presents a “limited” city widening towards the periphery by urban borders and ring roads, with new districts such as Arco Sur, Valdespartera, Parque Goya and Parque Venecia. Most of the households of this new districts correspond to social housing with bioclimatic characteristics and large green areas which are better prepared to combat the effects of the climate change, favouring well-being and saving on its residents.

Zaragoza Strategy for Adaptation to Climate Change establishes measures on territorial planning, land uses and changes.

The municipal planning policy includes measures to increase green areas, and the new Zaragoza Strategy of Biodiversity contains the guidelines for the conservation and improvement of biodiversity in the city.

(7)

The Control Board of Zaragoza Agency of Environment and Sustainability supervises the efficiency of the measures derived from the EAZ regarding green urban areas. This organ entails the application of the Agenda 21 and contributes to the System of Indicators of Sustainability of the City of Zaragoza that from 2001 is completed with 10 European indicators and 29 local specific ones.

The logic consequence of this action is reflected in the index of citizens´ satisfaction with quality of life in their city. Indexes are being improved from 2008, reaching its top value in 2010 with a

97.5% of residents fully satisfied with quality of life in Zaragoza.

3C. Future Plans

Describe the short and long term objectives and the proposed approach for their achievement. Emphasize to what extent plans are supported by commitments, budget allocations, and monitoring and performance evaluation schemes.

With particular reference on the establishment and management of green urban areas (public and privately owned) taking into consideration their function:

- 1. People's quality of life and recreation;*
- 2. Additional ecosystem functions and services such as regulating water balance, balancing climate extremes, filtering air pollution, education, etc.;*
- 3. Rehabilitation of brown field sites, derelict and/or contaminated land.*

Please make reference to the criteria that will be used to measure progress and impact.

The proposal for the future of Zaragoza is a strategic plan that articulates Zaragoza and its surrounding area using a compact, global and polycentric urban model that maintains and fosters the connections of the city and its metropolitan area.

It has been adopted a model of sustainable urban growth based on successful experiences such as Ecociudad Valdespartera, pooling bioclimatic criteria in architectural design (distances and orientation of the buildings) and the use of vegetation and renewable energies to generate microclimate conditions adapted to the harsh weather of Zaragoza.

The goal is to obtain an important improvement of energy efficiency and the quality of life as it is set out by the Municipal Bylaw on Energy Ecoefficiency and Use of Renewable Energy in the buildings and facilities of Zaragoza.

It has been also adopted a recycling for the consolidated city based on rehabilitation policies in the construction and establishment of new urban developments by the occupation of urban empty area. The goal is to complete the current city and its natural border, Zaragoza fourth ring road, serving as a transition area with the metropolitan corridors.

Another goal is to establish a global management in the city and its metropolitan area for the integration of nature in the city by:

- A strong municipal policy on the conservation of nature, articulated on Zaragoza Agenda 21 Local and the Strategy of Conservation of Biodiversity

For instance, the preparation of the Special Plan of the Steppe will equip Zaragoza with a system of special protection with more than 30,000 ha at the South of the city.

- Implementation of two projects for the consolidation of the natural wealth of Zaragoza, that have been acknowledged and backed up with two projects of Life+ program:
 - Orchards LIFE Km0 (environmental recovery of periurban areas of Zaragoza by the intervention in the ecosystem and ecological farming) (LIFE12 ENV/ES/000919) and
 - ZARAGOZA+ NATURAL (Creation, management and fostering of the green infrastructure of Zaragoza (LIFE12 ENV/ES/000567)
- Conservation of biodiversity elements with:
 - active measures for the conservation of native flora and fauna and regeneration of areas for sheltering, breeding and feeding based on the conservation of the natural areas
 - active policies for the reforestation and increase of urban green areas

- fight against exotic invasive species.

The goals with respect to the natural area are:

- Foster the maintenance of the model of compact and multifunctional city and accessibility to basic local services
- Plan and development of new urbanizations with criteria of compactness and multifunctionality as well as accessible green areas
- Avoid the use of materials that absorb a great quantity of sun radiation, with priority for pale and reflective materials guaranteeing a low albedo value
- Favour the construction of households with bioclimatic characteristics and vegetable covers on its roofs and/or walls, as stipulated by the Municipal Bylaw
- Retake the urban Mediterranean model: paths with natural airing, street orientation that optimizes sun influence, shadow corridors, narrow streets, four-to-six floor buildings, arcades, etc*.
- Increase green areas by planting trees and plants and creation of green spaces in all the city areas, even in roofs and walls
- Manage the availability of trees and plants of deciduous leaves adequate to the climatic characteristics of Zaragoza, and always avoiding the use of invasive species
- Design areas favouring the creation of healthy microclimates, taking into account orientation, creating water circuits, etc
- Foster energy saving in every stage of the construction of infrastructures and buildings
- Foster adaptation measures for saving energy consumption by cooling systems in buildings, pumping in water cycles, etc
- Campaigns of public awareness to minimize the production of waste and benefit selective collection
- Include road education in environmental policies in schools
- Favour urban actions allowing people to move on foot or bike, and availability and use of public vehicles
- Create an accessible, comfortable, safe and efficient bus transport. Also increase the subway-commuting network and the use of hybrid buses and bikes.

3D. References

DOCUMENTS

- Zaragoza Strategy on Biodiversity
- European Common Indicator A4
- Sustainability Indicators of Agenda 21 Zaragoza
- Zaragoza General Urban Planning Plan
- “Esto no es un solar”

INTERÉSING LINKS

- Ebropolis
<http://www.ebropolis.es/web/arb/interior.asp?idArbol=14&idNodo=21>
- Zaragoza Strategy for the Mitigation of Climate Change and the Improvement of the Quality of Air
<http://www.zaragoza.es/contenidos/medioambiente/EstrategiaCCCAZ.pdf>
- Zaragoza Strategy on Adaptation to Climate Change
<http://www.zaragoza.es/ciudad/medioambiente/atmosfera/estrategiasadaptacion.htm>
- Zaragoza Strategy for the Sustainable Management of Energy. Horizon 2010-2020
<http://www.zaragoza.es/contenidos/medioambiente/estrategia-gestion-sostenible-2012.pdf>
- Municipal Bylaw on Energy Eco-efficiency and Use of Renewable Energies in Buildings and its Facilities
http://www.zaragoza.es/ciudad/medioambiente/enlace/normativa/detalle_Normativa?id=245
- Renaissance Project
<http://www.renaissance-project.eu/?lang=en>
- Sustainable Mobility Plan
<http://www.zaragoza.es/ciudad/movilidad/>
- Ecociudad Valdespartera
<http://www.valdespartera.es/>
- Zaragoza Vivienda
<http://www.zaragozavivienda.es/>
- Waste Water Treatment Plan
<http://www.aragon.es/DepartamentosOrganismosPublicos/Organismos/InstitutoAragonesAgua/AreasTematicas/DepuracionAguasResiduales>
- South green ring
<http://www.parquedelagua.com/index.php/anillo-verde-de-zaragoza/anillo-verde-de-zaragoza-sur/>
- North green ring
<http://www.parquedelagua.com/index.php/anillo-verde-de-zaragoza/anillo-verde-de-zaragoza-norte/>
- Life Zaragoza Natural (LIFE12 ENV/ES/000567):
<http://www.zaragoza.es/cont/paginas/noticias/LIFE+%20ZARAGOZA1.pdf>
- Life Huerta Km 0 (LIFE12 ENV/ES/000919):
<http://www.zaragoza.es/cont/paginas/noticias/LIFE+%20ZARAGOZA1.pdf>