

THE URBAN GREEN INFRASTRUCTURE OF VITORIA-GASTEIZ

Proposal Document

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THE URBAN GREEN INFRASTRUCTURE OF VITORIA-GASTEIZ
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IMAGE ON COVER: *Zabalgana Park (Vitoria-Gasteiz)*
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0. PREFACE 3

1. INTRODUCTION 5

1.1 Ecosystem goods and services 5
1.2 The Green Infrastructure: concept, multifunctionality and scales 6
1.3 The Urban Green Infrastructure 8

2. THE URBAN GREEN INFRASTRUCTURE SYSTEM OF VITORIA-GASTEIZ 13

2.1 Strategic framework and objectives 13
2.2 Process for implementing an Urban Green Infrastructure System in Vitoria-Gasteiz 16
2.3 Territorial context 22
2.3.1 Regional and municipal environment 22
2.3.2 Urban and periurban environment 27
2.4 Components and elements of the Urban Green Infrastructure System of Vitoria-Gasteiz 43

3. ACTIONS TO ENHANCE ECOSYSTEM SERVICES IN VITORIA-GASTEIZ 61

3.1 General lines of action 61
3.2 Actions in progress 62
3.3 Pilot projects 66

ANNEX 163

The benefits of Green Infrastructure, por Janez Potočnik, Comisario Europeo de Medio Ambiente 163
OPINION of the Committee of the Regions – Green infrastructure: enhancing Europe's natural capital 163
OPINION of the European Economic and Social Committeeon theCommunication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the RegionsGreen Infrastructure (GI) — Enhancing Europe's 163

REFERENCES 179







0. PREFACE

In May, 2013, the European Commission published the European Green Infrastructure Strategy-Enhancing Europe's Natural Capital (European Commission, Brussels, 6.5.2013), with the aim of encouraging the development of Green Infrastructures at all territorial levels (national, regional and local) and to guarantee their consideration in territorial planning.

The European Strategy defines the GREEN INFRASTRUCTURE as *"a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings".*

Beyond constructing a network of interconnected green spaces, which is a fundamental requirement for conserving biodiversity, the Green Infrastructure provides a large number of environmental, social and economic benefits deriving from multiple ecosystem functions and services provided by nature, such as water regulation, erosion control, water purification or the prevention of climate change, among others.

In the urban context, the benefits provided by Green Infrastructures are especially important due to their contribution to the health and well-being of the public. Their numerous benefits include improvements to air quality, the tempering of the urban climate and consequent reduction of the "urban heat island" effect, the reduction of atmospheric contamination and the social functions of urban green spaces. All these aspects relate to the general habitability level of cities.

The commitment to environmental issues shown by Vitoria-Gasteiz over recent decades in its urban and territorial management policies led to its recognition as *European Green Capital 2012* by the European Commission. This award has encouraged the city to continue working on the environmental enhancement of the municipality and on sustainable development policies, as it is mindful of the fact that the current scenario of Global Change (with the loss of biodiversity, Climate Change, the depletion of resources, the energy crisis and the economic crisis as some of its main manifestations) obliges cities to rethink their policies in order to seek an urgent reduction in their ecological footprints and environmental impact.

Being aware that it is necessary to develop new strategies and projects to transform the city into a more resilient and biofriendly space, Vitoria-Gasteiz City Council proposes to commence a new line of action based on the application of this Green Infrastructure concept to the city of Vitoria-Gasteiz.

The great challenge set out in this document is to introduce and foster nature in the city, guaranteeing its coexistence with its normal urban flows and services. In this context, the intention is to conceive and introduce a new system of urban infrastructure: an URBAN GREEN INFRASTRUCTURE SYSTEM, based on ecosystem functions that will allow the urban system to evolve towards higher levels of sustainability.

The document presented here sets out in detail the definition, proposal and development of an Urban Green Infrastructure System in Vitoria-Gasteiz, which, in the form of a green grid, and through actions that enhance or transform certain spaces and urban and periurban elements, will strengthen the multifunctional nature of the urban ecosystem, contributing to an improvement in the way it operates and favouring in the long run the construction of a more habitable, efficient and sustainable city.

BENEFITS OF THE GREEN INFRASTRUCTURE IN ACCORDANCE WITH THE CLASSIFICATION OF ECOSYSTEM GOODS AND SERVICES.

(Source: Green infrastructure and territorial cohesion. The concept of green infrastructure and its integration into policies using monitoring systems. Comisión Europea, 2011).

HABITAT SERVICES

Biodiversity/species protection:

- *Habitats for species.*
- *Permeability for migrating species.*
- *Connecting habitats.*

PROVISIONING SERVICES

Water management:

- *Sustainable drainage systems - attenuating surface water run-off.*
- *Fostering groundwater infiltration.*
- *Removal of pollutants from water.*

Food production and security:

- *Direct food and fibre production on agricultural land, gardens and allotments.*
- *Keeping potential for agricultural land.*
- *Soil development and nutrient cycling.*
- *Preventing soil erosion.*

REGULATION SERVICES

Climate change adaptation:

- *Mitigating urban heat island effect .*
- *Strengthening ecosystems' resilience to climate change.*
- *Storing floodwater and ameliorating surface water run-off to reduce the risk of flooding .*

Climate change mitigation:

- *Carbon sequestration.*
- *Encouraging sustainable travel.*
- *Reducing energy use for heating and cooling buildings.*
- *Providing space for renewable energy.*

CULTURAL SERVICES

Recreation, well-being and health:

- *Recreation.*
- *Sense of space and nature.*
- *Clean air.*
- *Tourism/Ecotourism.*

Land values:

- *Positive impact on land and property.*

Culture and communities:

- *Local distinctiveness.*
- *Opportunities for education, training and social interactions.*

1. INTRODUCTION

1.1 Ecosystem goods and services

Nature provides human beings with many benefits. In fact, our existence on Earth depends on the good state of conservation of the ecosystems that supply resources such as food, energy, oxygen, water and perform essential functions for the adequate operation of the planet, such as climate regulation and the prevention of flooding or pollination. Ecosystems provide essential, strategic goods and services for the economic prosperity, safety, health and well-being of society. Ecosystem services are understood to be the benefits that people obtain from ecosystems.

In recent years, a large number of studies have been carried out that demonstrate the close relationship that exists between the state of conservation of ecosystems and human well-being. Several different approaches and methodologies have been applied to quantify, even in economic terms, the value of ecosystem goods and services. In fact, some studies have even estimated the monetary cost of losing biodiversity, all this with the aim of highlighting natural values and making administrators, politicians and the public aware of the need to protect and conserve nature and ecosystems.

The scientific programme *Millennium Ecosystem Assessment* (http://www.maweb.org/en/index.aspx), promoted by the United Nations between 2001-2005 and carried out by a team of 1360 experts, is the most important analysis carried out at an international level to evaluate the capacity of the ecosystems of the planet and biodiversity to maintain human well-being. The results of the programme highlight the gradual worsening that has occurred in the state of conservation of ecosystems over the last 50 years, it being estimated that today more than 60% of their services are becoming degraded or used in an unsustainable manner.

The Millennium Ecosystem Assessment of Spain project (http://www.ecomilenio.es/sobre-eme), promoted by the Biodiversity Foundation of the Ministry of Agriculture, Foods and the Environment and which began in 2009, is the first analysis made on the status and trends of terrestrial and aquatic ecosystem services in Spain and their contribution to the well-being of its inhabitants. Among the first results obtained until now the project highlights that "*today, between 40-60% of species are threatened, representing a major loss of biodiversity, and 45% of the ecosystem services evaluated have become degraded or are being used in an unsustainable manner. Regulation services have been the most negatively affected. Biodiversity and the ecosystem services supplied by it cannot remain in a state of invisibility any longer and the true value for society, as well as the costs of their loss and degradation, need to be taken into consideration in the decision-making process*".

Against this background, the Green Infrastructure concept has come to the fore as a new way of defending the high potential value of ecosystem services. This appears to be diametrically opposed to the Grey Infrastructure concept and proposes solutions based on natural processes and dynamics for correcting multiple problems, not only environmental but also economic and social, that affect human well-being (such as atmospheric contamination, floods, agricultural infestations and climate change). This kind of solution provides highly efficient alternatives for replacing or complementing artificial solutions which are, generally, more complex and costly.

As Janez Potocnik, Environment Commissioner, has pointed out, "*What we are seeing more and more across Europe is that Green Infrastructure solutions are more cost effective, more resilient and bring more long-term benefits than artificial, heavy infrastructures*". (The Benefits of Green Infrastructure, Speech of the EESC-CoR on Green Infrastructure, held in Brussels in November 2013) (http://www.europa.eu/rapid/press-release_SPEECH-13-880_en.pdf).

1.2 The Green Infrastructure: concept, multifunctionality and scales

In Europe, the first references to the Green Infrastructure **concept** appeared in regional policy and climate change documents. Nevertheless, its real framework for development is the *Strategy of the European Union on Biodiversity 2020*, passed by the European Commission in May 2011.

One of the premises of the Strategy is that "*so that society can take advantage of the multiple benefits offered by nature, it is necessary to protect and encourage natural processes*". Consequently, among its objectives, it proposes to restore at least 15% of degraded ecosystems by 2020 and to maintain and improve ecosystem services, for which it undertakes to develop a Green Infrastructure Strategy, with the conservation of biodiversity as a priority issue.

The reason why biodiversity is the backbone of the Green Infrastructure is that the operation and resilience of ecosystems and, ultimately, the quality of ecosystem services depend directly on the wealth and abundance of the species they harbour. For that reason, in order to guarantee the correct operation of the Green Infrastructure it is important to favour the ecological connectivity between areas of natural value, improving the permeability of the landscape.

One of the main characteristics of the Green Infrastructure is its **multifunctionality**, a quality that allows it to attend to multiple needs in a simultaneous manner, converting it into an instrument of a transversal nature that can support the development of numerous policies, both regional and sector (agriculture, energy, climate change, biodiversity, urban planning, housing, public spaces, etc.). In the city, it is a basic tool for the creation of healthy environments that improve the physical and mental health of its inhabitants and at the same time contributes to developing a green, sustainable economy.

The Green Infrastructure Strategy, passed in May 2013 (*Green Infrastructure-Enhancing Europe's Natural Capital*), offers a solid framework for the design and execution of Green Infrastructure projects in Europe. One of the points highlighted is that in order for these to be feasible, Green Infrastructure projects need to be integrated in the planning processes of the territory.

*The **Green Infrastructure** is a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings..*

(Source: Enhancing Europe's Natural Capital, May 2013).

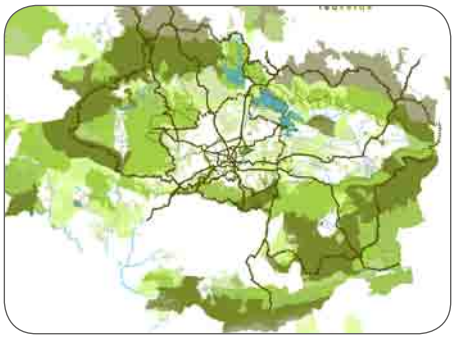
Aspects and key issues of the Green Infrastructure

- *It is an instrument for dealing with environmental problems through different solutions based on natural processes.*
- *Biodiversity is the backbone of the Green Infrastructure.*
- *It promotes the creation of ecological networks at different scales.*
- *It requires spatial and temporal planning and an adequate design.*
- *It is based on the collaboration between the different social agents: political, managerial and the public.*

The Green Infrastructure allows for several spatial **scales** of intervention; from the broadest scale, regional, to the smallest, urban and district, including the intermediate scale, local and municipal. As each scale involves different requirements and possibilities for action, the Green Infrastructure is conceived differently in each one of these:



At the **REGIONAL SCALE**, the Green Infrastructure is conceived as the system formed by those spaces that possess the highest environmental, landscape and cultural value, as well as by the connections required to maintain the basic ecological processes of the region. At this scale, it is essential to form functional ecological networks consisting of protected spaces, large reservoirs of fauna and flora, rivers and floodplains, etc. Actions carried out in order to protect habitats, restore degraded spaces and reinstate the ecological connectivity are essential.



At the **MUNICIPAL AND LOCAL SCALE**, those elements of high ecological potential such as hedgerows, stone walls, gallery forests, isolated trees, crop fields, etc., are especially important. Rivers and small streams represent ecological corridors par excellence and, together with any other kind of water mass, make up an essential part of the Green Infrastructure. The development of regional and sector planning and management (agricultural, hydrological, etc.) that guarantees the conservation and promotion of all these elements is essential.



At the **URBAN AND DISTRICT SCALE**, the Green Infrastructure is based both on natural, seminatural and artificial elements in which it is possible to intervene in order to improve the biotic indexes of the soil and urban biocapacity. Parks and gardens, tree-lined streets and squares, cemeteries, green roofs and facades, pools or playing areas and, in general, any surface area that is already permeable or whose permeability could be increased (plots of land, empty areas, etc.) are some of the spaces and elements that make up the Urban Green Infrastructure.

1.3 The Urban Green Infrastructure

Over recent years, the way in which urban planning has traditionally understood urban green areas is changing. Formerly, they were conceived as resources with a basically recreational function but now they are considered to be natural spaces, necessary for the efficient maintenance of the urban balance.

Within this new concept, the term Green Infrastructure refers, furthermore, to green areas as suppliers of socio-ecosystem functions and services that go beyond their recreational and landscape uses (*Green Areas for the 21st century by José Fariña, in the publication Vitoria-Gasteiz European Green Capital 2012. Proposal for reflection*).

Thus, the application of the Green Infrastructure concept to the urban context is making planners reconsider the value of the "urban green" and the use of the multiple benefits (environmental, social and economic) that the green areas of cities are capable of offering.

The Urban Green Infrastructure is thus conceived as an interconnected and complementary network of urban green spaces that includes all those elements of outstanding environmental, landscape or cultural importance, as well as their corresponding ecological processes and flows. On being integrated in a single system, these elements perform an important integrating function of the urban territory, as well as playing a fundamental role in the improvement of the environmental quality of the urban milieu. The consideration of this network and its integration in urban planning requires in many cases a fresh look at the way urban green spaces are planned and managed. In this sense, the theoretical and methodological framework provided by the *Theory of Landscape Ecology* is an extremely useful instrument for the design and analysis of the ecological operation of the green system.

In urban environments, biodiversity conservation remains at the centre of the Green Infrastructure due to its leading role in the operation and quality of ecosystem services; however, other objectives relating to hydrological improvement, the environmental regulation or social use associated with the offer of a spaces accessible to the public are also highly relevant.

The Urban Green Infrastructure provides benefits that affect people's health, such as clean air, better water quality and a healthy urban environment, as well as improvements in the habitability of the places where people live and work. Some spaces, such as community gardens, create a strong sense of belonging as they allow civil society to participate through volunteer schemes, thereby helping to combat social exclusion and isolation. Other spaces have an important educational component, such as the case of urban vegetable gardens that provide the connection between the production and local consumption of food. Moreover, urban green networks facilitate the connection between urban green areas and rural and natural areas. From the economic viewpoint, investments in Green Infrastructure can be also used to promote regional and urban development in the creation of green employment.

In the city, interventions made in line with the Green

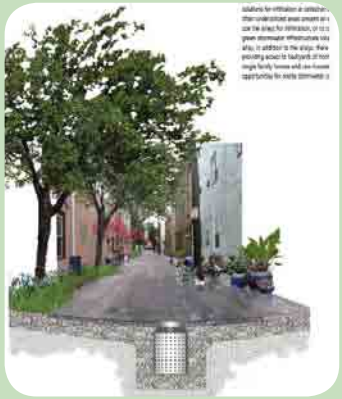
The **Urban Green Infrastructure** *seeks to improve and foster ecosystem services in the city. It includes urban green spaces (tree-lined roads, parks and gardens, green sports areas, urban vegetable gardens, and so on), other seminatural or artificial elements (green facades and roofs, rain gardens, permeable pavements, and so on) and incorporates new, more efficient designs and management methods that emulate natural processes and improve urban biocapacity.*

Infrastructure concept can be extremely varied and affect several different areas of urban management. Actions to naturalise built-up spaces, the installation of natural systems for the purification of water, the preparation of urban vegetable gardens for the local supply of food or the application of new ecological criteria in the design and management of green areas, are some examples of the broad range of the potential projects proposed. These are described below.



EXAMPLES OF URBAN TRANSFORMATION INTERVENTIONS TO IMPROVE ECOSYSTEM SERVICES IN THE CITY.

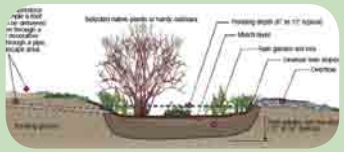
WATER MANAGEMENT



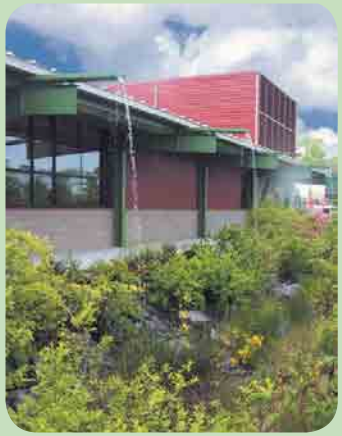
*Transformation of conventional storm water treatment systems into **sustainable urban drainage systems**, reducing the rainwater load in the sewerage system. Green City Project, Clean Waters, Philadelphia.*



***Infiltration tanks** that act as surface detention areas where the water is stored until infiltration occurs. Portland.*



***Rain gardens** act as a filter for run-off water, reducing the contaminants that enter the sewerage systems. Washington.*



Storm water collection systems. Portland.

DESIGN AND MANAGEMENT OF THE URBAN GREEN



*Recovery of **urban river ecosystems** with designs that encourage people to get close to the water. Chaumont-Sur-Loire.*



***Vertical Gardens** that increase the surface area of the green space and the biotic index of the soil. London.*



*Integration of functional urban designs and the **generation of habitats for insects, small birds and pollinators**. Chaumont-Sur-Loire.*



*Conservation of **biodiversity micro-spaces** in urban renovation processes. London.*

MOBILITY IN THE CITY



*Conversion of railway infrastructures into **green corridors associated with pedestrian mobility axes**. Promenade Plantée. Paris.*



*Placing of subway infrastructures underground and the creation of **green corridors and community spaces** on the surface, favouring cohesion and social identity and increasing quality-of-life levels. SW Corridor, Boston.*





*The **reutilisation of linear infrastructures** for pedestrian mobility spaces and their integration into the urban network as natural greenways for meeting, leisure and sport. High Line, New York.*

RENOVATING PUBLIC SPACES



*Integration of **playing areas and biodiversity** in small spaces. Gardens and vertical walls in Bordeaux.*



*Improvement in biodiversity and biocapacity in public green spaces. **Cemetery** on Boston Common.*



***Urban vegetable gardens** for learning and producing locally-sourced foods. Community vegetable gardens in Bordeaux.*



Increase in spaces for play, learning and discovery through landscape and contact with nature. School playground in Philadelphia.

RENOVATING AND REHABILITATING BUILDINGS



***Vegetal façade** that increases heat insulation, regulates the temperature by evapotranspiration, filters and retains contaminants and generates an attractive visual element. Quai Branly Museum, Paris.*



*Design of **community green spaces** for the production of local foods on the roofs of buildings. Eagle Street, Rooftop Farm, Brooklyn.*



2. THE URBAN GREEN INFRASTRUCTURE SYSTEM OF VITORIA-GASTEIZ

2.1 Strategic framework and objectives

In accordance with the theoretical-conceptual framework set out above, highlighting the multiple benefits provided by Green Infrastructures and taking into account the territorial context in which the city of Vitoria-Gasteiz is set, the conception and implementation of a new kind of urban infrastructure is proposed: An Urban Green Infrastructure System, that increases the provision of ecosystem services provided by nature and the natural processes within the city.

Taking the classical definition of urban infrastructure into account ("*set of necessary elements for the operation of the urban system*"), the Urban Green Infrastructure of Vitoria-Gasteiz is conceived as an interconnected network of green spaces and other "natural or seminatural" urban and periurban spaces, which, integrated in a single system, are essential for the operation of the urban ecosystem.

Due to its multifunctional nature, the Urban Green Infrastructure of Vitoria-Gasteiz shares the same objectives with many other complementary or synergy-forming municipal strategies. Therefore, the actions and guidelines that are proposed in the framework of the Urban Green Infrastructure System must be coordinated appropriately with these.

Due to the fact that the System contains express references to the need to create an Urban Green Infrastructure in Vitoria-Gasteiz, the most direct reference is the Strategy for the Conservation of the Biodiversity of the municipality of Vitoria-Gasteiz, based on the aforementioned 2020 European Biodiversity of May 2011. Its aim is "*to stop the loss of biodiversity and attain a favourable state of conservation of habitats and species in the municipality for the year 2022, by encouraging the recognition of their values and functions for society*".

This Strategy carries out an exhaustive analysis-diagnosis of the aquatic, agricultural-livestock and forestry environments of the municipality and, to a lesser extent, of the artificial environment and proposes a large number of measures and actions intended to protect, conserve and improve these. In an express reference to the urban environment, the document includes within its action plan "*the preparation of a Green Infrastructure Plan specifically for the urban context, which defines the elements that make it up and establishes the necessary actions to conserve or promote its biodiversity and to ensure its multifunctionality, including its adequate integration in urban planning*".

The document also carries out an in-depth analysis of the ecological functionality of the region, identifying all the priority elements on which action must be taken to ensure the future ecological connection between places of importance, with the exception of the connections between urban and periurban spaces, which it points out "*must be defined in the Green Infrastructure Plan*".

Other plans directly associated with the Urban Green Infrastructure System of Vitoria-Gasteiz are the Plan

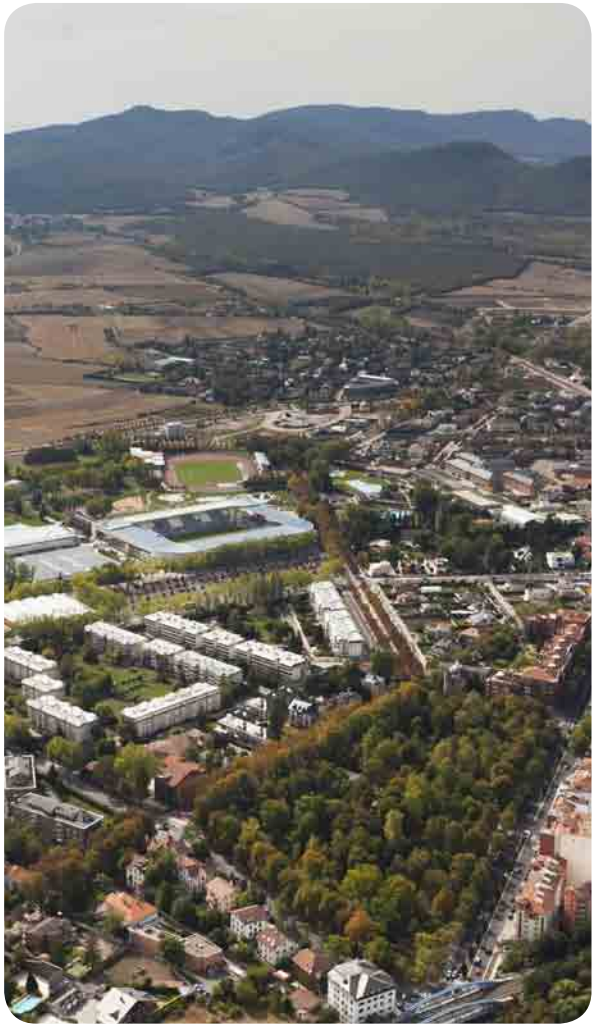
In addition to Biodiversity Conservation, some of the more important municipal plans and strategies relating to the Urban Green Infrastructure of Vitoria-Gasteiz include the Plan against Climate Change and the Climate Change Adaptation Plan.

against Climate Change and Adaptation to Climate Change Plans. Both strategies propose a large number of measures that can be incorporated and developed perfectly through the implementation of this System. Some of the measures proposed in this context for the reduction of greenhouse effect gases and for increasing the sink effect include:

- *"Develop measures to reduce the energy consumption of weeding operations carried out at the base of trees with plant protection products.*
- *Introduce green roofs in municipal installations.*
- *Use the compost generated within the municipality as fertiliser in urban parks and gardens".*

Moreover, the Plan against Climate Change itself proposes for its development the drafting of an Urban Green Strategy Plan with sustainability criteria, which establishes the guidelines for the development and consolidation of the green system in accordance with sustainability criteria to improve its functionality and quality. "*This Plan must include the role to be played by the Urban Green in the adaptation to climate change and its function as carbon sinks. The structure of the plan must include several different aspects such as the green in the region with all its descriptive variables, the composition, structure and ecological services, together with its historical and cultural dimension, education and communications, without forgetting management and maintenance*".

As well as with the aforementioned, it also shares synergies with the Sustainable Mobility and Public Space Plan, the Health Plan, the Municipal Energy Strategy and, of course, with the Urban Master Plan, currently under review, which represents the regulatory and legal framework within which the Urban Green Infrastructure must adapt to adequately in order to guarantee its implementation.







The Urban Green Infrastructure System of Vitoria-Gasteiz seeks the **following general objectives***:*

1. *Foster the* ***biodiversity*** *of the city, by increasing the spatial and functional connectivity between urban and periurban green spaces.*

2. *Increase* ***ecosystem services*** *in the city, by favouring urban metabolism processes more in line with natural processes, reducing the consumption of natural resources.*

3. *Integrate* ***ecological and hydrological processes and flows*** *into the urban developed network* ***through adequate planning****.*

4. *Reduce urban heat islands, prevent* ***climate change*** *and improve conditions and processes to adapt to this. Increase the* ***resilience*** *of the region and reduce its vulnerability.*

5. *Promote* ***public use*** *compatible with green spaces, increase opportunities for leisure and recreation, increase accessibility and country-city connections, preserve the cultural heritage and traditional landscapes and increase a sense of identity and belonging.*

6. *Create environments that favour* ***health, collective well-being*** *and the general* ***habitability*** *of the city.*

7. *Create an awareness of the* ***nature-biodiversity/society relationship*** *and, in particular, of the goods and services of ecosystems, including their economic valuation.*

8. *Contributes to economic development through* ***green employment****.*

2.2 Process for implementing an Urban Green Infrastructure System in Vitoria-Gasteiz

The materialisation of a Green Infrastructure System in Vitoria-Gasteiz is seen as a gradual process of urban transformation in questions regarding the character, management and maintenance of the different environments and elements associated with the provision of ecosystem services in the city (green spaces, public space, water management, construction, etc.).

This transformation process must bring together a number of different objectives and consider the different sensibilities of the large number of social agents that must take part in it. For this reason, since the beginning, it has been seen as an open process in which proposals and approaches are agreed upon prior to taking decisions.

It is continuous process that must include the following lines of action or key tasks:

DESIGN OF THE URBAN GREEN INFRASTRUCTURE SYSTEM
Creation of an interconnected network of green spaces and elements, in which each space or element carries out a specific role within the whole, providing support to the other green spaces and to the city itself.

INFORMATION, COMMUNICATION AND PUBLIC PARTICIPATION
Preparation and development of an extensive programme of communications and awareness campaigns aimed at the public and different social agents to foster their participation in defining the system and in establishing the means and urban transformations proposed in the city and in its districts.

INTEGRATION IN URBAN PLANNING
Inclusion of the Urban Green Infrastructure System in urban planning and development through its integration as a general system in the Urban Master Plan - currently under review - and in the instruments used to develop this (bylaws, urban plans, etc.).

TRANSFORMATION AND IMPROVEMENT OF THE ELEMENTS CONTAINED IN THE SYSTEM
Establishment of the interventions required in each space and element to guarantee the functionality of the System as a whole. The actions taken may be of different types and may affect different spaces and environments included in urban planning actions.

KNOWLEDGE, MONITORING AND VALUATION
Establishment of a periodic monitoring system that provides information on the benefits afforded by the System and assessment of the effectiveness of the measures and actions carried out.



DESIGN OF THE URBAN GREEN INFRASTRUCTURE SYSTEM

With the Urban Green Infrastructure System in Vitoria-Gasteiz the intention is to set up an interconnected network of green spaces and elements in which each space or element acquires its own functionality as an ecosystem within the whole.

According to this approach and taking the postulates of the Landscape Ecology theory as a reference (following their adaptation to the urban and periurban environment) and after a process of characterisation and analysis of elements that can be used to configure the System, an "Initial proposal for an Urban Green Infrastructure System in Vitoria-Gasteiz" has been defined.

The "Urban Green Infrastructure System of Vitoria-Gasteiz" defined in this way is made up of the following elements:

- ***Core elements**: spaces with a high level of naturalness and an adequate state of conservation in areas adjacent to the city.*
- ***Nodes**: green spaces located within the city, which, due to their size and/or location, represent basic structural parts of the urban green system.*
- ***Connectors**: elements of a linear nature, the main function of which is to facilitate the connection between core elements and nodes.*

This primary System, which would provide support and nourish the rest of the green spaces and the city itself, is put forward as a basic technical proposal which will be developed by allowing the incorporation of other points of view and sector approaches that will help to enhance the Urban Green Infrastructure of Vitoria-Gasteiz.





INFORMATION, COMMUNICATION AND PUBLIC PARTICIPATION

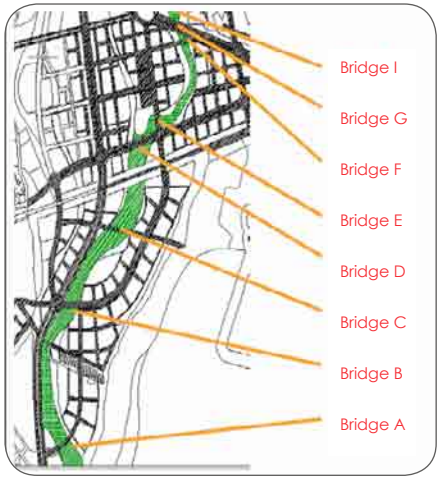
The implementation of the Urban Green Infrastructure System requires the general agreement of all the agents involved concerning the need to create it and its associated benefits. For this reason it is necessary to inform, create awareness and favour the participation of the general public and of the full spectrum of social agents. Participation is required both in the design of the System and in the interventions to be carried out.

A broad and participative approach, which has both the involvement of multiple social agents (neighbours associations, citizen groups, teaching centres, shop-owner associations, the University) and the collaboration and support of the private sector, will guarantee that the System responds to the range of existing objectives and sensibilities.

For this reason, the adequate information, communications and participation mechanisms will be established to favour and encourage public initiatives linked to the Green Infrastructure, such as:

- *Organisation of workshops, seminars, exhibitions... that promote the participation of the public in the definition of new urban spaces linked to biodiversity.*
- *Participative biodiversity inventories.*
- *Popular initiatives to support the transformation of green spaces through, for example, popular planting campaigns similar to the "Adopt a tree" initiative.*
- *Programmes to support public initiatives for the development of urban vegetable gardens, school vegetable gardens and community gardens.*
- *Sponsorship programmes to transform and improve degraded spaces.*
- *Initiatives to foster knowledge and enjoyment of the Green Infrastructure (popular walks, guided visits, etc.).*





INTEGRATION IN URBAN PLANNING

In order to consolidate the Urban Green Infrastructure System, it is necessary to provide the adequate mechanisms to guarantee its feasibility from the legal viewpoint.

In this sense, urban planning is an essential instrument for the structural consolidation of the Urban Green Infrastructure System as this provides the necessary legal support. The proposed System contains determinations that have a direct effect on the city model and on its structural planning, and therefore its inclusion in the Urban Master Plan is essential.

For this reason and due to the fact that the Urban Master Plan of Vitoria-Gasteiz is currently under review, the need for the Urban Green Infrastructure System and its determinations and development instruments must be included and dealt with appropriately in the future Plan.

However, we find ourselves before a new paradigm of the urban planning practice, which consists of the incorporation of ecosystem services within the functional systems of the city through the inclusion of a new concept of urban infrastructure. Currently, therefore, there is no urban practice adapted to this change. The transformation is yet to be completed and there are no fixed or legally tested rules. Although one of the legal formulae used to integrate the new infrastructure in the Urban Plan might be its inclusion in the network of Communication and Infrastructure Systems of the city, the new legal forms to be included within the legal framework of superimposed conditioning factors established by the Building Code might also be considered.

The following aspects may be dealt with in the future Urban Master Plan:

- *Consolidation of the System proposed in the structural planning of the city.*
- *Establishment of objectives, criteria, standards and recommendations for use and management to protect the system and increase the ecosystem services in the city.*
- *Development of an appropriate Green Areas Bylaw for the new concepts incorporated.*
- *Development and integration of specific plans such as the Urban Wood Plan, Landscape Plan, etc.*





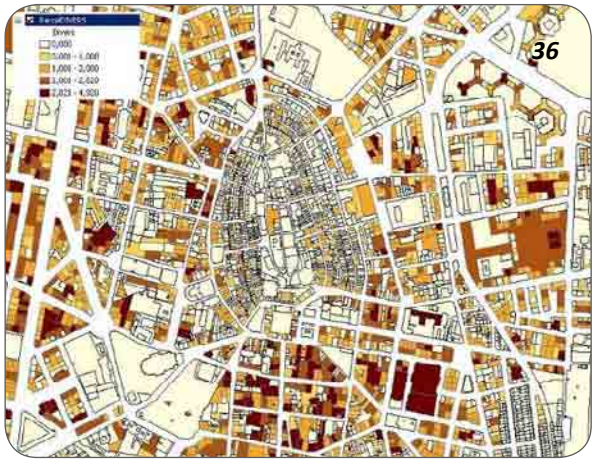
TRANSFORMATION AND IMPROVEMENT OF ELEMENTS IN THE SYSTEM

In order to develop the proposal for the Urban Green Infrastructure and guarantee the functionality of the System, it is necessary to carry out several different kinds of physical interventions that will affect a range of urban spaces and environments.

Some of the transformation actions to be carried out will require structural changes that may require that new technologies and designs be tested, while others will be minor, consisting solely in the introduction of changes in the ordinary management of some spaces in order to achieve a greater level of efficiency in the use of resources.

In order to improve the ecosystem services of the Urban Green Infrastructure of Vitoria-Gasteiz, a broad range of possible actions are proposed, including:

- *Actions aimed at increasing urban biodiversity (through interventions in green spaces, public space, rehabilitation of buildings, lighting, etc.).*
- *Actions aimed at the conservation of relic vegetation that still exists in some spaces.*
- *Actions aimed at increasing the ecological connectivity between green spaces.*
- *Actions aimed at improving accessibility to urban and periurban green spaces and improving their quality for sitting.*
- *Introduction of systems to improve urban water management.*
- *Introduction of efficient urban green systems.*



36



KNOWLEDGE, MONITORING AND VALUATION

In order to make progress in the implementation of the Urban Green Infrastructure in Vitoria-Gasteiz it is necessary, among other things, to analyse the development of the System on a periodic basis with regard to the benefits provided and the habitability conditions in the city. Innovation is required in the development of evaluation instruments and study and research programmes that tackle several different aspects of the Urban Green Infrastructure in an in-depth, precise and rigorous manner. Some of the studies and analyses that are currently underway or planned are described below:

- *Identification of the ecosystem goods and services of the Urban Green Infrastructure and selection of indicators.*
- *Development of a programme for monitoring common birds in the urban environment.*
- *Analysis of the trend in the consumption of water for irrigation in parks and gardens.*
- *Evaluation of the carbon sink effect of urban trees.*
- *Cost-benefit studies of the transformation and naturalisation of green spaces.*
- *Inventory of invasive exotic species in the urban environment.*
- *Contribution of the Urban Green to the reduction in the carbon footprint.*

In view of the innovative nature of the Green Infrastructure concept, it is considered essential to carry out a survey and analysis of innovating and successful solutions associated with good practices on which to support the decision-making process at a local level. In this sense, it is proposed that it would be of interest to establish collaboration frameworks with R&D&I entities such as research centres, universities, knowledge networks, etc.

2.3 Territorial context

2.3.1 Regional and municipal environment

To ensure that urban green spaces are ecologically functional, it is necessary to accept a territorial and systematic perspective in their planning that takes into account and integrates the ecological processes and flows that take place in the territory.

For that reason, the conception and design of the Urban Green Infrastructure System are conditioned by the territorial framework in which the city is situated and take into account the particular biotic, hydro-geological conditions of the municipality of Vitoria-Gasteiz and by extension, of the Central Region of Alava.

Vitoria-Gasteiz is situated at the centre of a natural geographical region, the so-called Bioregion or Functional Area of Central Alava, made up of an extensive plain surrounded by mountains on its edges. These mountains connect two important reservoirs of biodiversity: the Cantabria mountain range to the west and the Pyrenean Mountain Range to the east. These play an essential role in maintaining the ecological connectivity of northern Iberia and represent a key link for the configuration of the pan-European Ecological Network.

Its population of somewhat more than 250,000 is concentrated mainly in the capital Vitoria-Gasteiz which, with more than 240,000 inhabitants, is the regional centre, where the province's major service infrastructures are based. The rest of the small and medium-size population centres are surrounded by an extensive mosaic of woods, rivers, meadows and crop fields.

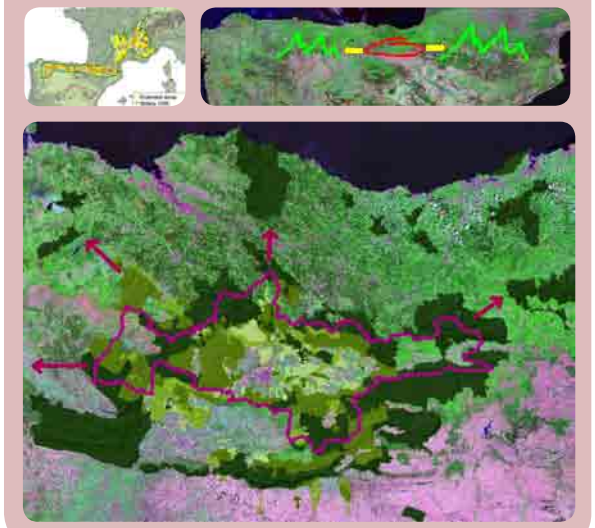
The naturalistic wealth of this territory, which is home to a wide variety of species of flora and fauna, is important due to three main circumstances.

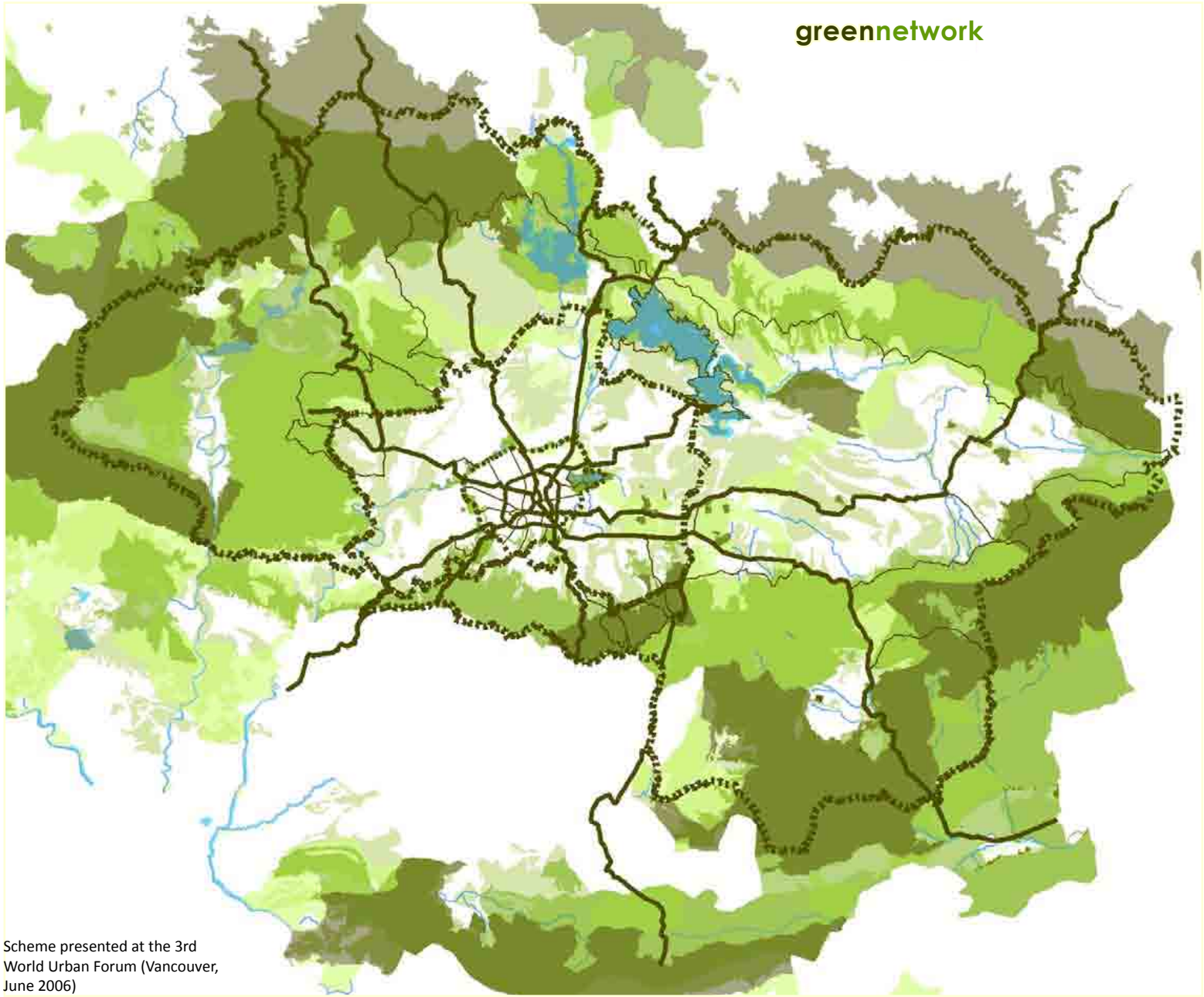
The first has to do with the broad climatic variation within the region which, lying in an area of transition between the Atlantic and Mediterranean weather systems, offers vegetation landscapes that vary a great deal in just a few kilometres. The second relates to the presence of an extraordinary amount of water resources. The quaternary aquifer of Vitoria, the Subijana aquifer, the extensive catchment areas and the dense network of rivers and streams that flow through the region represent an ensemble of great ecological importance. The third refers to the characteristics of the soil. More than 80% of forestry land and more than half of the total land in the territory is publicly owned, which has favoured its conservation over the centuries through complex and efficient community-controlled systems in the use of natural resources.

All these circumstances have led to a situation whereby a very large part of the territory included in the Functional Area of Central Alava is environmentally protected. It features five consolidated Natural Parks and another that is about to receive this distinction (Montes de Vitoria), three Ramsar Wetlands and several Community Interest Sites, as well as a number of different spaces catalogued as Singular and Outstanding Landscapes.

Likewise, an important part of this territory is protect-

FUNCTIONAL ECOLOGICAL NETWORK OF THE AREA AROUND THE HIGHLAND RING IN THE LARGE, MOUNTAINOUS CORRIDOR OF THE CANTABRIA-PYRENEES-FRENCH CENTRAL MASSIF-WESTERN ALPS. Mountain corridors of the UICN initiative.





Scheme presented at the 3rd World Urban Forum (Vancouver, June 2006)

CENTRAL ALAVA BIOREGION
Functional Ecological Network

Network of Protected Natural Spaces
Natural Parks
Protected Biotopes
Singular Trees

Natura 2000 European Ecological Network
CISs
SPAs

Ramsar Agreement Wetlands

Catalogue of Singular and Outstanding Landscapes of Alava

Network of Ecological Corridors of Alava

Territorial Protection Areas. PTP AC

Green Itineraries
Urban Pathways
Green Belt Walks
Green Routes
PRs and GRs
Shepherd's Route
Green Ways

ed by the European “Habitats” Directive.

In this sense, local institutions continue to work on new strategies and proposals to extend and connect these protected spaces in order to consolidate a Functional Ecological Network for Central Alava.

Located within this privileged territory, the municipality of Vitoria-Gasteiz (with a surface area of 276 Km^2, it is the largest in the Basque Autonomous Community) contains a large variety of ecological environments with a wealth of biodiversity. The public can access a broad range of natural habitats, from meadows and wetlands to large forests, just a few kilometres from the city.

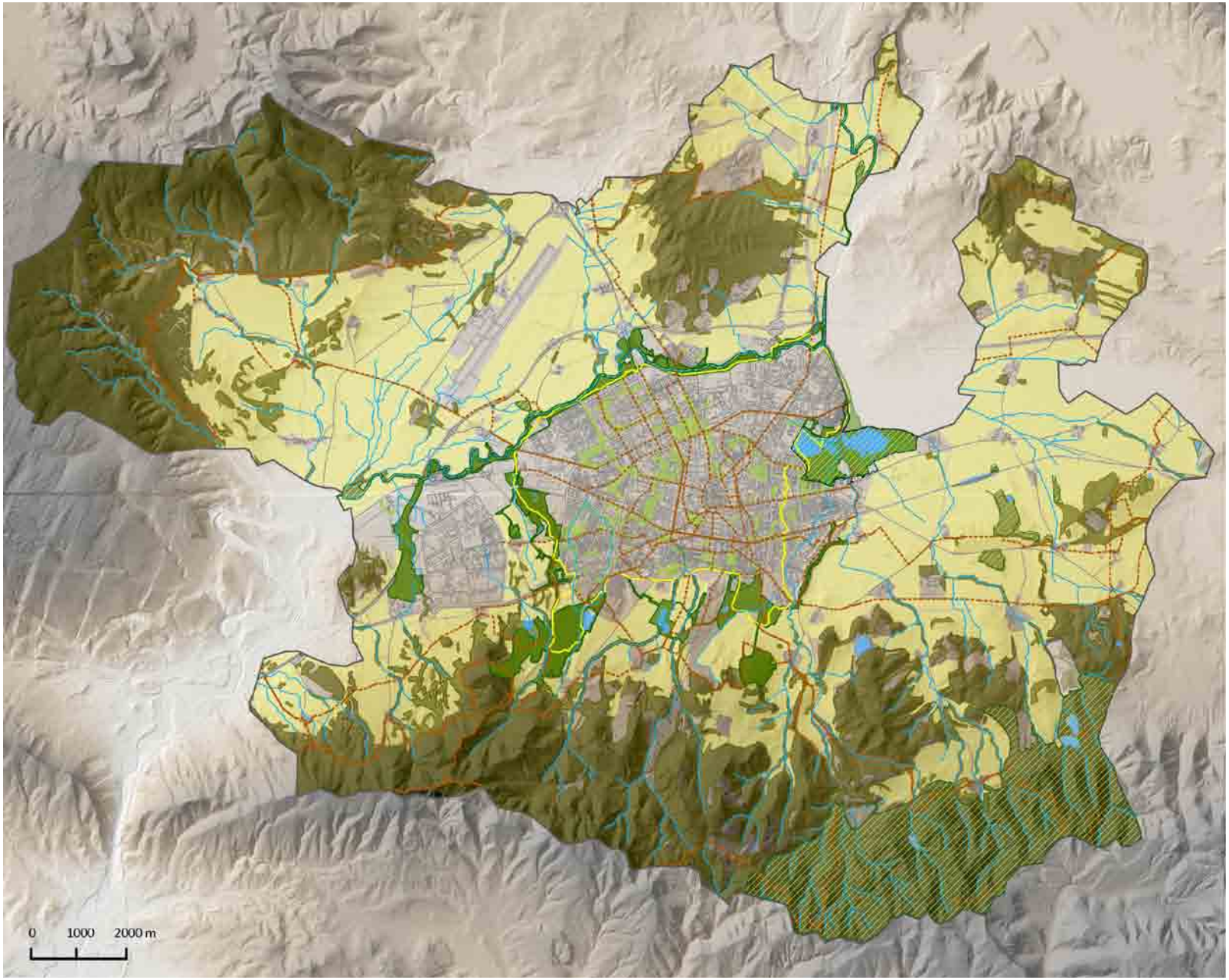
The different physical elements and ecosystems in the municipality are arranged concentrically, with the city located in the geographical centre, surrounded by a belt of green periurban spaces (Green Belt). Around the city there is a large agricultural area (the Agricultural Belt), including 64 small population centres and a number of small, isolated woods. A third Belt is made up of extensive forests that occupy the mountainous edges that mark the boundaries of the municipality. An extensive network of greenways and hedgerows cross the territory, connecting its urban, rural and natural spaces.

The natural environment of Vitoria-Gasteiz has been maintained in a general state of good conservation thanks to an environmentally friendly management of the territory and a determined policy of environmental restoration and protection of its biodiversity, which has permitted the recovery of some of these degraded spaces as well as the preservation of a large number of fragile ecosystems.

Currently, Vitoria-Gasteiz has an extensive range of species of flora and fauna and several locations have been declared CISs (Community Interest Sites) within the Natura 2000 network: the eastern sector of the Montes de Vitoria mountains, the River Zadorra and the Salburua Wetlands.

The situation with regard to the provision of ecosystems services in this territory is very favourable. The aim is to promote these services through actions that facilitate the future ecological connection between places of greatest importance and between natural spaces and urban and periurban green spaces, strengthening the ecological framework of the municipality to the very heart of the city through the Urban Green Infrastructure System.

*The principal natural spaces of the municipality are the **Zadorra River** (declared Community Interest Site), the **Salburua Wetlands** (declared Ramsar Wetland of International Importance, as well as a Community Interest Site) and the **Montes de Vitoria** mountains (currently in the process of being declared a Natural Park).*



VITORIA-GASTEIZ
Urban Green Infrastructure

FORESTS

AGRICULTURAL BELT

GREEN BELT

GREEN BELT CIRCUIT

LAKES AND WETLANDS

RIVERS AND STREAMS

URBAN PATHWAYS AND GREEN ROUTES

URBAN GREEN LAYOUT

COMMUNITY INTEREST SITES



2.3.2 Urban and periurban environment

In its urban and periurban environment, Vitoria-Gasteiz has a large number of territorial spaces and elements of different typologies that act in a similar fashion to the way in which the components of an Urban Green Infrastructure System work, as they have important environmental and social functions.

The spatial distribution of these elements reveal the outline of a network on which it is possible to act in order to improve the ecological and functional connection between the main spaces and to configure in this way an Urban Green Infrastructure System that strengthens the socio-ecosystem services of the whole and responds to some of the existing inefficiencies and problems, such as those relating to the deficient management of water, the high maintenance costs of green spaces, ecological fragmentation, etc.

A detailed study of each one of the existing spaces and elements with regard to their state of conservation and potential, will allow us to identify what actions are required to improve their functionality and to facilitate in this way their incorporation into the Green Infrastructure System.

These elements are grouped together in the following categories:

FORMS OF WATER
Aquifer, rivers and streams, lakes and wetlands and the sewerage network.

GREEN BELT PARKS

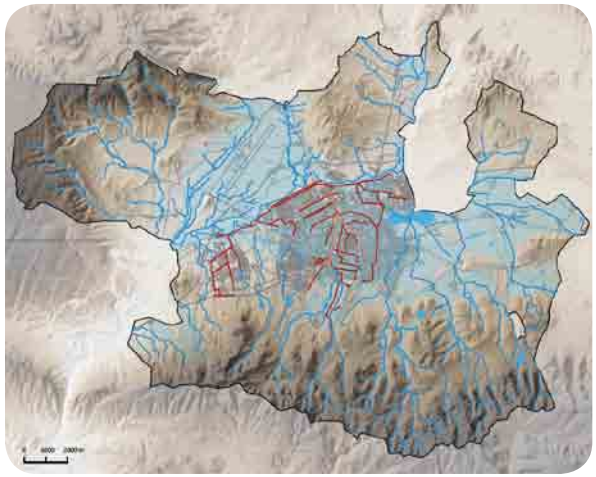
URBAN GREEN LAYOUT
Urban green spaces and vacant plots.

AGRICULTURAL BELT

PUBLIC USE
Urban pathways, greenways and ecological routes.

SUSTAINABLE MOBILITY INFRASTRUCTURES
Bicycle lanes and freed up public space.

FORMS OF WATER









A large part of the municipality lies over the Quaternary Aquifer of Vitoria, a large reserve of subterranean water of around 450 million litres, of great potential as a source of supply. Currently it is used very little except for agricultural use and for irrigating gardens.

The surface water system is made up of a dense network of rivers and streams that flow into the river Zadorra, the main river of the Llanada Alavesa plain, which crosses the city from east to west, forming its northern border. The status of many of these rivers and streams is precarious due to the degradation of their banks and adjacent areas as a result of agricultural practices and urban occupations of all kinds.

The situation of the rivers in the South is especially problematic. Until just a few decades ago, these rivers, which connected the Montes de Vitoria to the river Zadorra, were placed in channels at the entrance into the city and became the collectors in the city's sewerage network. In addition to the total loss of ecological and social functionality, their transformation into collectors generated other, additional problems especially in times of heavy rainfall: flooding in urban areas near the locations where these rivers were placed in channels at their entrance into the city and overloads both in the network and in the water treatment plant meant that unnecessary effort was spent in treating water that was relatively clean, and untreated, highly-contaminated waste water was dumped directly into the river Zadorra.

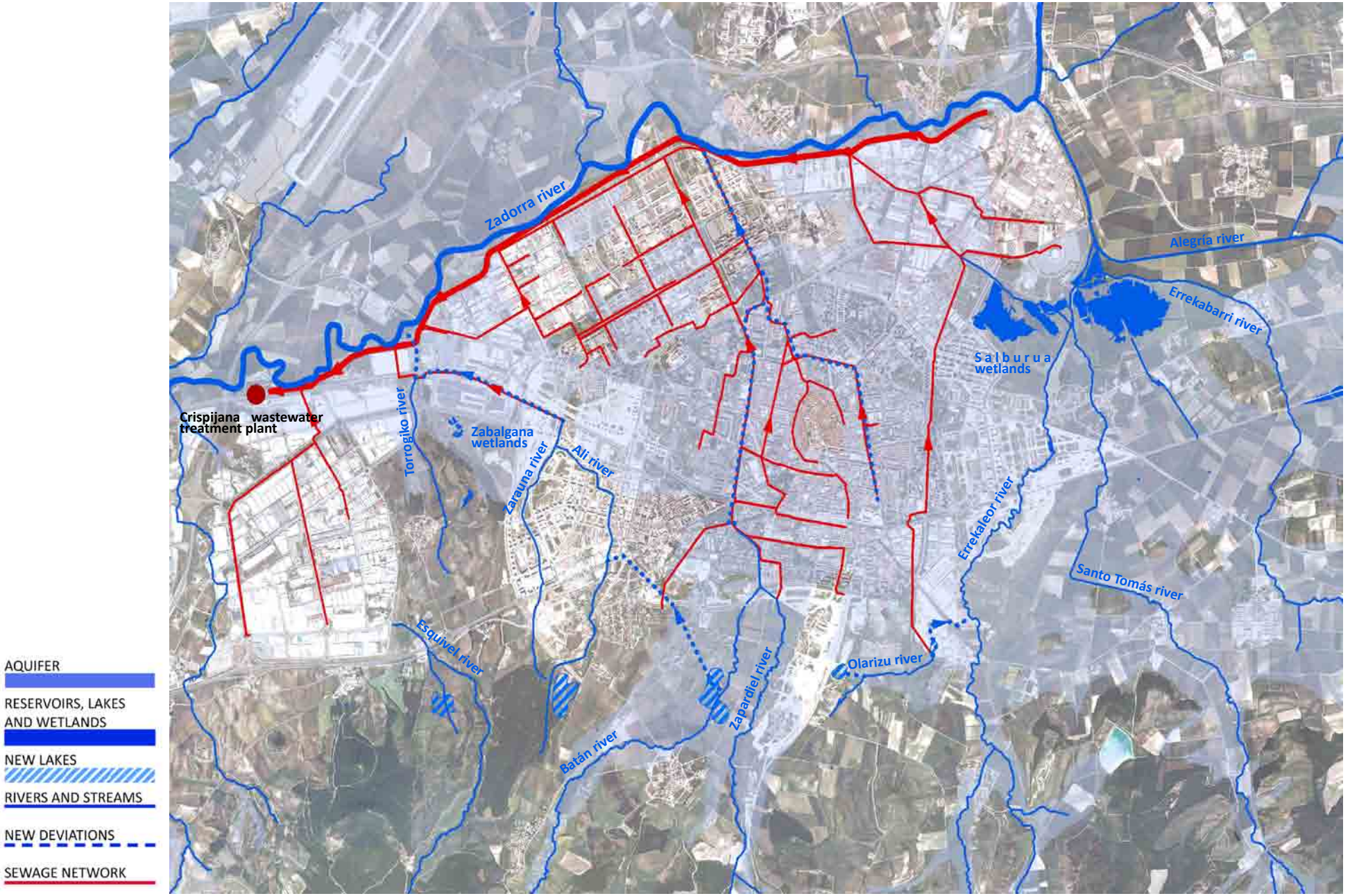
Over recent years, actions have been taken in order to prevent flooding, improve the quality and quantity of water resources and of our aquatic ecosystems, as well as actions to bring about an overall improvement in the sewerage network. These include diverting the rivers Santo Tomás and Errekaleor, associated with the recovery of the natural wetlands of Salburua, the hydraulic adaptation and environmental restoration of the river Zadorra, the environmental preparation of river courses in the urban environment and the construction of a storm water tank to collect surplus, thus avoiding overloads in the network and the dumping of untreated wastewater into the river Zadorra, etc.

Other forms of water that exist in the urban and periurban environment are pools and small lakes, lagoons and wetlands, which, in addition to improving biodiversity and naturalistic world, play an extremely relevant role in the regulation of the hydrological cycle. In the specific case of the Salburua wetlands, great improvements have also been made in the quality of water of the aquifer on which these lie.

Because of their naturalistic values and as they are the habitats of several threatened species, two aquatic ecosystems (the river Zadorra and the Salburua wetlands) are included as CISs in the Natura 2000 network. Moreover, the latter have been declared RAMSAR Wetlands of International Importance.

Today, new actions are being proposed to improve the hydraulic operation and to restore the natural dynamics of the river courses in the urban and periurban environment of Vitoria-Gasteiz. These include work to continue diverting the flows of rivers in the South to abandoned gravel pits and other degraded spaces that would take on the role of flood separation pools and, at the same time, would be used to other streams with deficient flows. It is also planned to recover certain stretches of the river within the urban environment, creating a new surface ecological corridor, etc.

At the same time, it is planned to install sustainable urban drainage systems to increase the permeability of the soil and the infiltration capacity of the water, which help to manage rainwater more efficiently and to reduce run-off, through measures such as filter strips, drainage ditches, retention ponds and infiltration tanks.


Zadorra river
Alegría river
Errekabarri river
Salburua wetlands
Crispijana wastewater treatment plant
Torrogiko river
Zabalgana wetlands
Zarauna river
Ali river
Errekaleor river
Santo Tomás river
Esquivel river
Zapardiel river
Olarizu river
Batán river
AQUIFER
RESERVOIRS, LAKES AND WETLANDS
NEW LAKES
RIVERS AND STREAMS
NEW DEVIATIONS
SEWAGE NETWORK

GREEN BELT PARKS







The Green Belt is a large, 731-ha seminatural space that lies around the city. This initiative is the result of a restoration project of the urban outskirts that began in the early 90s and continues today with plans to extend it in the future. The Salburua wetlands and the River Zadorra, which have been incorporated in the Natura 2000 Network, are spaces of high nature value. Next to these, the remaining parks form a natural corridor between the Montes de Vitoria and the river Zadorra and between the city and the agricultural belt, which features a high level of biodiversity on the outskirts of the city.

The protection and improvement of the biodiversity and the landscape, the prevention of flooding in the city centre and their contribution to regulating the hydrological cycle, leisure and recreation in contact with nature and the promotion of environmental education are some of the many ecosystem functions and services provided by Green Belt Parks.

Beyond these functions, their true potential resides in the fact that the Green Belt is in itself a truly green infrastructure, of great importance in the ecological framework of the territory, both at a local and supra-municipal scale. Its location, circular shape and the fact that it is made up of a set of natural spaces connected by means of eco-recreational corridors, guarantee the ecological connection between two of the main natural spaces of the municipality: the Montes de Vitoria mountains to the south and the River Zadorra, to the north.

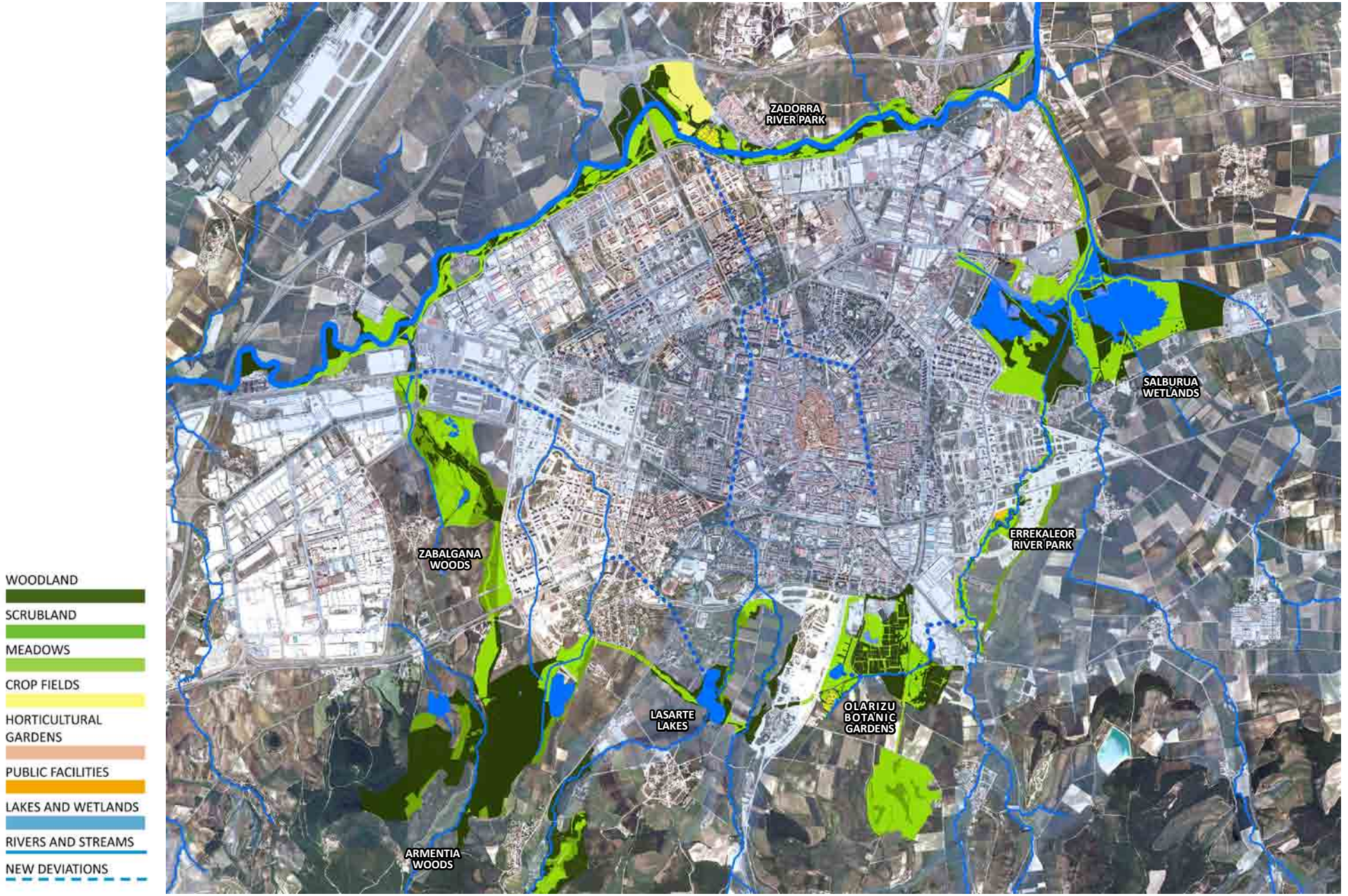
With regard to the urban green framework, the role of the Green Belt is paramount as it allows the natural milieu to permeate towards the city and from the city to the countryside, establishing reciprocal relationships that gave the entire ecological system a sense of continuity.

The Green Belt of Vitoria-Gasteiz has been singled out by the European Commission as an example of a Green Infrastructure in Europe due to its contribution to improving ecosystem services in periurban areas (Commission Staff Working Document. Technical Information on Green Infrastructure (GI), Brussels, 6.5.2013).

The criteria used in the restoration and subsequent management of the parks that make up the Green Belt are linked more to the techniques used in purely wild spaces than in urban spaces. Thus, the use of native plant species, the use of management techniques intended to ensure the maximum diversification of ecological environments, management criteria involving a lower level of intervention, the conservation initiatives of certain habitats or species, the scientific monitoring of environmental parameters and the large number of actions designed to increase environmental awareness, are some of the distinguishing features that make the management of the Green Belt extremely important. (Source: Strategy for the Conservation of the Biodiversity of the Municipality of Vitoria-Gasteiz, Draft, March 2013).

The results of the management carried out on the Green Belt show that it is possible to make public use compatible with nature conservation. In fact, the increase in the number of visitors has gone hand-in-hand with an increase in the number of nesting birds in the Green Belt.

The improvement in the ecological connections between Parks, associated with the rivers, hedgerows and other periurban landscape elements, and improved accessibility from the city to a number of points along the Green Belt and mountain areas will help to reinforce the ecological connectivity of the Green Belt and therefore its condition as an ecological corridor. The annexation of new urban or agricultural spaces to the Green Belt is considered to be a very good way of strengthening its identity and potential as an ecological corridor.


ZADORRA RIVER PARK
SALBURUA WETLANDS
ERREKALEOR RIVER PARK
ZABALGANA WOODS
LASARTE LAKES
OLARIZU BOTANIC GARDENS
ARMENTIA WOODS
WOODLAND
SCRUBLAND
MEADOWS
CROP FIELDS
HORTICULTURAL GARDENS
PUBLIC FACILITIES
LAKES AND WETLANDS
RIVERS AND STREAMS
NEW DEVIATIONS







URBAN GREEN LAYOUT: Urban green areas

Urban green areas are parks, gardens, green sports areas, cemeteries, interior courtyards, boulevards and tree-lined promenades that extend throughout the city. With 20 m^2/inhabitant, Vitoria-Gasteiz is one of the European cities with more green surface area per inhabitant, doubling the amount recommended by the World Health Organisation of 10 m^3/inhabitant.

In general, the distribution of green spaces in the city is balanced, so that from any point within the residential layout of the city access can be had to a green recreation area within a maximum radius of 250 m, in other words, a maximum distance of 2.5 minutes on foot.

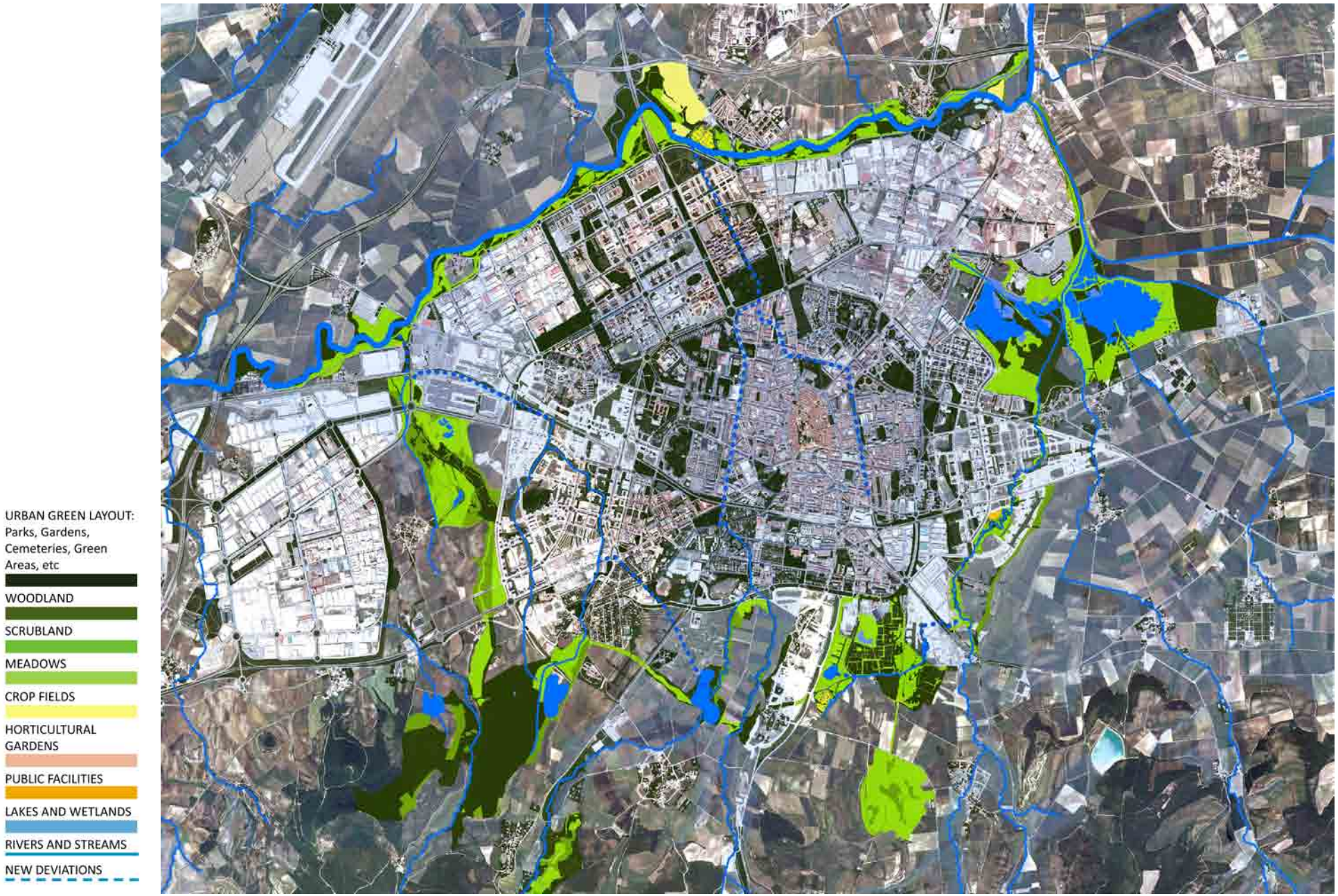
Urban green areas represent a unique and complex biodiversity resource with more than 50,000 vegetal units, including up to 381 different species of trees and shrubs as well as 12,160 shrub masses. For their part, the streets of the city are lined with more than 130,000 trees.

In addition to its merely aesthetic and recreational functions, the urban green layout also plays a fundamental role in tempering the urban climate and improving climactic comfort, reducing contamination, preventing climate change due to its action as a carbon sink, increasing the infiltration capacity of the land and as a consequence of all of these factors, improving urban biocapacity.

However, as the Biodiversity Conservation Strategy of the municipality points out, the biological diversity of the flora and fauna of the urban parks as a whole has decreased significantly. Several reasons for this situation have been detected. These relate to the management of the city's spaces: firstly, the high frequency with which grass has been cut; secondly, the reduced use of native species in favour of exotic species (in some cases of an invasive nature) that adapt poorly to local conditions and have higher water requirements, and thirdly, the vertical structure of green spaces, which in general consist of just two storeys (lawn and trees). As a result, this simplicity, both in specific and structural terms, affects the rest of the biological community. On the other hand, this type of management involves high maintenance costs.

In other aspects relating to the management of urban green spaces, however, the situation is more promising. Thus, the efficiency levels obtained in the use of water are relatively high (the Comprehensive Water Saving Plan includes measures to replace drinking water with recycled water for irrigation) and the amount of woody waste is not excessive, taking into consideration the method used to prune trees, which allows them to develop naturally.

Today, a number of measures to improve the management of green spaces have already been adopted, with the aim of increasing urban biodiversity and reducing irrigation needs and maintenance costs. These include the use of native plant species, a reduction in the frequency with which grass is cut, the creation of shrub masses and flower meadows, the creation of small ponds and dry stone walls, the reduction in night-time street lighting, the maintenance of trees with cavities (whenever these do not represent any danger for passers-by), the placing of nesting boxes for bats or cavity-nesting birds or the creation of small masses of dead wood.


URBAN GREEN LAYOUT:
Parks, Gardens,
Cemeteries, Green
Areas, etc
WOODLAND
SCRUBLAND
MEADOWS
CROP FIELDS
HORTICULTURAL
GARDENS
PUBLIC FACILITIES
LAKES AND WETLANDS
RIVERS AND STREAMS
NEW DEVIATIONS

TRANSITIONAL URBAN GREEN LAYOUT: Vacant plots





A question of great importance in the current urban configuration of the city is the existence of a large number of vacant plots reserved for municipal installations, residential, productive or services, which in view of the current economic situation, are not likely to be developed in the short term.

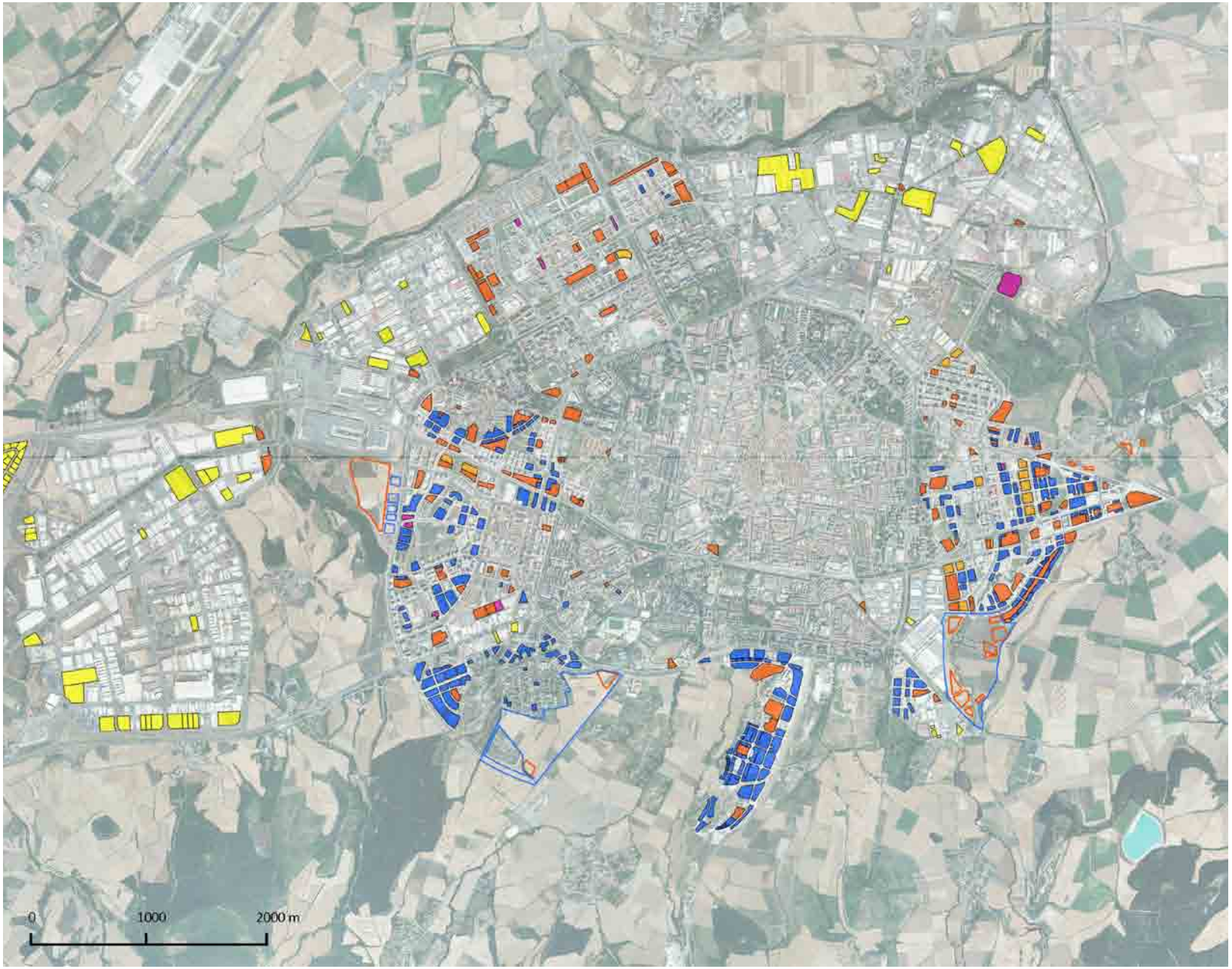
A recent analysis of vacant plots on the urban and developable land of Vitoria-Gasteiz estimates that there are more than 500 units and almost 3 million square metres of land in the city that have not been developed and which remain vacant, both on land earmarked for productive or services installations and residential (794,146 m² of installations, 60,338 m² of services and 896,221 m² of residential), especially in the new areas of Salburua, Zabalgana and Aretxabaleta-Gardelegi. The scale of the problem is appreciable as it generates major problems of a social, economic and environmental nature.

This situation is a consequence of overestimating the need for land which was far in excess of requirements in accordance with the actual and expected demographic development at that time, which led to the classification of 43% of the area of urban land existing at the time as Programmed Developable Land by the Current General Plan (passed in 2003).

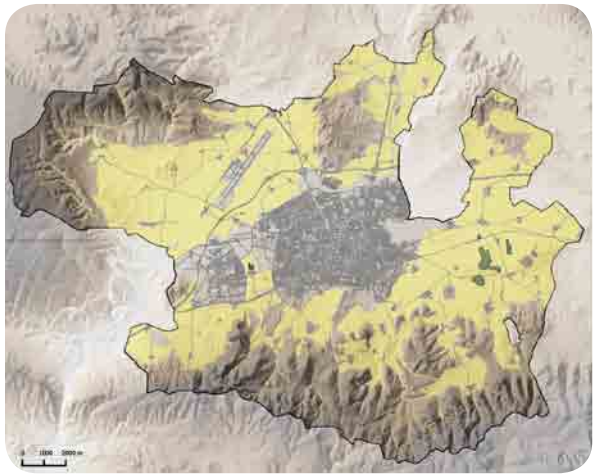
This over sizing has meant, among other things, that the new districts, most of which have been developed, present large discontinuities and vacant urban spaces, as a result of low building density and the dispersion of buildings, which re-densification processes have not succeeded in correcting. This low density prevents the development of activities other than residential and has led to a situation whereby there is little social cohesion and public spaces are not identified due to the dispersion of housing blocks. In these new districts, it is necessary to consolidate communications axes within the city centre and plan the orderly growth of building on the plots, in order to satisfy the most urgent needs and, for example, create streets and consolidate the urban layout (*Updated Urban Planning Diagnosis additional to the Previous Studies of the General Plan Review*, March 2013).

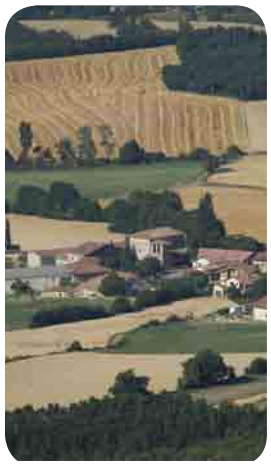
In this situation, moreover, it is necessary to find a solution for these vacant spaces through the proposal of new uses designed to resolve, on a temporary or, if appropriate, definitive basis, both the state of deterioration and abandonment in which they find themselves and the socio-environmental problems that are arising as a result, and offer new opportunities for the development of the city and its districts.

The potential uses that can be planned in the form of temporary measures for these plots include those relating to the provision of ecosystem goods and services through, for example, their transformation into urban vegetable gardens or community gardens. These alternatives combine the naturalisation of the spaces with social uses. In this way, vacant plots become spaces for opportunity within the Urban Green Infrastructure System.


VACANT PLOTS
Municipal installations without consolidated use
Municipal installations in ground-floor residential buildings
Municipal installations in non-developed area
Productive
Residencial
Residencial in non-developed area
Tertiary
0
1000
2000 m

AGRICULTURAL BELT







The agricultural land that lies between the urban-periurban environment and the mountainous areas occupies 58% of municipal land and is in general of high agrological value. It includes 64 small population centres of a highly rural nature.

Today, the municipal rural landscape is rather simplified due to the intense process of industrialisation that the agricultural sector has undergone in recent years, and for that reason, the low amount of remnants of natural vegetation at this time (hedgerows, river banks and island woods) are highly relevant from an ecological and landscape perspective. The preservation, improvement and connection of these small relics of natural vegetation scattered in the agricultural matrix, is key to restoring the ecological connectivity between the green belt and the mountains and articulating a stable green infrastructure, increasing biodiversity, improving the quality of the rural landscape and the fertility of the agricultural land.

Due to their nature value, island oak woods, the remains of the primitive vegetation that covered the valley floor, are especially noteworthy. These are isolated wooded spaces, which, although fragmented, are used as a refuge by forest species, many of which are threatened, and diversify and enhance the rural landscape. These regions have led to the declaration of several island woods as Community Interest Sites (CIS), within the European Natura 2000 Network.

From the viewpoint of the agricultural sector itself, the transition from traditional agricultural systems to agricultural practices that are more respectful of the land itself, the aquifer, the watercourses and the existing remains of natural vegetation would be desirable, as it would give the product added value. In this sense, the periurban agricultural land, in contact with the green belt, shows a greater potential with regard to its conversion into an agricultural space in which to test and put into operation organic, integrated or ecological agricultural practices. Moreover, the annexation of the spaces to the Green Belt would give it greater entity and would strengthen its role as an ecological connector.

One of the initiatives put into motion by institutions to promote ecological agriculture and, more exactly, ecological horticulture in the municipality, is the Basaldea project. This involves an experiment with a clear professional and business objective that will provide young agricultural promoters with training to enable them to create their own farms, facilitate the initiation of a distribution and marketing channel for ecological products and create an awareness of the added value involved in ecological products and local consumption.

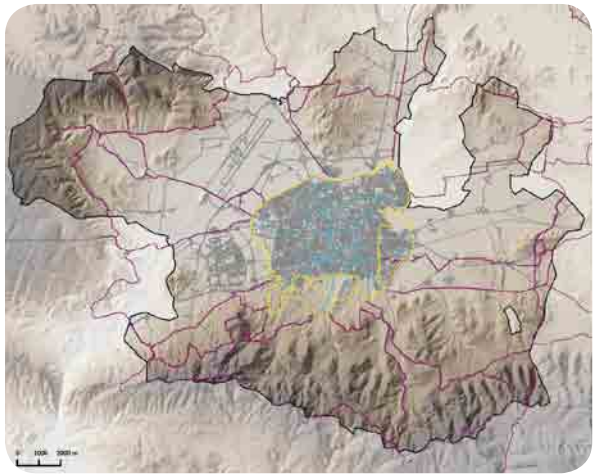
Not only in the rural and periurban environment, but also in the city itself, ecological horticulture is an alternative that is growing in importance. Over recent years, several public and private initiatives have been put into motion in this field, with a clear educational and social objective. On the one hand, two municipal installations have been set up on the Green Belt: these are the Olarizu Vegetable Gardens and the Urarte Vegetable Gardens in Abetxuko, in which a large number of citizen groups and individuals have learnt how to grow vegetables ecologically. On the other hand, numerous teaching centres have started up their own school vegetable gardens with a clearly pedagogic objective.

Today, work is being done to create and start up two urban vegetable gardens on empty plots in the main areas of urban expansion in the city (Salburua and Zabalgana). Both initiatives, promoted by neighbourhood associations, intend to explore ways of self-management linked to the development of a community horticultural activity.


AGRICULTURAL BELT
URBAN GREEN LAYOUT: Parks, Gardens, Cemeteries, Green Areas, etc
WOODLAND
SCRUBLAND
MEADOWS
CROP FIELDS
HORTICULTURAL GARDENS
PUBLIC FACILITIES
LAKES AND WETLANDS
RIVERS AND STREAMS
NEW DEVIATIONS


ABETXUKO HORTICULTURAL GARDENS
OLARIZU HORTICULTURAL GARDENS

PUBLIC USE





Over recent years, a large number of routes and pathways have been created to improve access to green spaces and their enjoyment.

In accordance with the Sustainable Mobility and Public Space Plan, work is currently underway in the city on the configuration and preparation of a network of urban pathways that will link the main socio-cultural installations and urban parks to each other and to the city's periurban parks.

On the Green Belt, about 90 km of itineraries for pedestrians and cyclists have been created. The Green Belt Circuit, consisting of just over 30 km, is the main pedestrian and cyclist route in this network, as it links all the parks that form the Green Belt. It is the main element that connects the different parks in the Green Belt and is easily accessible from any point of the cycle paths and urban pathways that cross the city.

Agricultural land also contains itineraries such as the old railway line and livestock breeder's routes, which allow users to access the rural and natural milieu from the city. Some examples include the green routes to Estíbaliz and Arlabán or the Peña Betoño cattle route.



Together, these pathways and routes form a network of itineraries of great socio-ecological value as, in addition to fostering physical activity, enjoyment of the open air and the development of a love of the natural and cultural heritage of the municipality, they facilitate the ecological connection between spaces and develop climatic and environmental regulation functions thanks to the trees planted along their edges.

With regard to the future, the idea is to resolve the discontinuities that exist along some routes such as the Estíbaliz Greenway where it crosses Vitoria-Gasteiz, and to integrate the entire network in a broader network of greenways for the entire province of Alava. The Provincial Council of Alava is the body responsible for planning and managing the network of greenways that run through the province, in collaboration with the town halls and other government bodies and entities.




URBAN WALKWAYS AND ECOLOGICAL ITINERARIES
ROUTE AROUND THE GREEN BELT
AGRICULTURAL BELT
URBAN GREEN LAYOUT: Parks, Gardens, Cemeteries, Green Areas, etc
GREEN BELT
LAKES AND WETLANDS
RIVERS AND STREAMS
NEW DEVIATIONS

SUSTAINABLE MOBILITY INFRASTRUCTURES



The Sustainable Mobility and Public Space Plan of Vitoria-Gasteiz fosters modes of sustainable mobility to the detriment of private vehicles through a range of different measures such as the restructuring of the network of urban buses in coordination with the tram service, the extension of pedestrian precincts, the creation of a functional network of cycle paths and the configuration and preparation of a network of urban pathways.

The Cyclist Mobility Master Plan and the Pedestrian Mobility Master Plan envisage importance reforms in the thoroughfares and streets of the city. In the first case this is to extend the current network of 116.5 km to 145 km of streets with cycle paths and in the second case, to prepare a network of urban pathways of approximately 70 km in length. The network of urban pathways and cycle paths offer great deal of potential for forming part of an Urban Green Infrastructure, provided that their connectivity can be ensured and as long as naturalisation and green promotion measures are taken in order to guarantee both their physical and ecological functionality.



One of the most ambitious proposals of the Sustainable Mobility and Public Space Plan is to reorganise the network for private vehicles in accordance with a model based on superblocks in which pedestrian and cyclist mobility modes will have preference. This measure will involve the removal of traffic from thoroughfares located within the superblock and the restoration of a more accessible, comfortable, continuous and safe public space in which it is possible to apply new, greener urban designs on which to support the Urban Green Infrastructure System. Seventy-seven superblocks have been planned.

Likewise, it is desirable to redesign thoroughfares in accordance with measures deriving from the Sustainable Mobility and Public Space Plan and develop the public space freed up as a result. The arrival of the high-speed train to Vitoria-Gasteiz in the future offers several possibilities with regard to the preparation of new urban axes that could be integrated within the same plan.




CURRENT RAILWAY ROUTE AND FUTURE HIGH-SPEED TRAIN
TRAM
BICYCLE PATH NETWORK
URBAN WALKWAYS AND ECOLOGICAL ITINERARIES
ROUTE AROUND THE GREEN RING
AGRICULTURAL BELT
URBAN GREEN LAYOUT: Parks, Gardens, Cemeteries, Green Areas, etc
GREEN BELT
LAKES AND WETLANDS
RIVERS AND STREAMS
NEW DEVIATIONS



2.4 Components and elements of the Urban Green Infrastructure System of Vitoria-Gasteiz

Based on the analysis and diagnosis of the ecosystem functionality of the green spaces of the city and surrounding area, the main elements that make up the first proposal for the Urban Green Infrastructure System of Vitoria-Gasteiz have been selected.

In order to define and design the Urban Green Infrastructure System of Vitoria-Gasteiz, the postulates of the *Landscape Ecology Theory* have been taken as a reference, although it is recognised that this theory and the concept of the "ecological network" itself have been conceived for application to the territory as a whole and, therefore, the application of this theory in the case of urban areas requires a number of adaptations.

Landscape ecology argues in favour of strengthening the ecological framework of the territory by connecting its core spaces (defined as those spaces with the highest level of biodiversity) in a network through a number of nodes and connectors. By applying these concepts to the urban ecosystem, the **core elements** will be set up in the natural and seminatural spaces nearest the city (essentially the Green Belt) while the **nodes** would correspond to parks, gardens and other urban green areas. The **connectors**, understood to be the routes to be followed between these nodes and the core elements, would link some spaces to others. Together, all these elements would make up a green network that would enrich and nourish the remaining elements in the public space.

The Urban Green Infrastructure System of Vitoria-Gasteiz is based, therefore, on already existing urban and periurban elements, basically on those of public property and use.

The elements suitable for forming part the system are those that have the potential to comply with all or some of the ecosystem functions associated with them. In the city, all green areas (both urban parks and interstitial spaces associated with thoroughfares or service installations), as well as empty plots, which, although devoid of vegetation, possess permeable soils, can be integrated into the Green Infrastructure. In the periurban environment, the green belt and adjacent agricultural spaces are fundamental elements in the system.

Due to operability issues, however, and as an initial approximation, it has been decided to delimit and define a "primary" or basic system of green infrastructures, made up of the most relevant elements, which would support and nourish the remaining green spaces and the city as a whole. Thus proposed, the Green Infrastructure would fall well within the legal and operative framework of urban planning.

Each functional assembly of the elements that make up the aforementioned "primary" or basic System of the Urban Green Infrastructure of Vitoria-Gasteiz is categorised and defined below.

CORE ELEMENTS

The periurban parks that form the Green Belt are spaces with a high naturalness level and currently enjoy a good state of conservation. For this reason and as they are located adjacent to the city, they represent the core elements of the System.

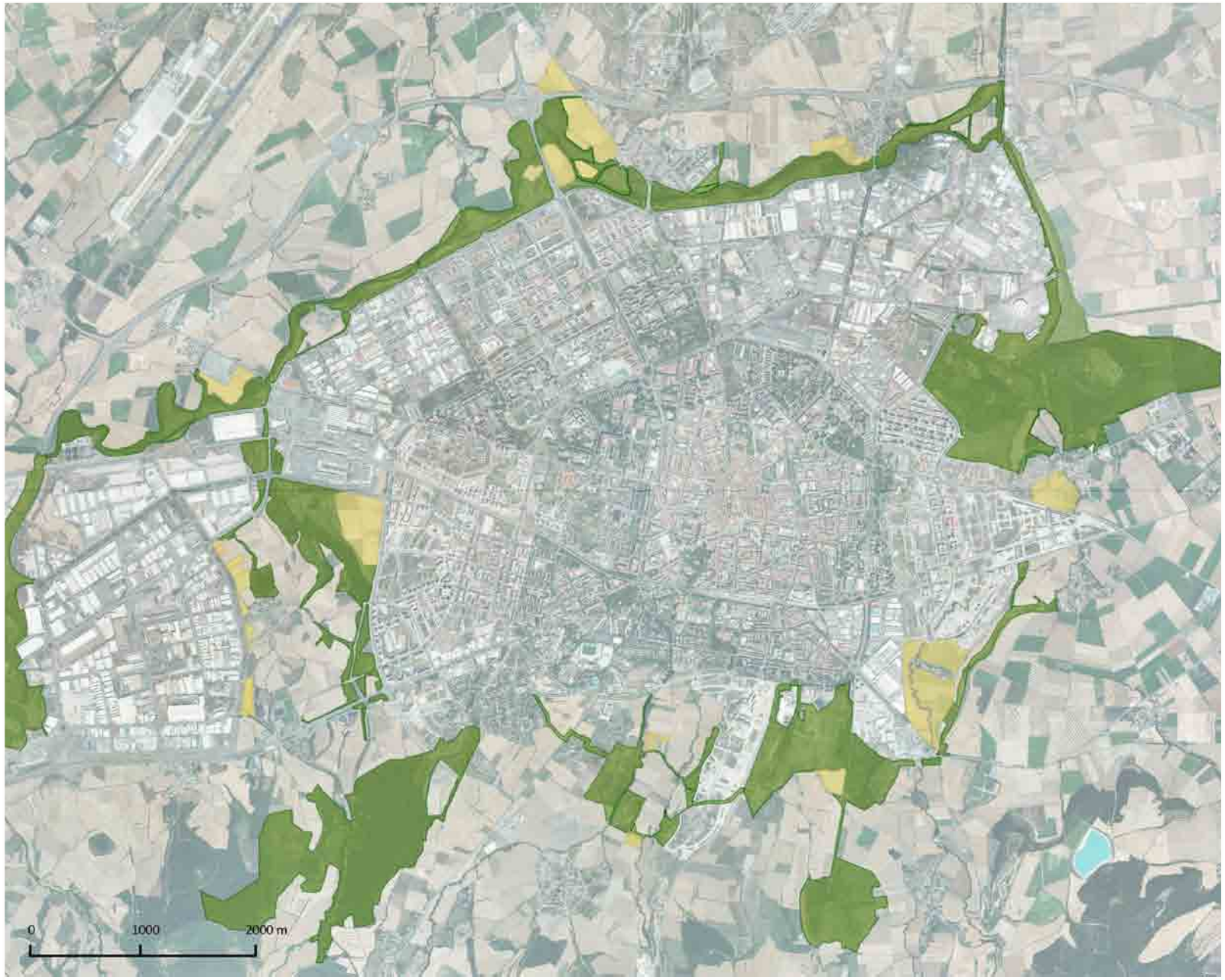
Their current naturalness indexes mean that they can be used as transition elements between the city and the natural systems that surround the municipality. Therefore, they are essential elements in the Urban Green Infrastructure System as they guarantee the ecological connection between the inner city and surrounding nature. It is necessary, for this reason, to guarantee their internal connectivity, i.e., between the Green Belt parks themselves and their external connectivity both with the surrounding natural spaces and urban green areas, in an attempt to introduce nature into the city.

Several agricultural spaces within the environment of the Green Belt are also proposed as core elements. These involve either agricultural land belonging to the municipality or vacant urban spaces of private ownership (in sectors that have still to be developed) in which it would be possible to promote a conservationist agriculture that favours biodiversity and ecological processes. The inclusion of these agro-ecosystems in the Green Infrastructure (despite the transitory and provisional nature associated with some of the spaces) is proposed due to the importance of some of the services that can be provided. These include, most importantly, supply services (production of quality foods, of low environmental impact, that favour the advance towards higher levels of food sovereignty) and support services (as they are the specific habitat of certain biota such as field flora, local crop varieties or the fauna typical of open environments, including seriously threatened species such as Montagu's harrier).









VITORIA-GASTEIZ
Urban Green Infrastructure

CORE ELEMENTS:

Green Belt

Green Belt: Agricultural Areas


Agricultural Area
Green Belt
Green Belt

CODE	TYPOLOGY	NAME	SURFACE (Ha)
AV 1.01	GREEN BELT	ALEGRÍA	11,5
AV 1.02	GREEN BELT	SALBURUA	214,5
AV 1.03	GREEN BELT	ZADORRA (GAMARRA)	20,4
AV 1.04	GREEN BELT	ZADORRA (ABETXUKO)	34
AV 1.05	GREEN BELT	ZADORRA (URARTE)	28
AV 1.06	GREEN BELT	ZADORRA (ATXA)	55,2
AV 1.07	GREEN BELT	ZADORRA (CRISPIJANA)	34,6
AV 1.08	GREEN BELT	ZABALGANA	79,4
AV 1.09	GREEN BELT	ARMENTIA	162,1
AV 1.10	GREEN BELT	LARRAGORRI	35,2
AV 1.11	GREEN BELT	OLARIZU	118,8
AV 1.12	GREEN BELT	ERREKALEOR-LAS NEVERAS HILL	17,9
AV 1.13	GREEN BELT	JUNDIZ	77,4

CODE	TYPOLOGY	NAME	SURFACE (Ha)
AV 2.01	AGRICULTURAL AREA	GAMARRA	6,7
AV 2.01	AGRICULTURAL AREA	BASALDEA	31,7
AV 2.01	AGRICULTURAL AREA	ASTEGUIETA	7,1
AV 2.01	AGRICULTURAL AREA	JÚNDIZ AREA	13,6
AV 2.01	AGRICULTURAL AREA	ALDAIA	19,2
AV 2.01	AGRICULTURAL AREA	LARRAGORRI	3,2
AV 2.01	AGRICULTURAL AREA	OLÁRIZU	4,2
AV 2.01	AGRICULTURAL AREA	OLARÁN	30,8
AV 2.01	AGRICULTURAL AREA	ELORRIAGA	10,5

The proposed core elements will occupy a total surface area of 1016 ha (of which 889 ha correspond to periurban parks and 127 to agricultural areas).

NODES

The elements that can be used to build the nodes of the infrastructure are those open spaces, located within the city, capable of fulfilling a relevant structuring role due to their size or location. When selecting these nodes, both their current and potential characteristics and functional capacities are taken into consideration.

The spaces that are most compliant with these requirements are urban parks subject to any kind of public use. The term “park” is understood to refer to any open space prepared for use by the public for recreation, relaxation and rest as well as those that comply, now or in the future, with other functions established for Green Infrastructures. Therefore, this category includes the following detailed uses established in the Urban Master Plan for Open Spaces: urban parks, public green areas and open spaces for public use.

Those open spaces that are not built on and are not intended principally for public use but may comply partially with some of the functions assigned to Green Infrastructures, may also be included as nodes in the Infrastructure. These spaces may belong to the network of Urban Installations and Services in the city, or even be defined as such, as is the case of the cemetery, with an important coverage of trees.

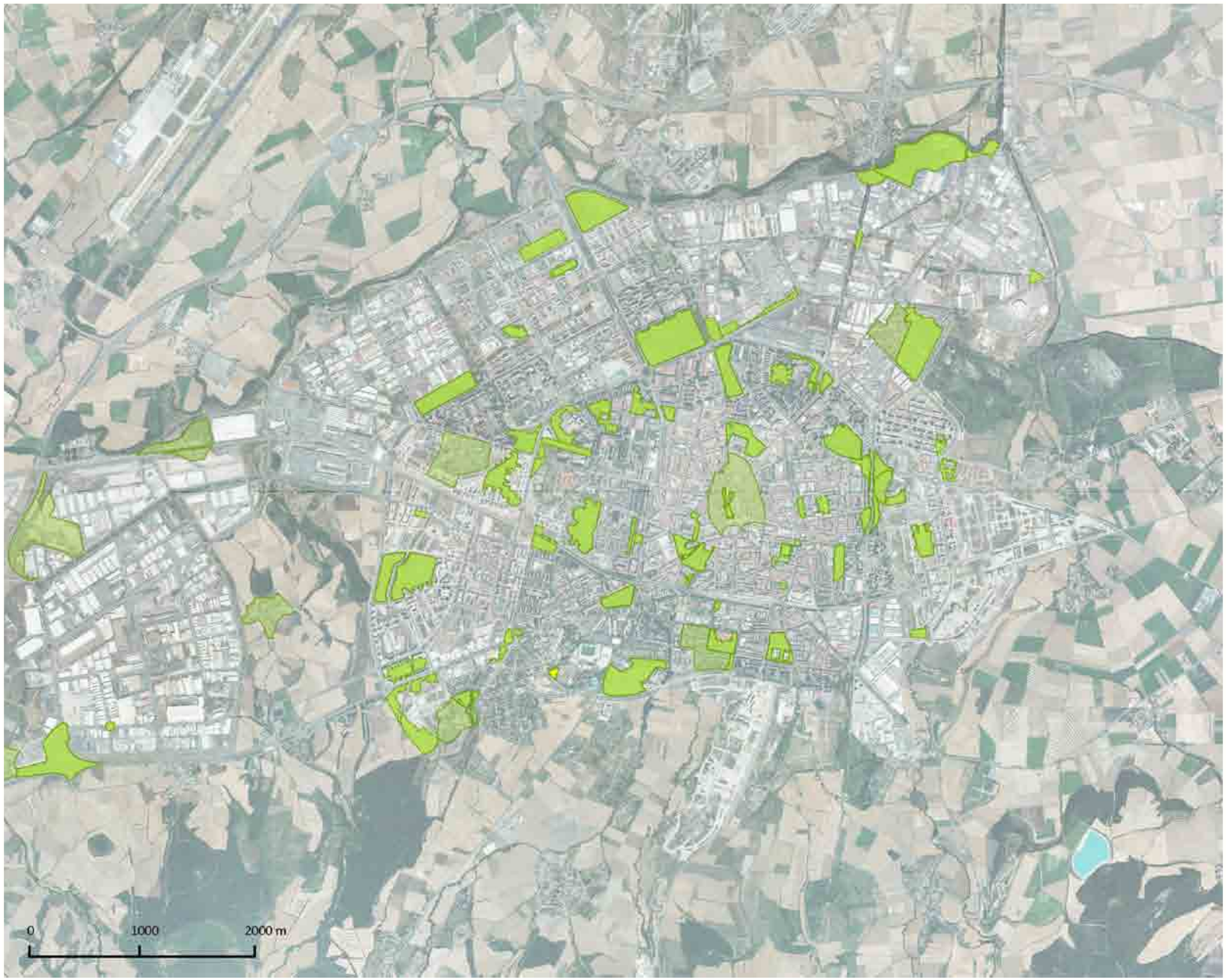
Likewise, those plots that are currently vacant or without a specific use, especially in the new districts of the city, could be put forward for conversion into green areas associated with the Urban Green Infrastructure, increasing the potentiality of the system.

Most of these nodes are therefore clearly defined, delimited spaces (differentiating between two subcategories: **principal nodes** and **secondary nodes**, in accordance with the magnitude of their functional capacity). Other areas in which there are no continuous and compact green spaces of a sufficient size, but in which there are (or maybe introduced) dispersed green elements, capable of complying with the functions of the Green Infrastructure, are also considered nodes and behave as such. These groups of elements are **diffuse nodes**.

The node system is formed by a total of 71 elements, of which 23 are principal nodes, 38 are secondary nodes and 10 are diffuse nodes. The total surface area occupied is 244 ha (without counting the diffused nodes) with an average surface area of 4 ha. The principal node with the largest surface area is Arriaga Park with 20 ha.







VITORIA-GASTEIZ
Urban Green Infrastructure

NODES

Principal and Secondary Nodes

Diffuse Node


NO 2.30 Old aerodrome parks
NO 1.18 Arana park
NO 1.17 Aranbizkarra park

CODE	TYPOLOGY	NAME	SURFACE (Ha)
NO 1.01	PRINCIPAL NODE	SALINILLAS DE BURADON PARK	14,46
NO 1.02	PRINCIPAL NODE	BORINBIZKARRA PARK	6,18
NO 1.03	PRINCIPAL NODE	LAKUABIZKARRA PARK	7,81
NO 1.04	PRINCIPAL NODE	LAKUA IBAIONDO CENTRE PARKS	1,60
NO 1.05	PRINCIPAL NODE	ARMENTIA FIELDS	1,82
NO 1.06	PRINCIPAL NODE	MENDIZABALA AREA	11,00
NO 1.07	PRINCIPAL NODE	PRADO PARK	3,55
NO 1.08	PRINCIPAL NODE	SAN MARTIN PARK	8,13
NO 1.09	PRINCIPAL NODE	ARRIAGA PARK	19,96
NO 1.10	PRINCIPAL NODE	MUNICIPAL NURSERY	11,14
NO 1.11	PRINCIPAL NODE	LA FLORIDA PARK + CATHEDRAL GARDENS	5,39
NO 1.12	PRINCIPAL NODE	MARIA DE MAEZTU PARK	3,33
NO 1.13	PRINCIPAL NODE	MAURICE RAVEL GARDENS	3,46
NO 1.14	PRINCIPAL NODE	MOLINUEVO PARK	4,59
NO 1.15	PRINCIPAL NODE	SANTA ISABEL PARK	6,00
NO 1.16	PRINCIPAL NODE	JUDIMENDI PARK	2,50
NO 1.17	PRINCIPAL NODE	ARANBIZKARRA PARK	6,68
NO 1.18	PRINCIPAL NODE	ARANA PARK	4,27
NO 1.19	PRINCIPAL NODE	SANTA LUCIA AND ARANA THOROUGHFARES	6,10
NO 1.20	PRINCIPAL NODE	EAST PARK	3,88
NO 1.21	PRINCIPAL NODE	GAMARRA PARK	19,36
NO 1.22	PRINCIPAL NODE	JUNDIZ INDUSTRIAL ESTATE LINK ROAD	14,38
NO 1.23	PRINCIPAL NODE	MICHELIN FOOTBALL PITCHES	14,12

CÓDIGO	TIPOLOGÍA	NAME	SURFACE (Ha)
NO 3.01	DIFFUSE NODE	ALI	16,37
NO 3.02	DIFFUSE NODE	ARMENTIA	8,38
NO 3.03	DIFFUSE NODE	MEDIAEVAL QUARTER	23,35
NO 3.04	DIFFUSE NODE	DESAMPARADOS SQUARE + LEIZAOLA SQUARE	1,35
NO 3.05	DIFFUSE NODE	BETOÑO	9,41
NO 3.06	DIFFUSE NODE	GARDEN CITY	9,75
NO 3.07	DIFFUSE NODE	ZUHATZU	8,87
NO 3.08	DIFFUSE NODE	CRISPIJANA	10,4
NO 3.09	DIFFUSE NODE	LERMANDA	22,38
NO 3.10	DIFFUSE NODE	ARIÑEZ	40,12


NO 2.20 Echanove Park
NO 2.25 Llodio Square
NO 2.11 La Constitución Square
NO 2.10 Music School Park
NO 2.29 Michelin Gardens

CODE	TYPOLOGY	NAME	SURFACE (Ha)
NO 2.01	SECONDARY NODE	VIÑASPRE PARK	3,53
NO 2.02	SECONDARY NODE	LA ANTONIO ROUNDABOUT AND SURROUNDINGS	1,82
NO 2.03	SECONDARY NODE	EL MINERAL PARK	0,45
NO 2.04	SECONDARY NODE	ETXEZARRA PARK	2,69
NO 2.05	SECONDARY NODE	LOS GOROS PARK	3,45
NO 2.06	SECONDARY NODE	LOS HUETOS AVENUE SQUARE	1,38
NO 2.07	SECONDARY NODE	BLOOD DONORS WALK	2,64
NO 2.08	SECONDARY NODE	TXAGORRITXU HOSPITAL GARDENS	3,16
NO 2.09	SECONDARY NODE	GAZALBIDE PARK	3,09
NO 2.10	SECONDARY NODE	MUSIC SCHOOL PARK	2,60
NO 2.11	SECONDARY NODE	LA CONSTITUCIÓN SQUARE	1,07
NO 2.12	SECONDARY NODE	CATALONIA SQUARE	1,54
NO 2.13	SECONDARY NODE	ZABALORTU	0,45
NO 2.14	SECONDARY NODE	GERARDO ARMESTO SQUARE	0,52
NO 2.15	SECONDARY NODE	AVENDAÑO STREET	0,75
NO 2.16	SECONDARY NODE	PALACIO ZULUETA GARDENS	0,40
NO 2.17	SECONDARY NODE	TEACHER TRAINING COLLEGE GARDENS	0,33
NO 2.18	SECONDARY NODE	ALAVA STREET-ZUMAQUERA PARK	0,48
NO 2.19	SECONDARY NODE	LA MURALLA GARDENS	0,87
NO 2.20	SECONDARY NODE	ECHANOVE PARK	0,21
NO 2.21	SECONDARY NODE	GREEN CAPITAL SQUARE	0,22
NO 2.22	SECONDARY NODE	SANTA BARBARA SQUARE	0,73
NO 2.23	SECONDARY NODE	JOSE MARDONES-LOGROÑO PARK	0,74
NO 2.24	SECONDARY NODE	SIMON BOLIVAR PARK	1,23

CODE	TYPOLOGY	NAME	SURFACE (Ha)
NO 2.25	SECONDARY NODE	LLODIO SQUARE	2,41
NO 2.26	SECONDARY NODE	ALAS PARK + ZARAMAGA SQUARE	2,80
NO 2.27	SECONDARY NODE	SANTO TOMAS ROUNDABOUT	0,66
NO 2.28	SECONDARY NODE	GAMARRA SQUARES	2,25
NO 2.29	SECONDARY NODE	MICHELIN GARDENS	2,59
NO 2.30	SECONDARY NODE	OLD AERODROME PARKS	2,11
NO 2.31	SECONDARY NODE	GAMARRA	1,82
NO 2.32	SECONDARY NODE	PORTAL DE ZURBANO	0,88
NO 2.33	SECONDARY NODE	ZABALGANA	4,84
NO 2.34	SECONDARY NODE	ARMENTIA	8,49
NO 2.35	SECONDARY NODE	CONDE DE PEÑAFLORIDA SQUARE	0,86
NO 2.36	SECONDARY NODE	SALBURUA	1,04
NO 2.37	SECONDARY NODE	JÚNDIZ	0,52
NO 2.38	SECONDARY NODE	BIODIVERSITY SQUARE	1,96

The nodes occupy a total surface area of 395 ha, of which 151 ha correspond to diffuse nodes, 176 ha to principal nodes and 68 ha to secondary nodes.

CONNECTORS

Connectors are elements of a linear nature, the main function of which is to be used precisely as ecological connectors between different core and node elements of the Urban Green Infrastructure.

In order to establish the connectors, tree-lined streets and existing corridors or those associated historically to watercourses, situated between core and node elements, have been taken as a reference. Many of these potential connectors are partially fragmented and for this reason sections in which actions must be taken in order to favour their connecting function within the system have been defined.

Connectors are classified in categories according to their orientation and hydrological potential: North-South fluvial connectors (CC 1), North-South non-fluvial connectors (CC 2), East-West connectors (CC 3).

North-South fluvial connectors are associated with the rivers and streams that run down from the Montes de Vitoria mountains and cross the urban grid at some point. These river courses are: Torroguico, Zarauna, Ali, Batán, Zapardiel, Errekleor and Santo Tomás.

Non-fluvial North-South and East-West connectors run along corridors deriving from the urban development of the city itself. Thus, bypasses, avenues and the route of the railway are used as examples.

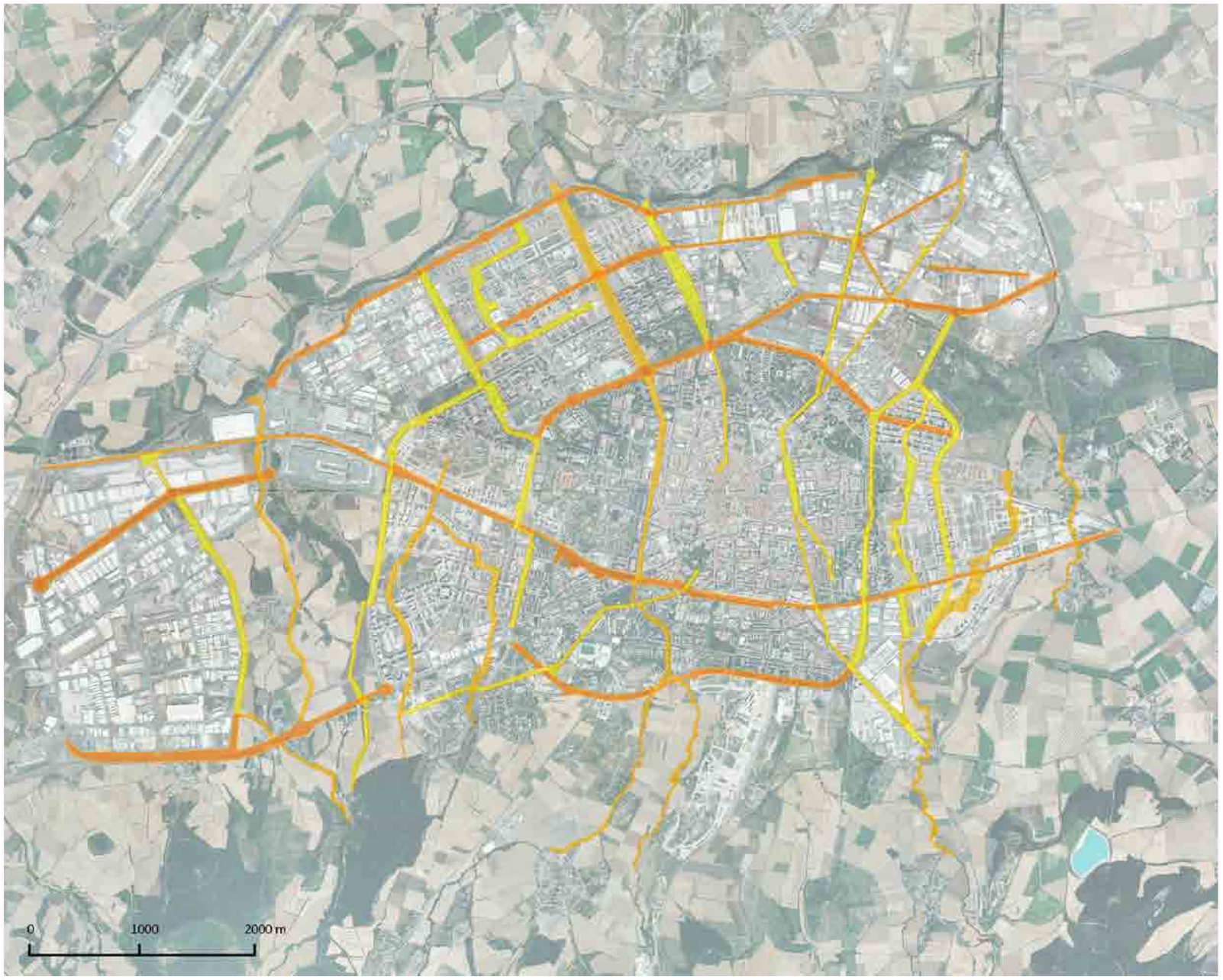
Of all the connectors, there are four with forks that give rise to branches of varying length. These are the connectors CC 1.4, CC 2.5, CC 3.3 and CC 3.4.

The connectors have a length of more than 100 km with an average of 4.6 km per connector. The longest connector is CC 3.2, corresponding to the railway line, which is almost 10 km in length, and the shortest is CC 2.9 with less than 350 m.









VITORIA-GASTEIZ
Urban Green Infrastructure

CONNECTORS

- **East-West**
- **N-S fluvial**
- **N-S non-fluvial**

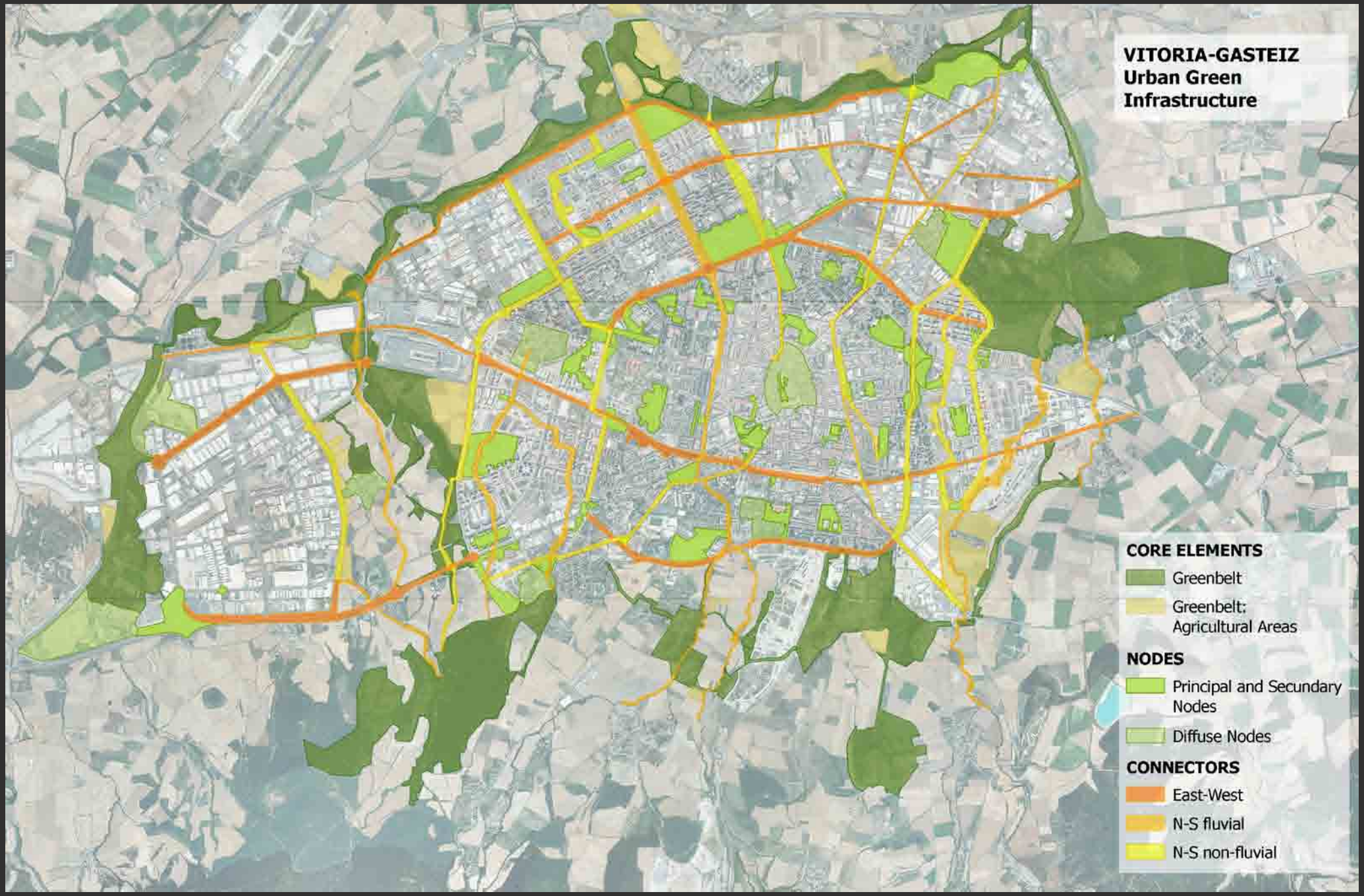

CC 3.1 Mendizorroza-Adurza
CC 2.3 Armentia-La Senda Walkway
CC 1.4 Batán
CC 3.2 Crispijana-Arkaia FFCC

CODE	TYPOLOGY	NAME	No. SECTIONS	LENGTH (m)
CC 1.1	NORTH-SOUTH FLUVIAL	TORROGUICO	3	3.108
CC 1.2	NORTH-SOUTH FLUVIAL	ZARAUNA-ALI	6	2.838
CC 1.3	NORTH-SOUTH FLUVIAL	ALI	6	2.250
CC 1.4	NORTH-SOUTH FLUVIAL	BATAN	8	6.677
CC *1.4.1*	NORTH-SOUTH FLUVIAL	*BATAN BRACH ROAD*	1	1.919
CC *1.4.2*	NORTH-SOUTH FLUVIAL	*ZAPARDIEL BRANCH ROAD*	3	2.195
CC 1.5	NORTH-SOUTH FLUVIAL	ERREKALEOR	3	4.212
CC 1.6	NORTH-SOUTH FLUVIAL	SANTO TOMAS	3	1.784
CC 1.7	NORTH-SOUTH FLUVIAL	ERREKERA	2	1.400
CC 2.1	NORTH-SOUTH NON FLUVIAL	ZABALGANA-SANSOMENDI	4	5.286
CC 2.2	NORTH-SOUTH NON FLUVIAL	ARIZNAVARRA-IBAIONDO	6	3.739
CC *2.2.1*	NORTH-SOUTH NON FLUVIAL	*LAKUA BRANCH ROAD*	1	571
CC *2.2.2*	NORTH-SOUTH NON FLUVIAL	*IBAIONDO BRANCH ROAD*	1	900
CC 2.3	NORTH-SOUTH NON FLUVIAL	ARMENTIA-LA SENDA WALKWAY	5	3.018
CC 2.4	NORTH-SOUTH NON FLUVIAL	ALMENDRA-ABETXUKO	4	2.565
CC 2.5	NORTH-SOUTH NON FLUVIAL	PUENTE ALTO-GAMARRA	8	4.747
CC *2.5.1*	NORTH-SOUTH NON FLUVIAL	*BETOÑO BRANCH ROAD*	1	2.399
CC *2.5.2*	NORTH-SOUTH NON FLUVIAL	*GAMARRA BRANCH ROAD*	1	1.814
CC 2.6	NORTH-SOUTH NON FLUVIAL	ADURZA-SALBURUA	5	3.357
CC 2.7	NORTH-SOUTH NON FLUVIAL	PUENTE ALTO-SALBURUA	3	3.110
CC 2.8	NORTH-SOUTH NON FLUVIAL	LARREIN-SALBURUA	3	2.471
CC 2.9	NORTH-SOUTH NON FLUVIAL	MICHELIN	1	311
CC 2.10	NORTH-SOUTH NON FLUVIAL	LA PEÑA	1	500
CC 2.11	NORTH-SOUTH NON FLUVIAL	ZUAZOBIDEA	1	2.750

CODE	TYPOLOGY	NAME	Nº TRAMOS	LONGITUD (m)
CC 3.1	EAST-WEST	MENDIZORROZA-ADURZA	5	3.237
CC 3.2	EAST-WEST	CRISPIJANA-ARKAIA FFCC	9	9.905
CC 3.3	EAST-WEST	TXAGORRITXU-ZARAMAGA	3	1.993
CC *3.3.1*	EAST-WEST	*CANTABRICO BRANCH ROAD*	4	3.023
CC *3.3.2*	EAST-WEST	*MADRID BRANCH ROAD*	2	2.176
CC 3.4	EAST-WEST	SANSOMENDI-GAMARRA	4	3.720
CC *3.4.1*	EAST-WEST	*BARRATXI BRANCH ROAD*	1	1.032
CC *3.4.2*	EAST-WEST	*SANTO TOMAS BRANCH ROAD*	1	499
CC 3.5	EAST-WEST	GOBEO-GAMARRA	4	5.859
CC 3.6	EAST-WEST	LARRAGANA	1	900
CC 3.7	EAST-WEST	LERMANDABIDEA	2	2.400
CC 3.8	EAST-WEST	JÚNDIZ-N102	2	3.000

Added together, there are a total of 101.7 km, of which 37.7 km correspond to East-West connectors, 26.4 km to the North-South fluvial connectors and another 37.5 km to North-South non-fluvial connectors.


Urrunaga reservoir
Zadorra river
Ullibarri Gamboa reservoir
Alegría river
Ullibarri Gamboa reservoir
Alegría river
Salburua wetlands
Avenida Gasteiz
Railway green corridor
Zapardiel river
Batán river


VITORIA-GASTEIZ
Urban Green
Infrastructure
CORE ELEMENTS
Greenbelt
Greenbelt:
Agricultural Areas
NODES
Principal and Secundary
Nodes
Diffuse Nodes
CONNECTORS
East-West
N-S fluvial
N-S non-fluvial



3. ACTIONS TO ENHANCE ECOSYSTEM SERVICES IN VITORIA-GASTEIZ

3.1 General lines of action

There are a large number of potential interventions designed to improve the ecological, environmental and social functionality of the Urban Green Infrastructure System of Vitoria-Gasteiz. Some of the most relevant lines of action identified on which to base intervention projects are described below:

- Orientate the management of Urban Green spaces towards **gardening systems** and **more efficient ways of using resources** (plant health, waste, water, energy, etc.).
- Increase the existing very poor biological diversity of urban green spaces through **adequate design and management measures** (use of native plant species, eradication of invasive species, creation of refuges, fostering of shrub masses, etc.).
- **Preserve** spaces that still contain **remnants of natural vegetation**.
- Introduce measures to increase biodiversity and the **renovation and rehabilitation of buildings**, especially in areas with a low presence of green spaces (plant facades and walls, etc.).
- Increase **soil permeability** indexes and the presence of vegetation in **urban space renovation** actions.
- **Increase the value of vacant and marginal spaces** without defined uses within the consolidated urban grid.
- Increase the **ecological connectivity** between the Green Belt and urban green areas through intra-urban fluvial watercourses, replanted median strips and tree-lined streets, favouring compatible public use.
- Promote the value of **periurban agricultural spaces** by promoting the development of a type of agriculture that favours biodiversity, based on natural processes.
- Enhance **accessibility** to urban and periurban green spaces.
- Introduce **water management improvement systems** that help to resolve the danger of periodically-occurring floods through water separation systems, drainage systems that increase the infiltration of rainwater and aquifer recharging processes, etc.
- Restore, recover and recreate, if appropriate, **fluvial ecosystems in the urban environment**.
- Increase the current offer of **urban vegetable gardens and community green spaces**.
- Improve the **quality of urban green spaces for relaxation**, fostering their use and enjoyment.
- Develop the **educational potential** of green spaces and elements to provide information about the Urban Green Infrastructure of Vitoria-Gasteiz.
- Promote **public involvement** and participation both in the design and management of the Urban Green Infrastructure.
- Include the Urban Green Infrastructure as a **new, reduce system** on which to support the planning work of the city and to ensure the protection and fostering of the ecological, hydrological and environmental functionality of the spaces and elements of which it is formed.
- Seek the involvement of economic agents and research centres to make progress in the **research, development and application of green solutions and technologies** that promote local green employment.

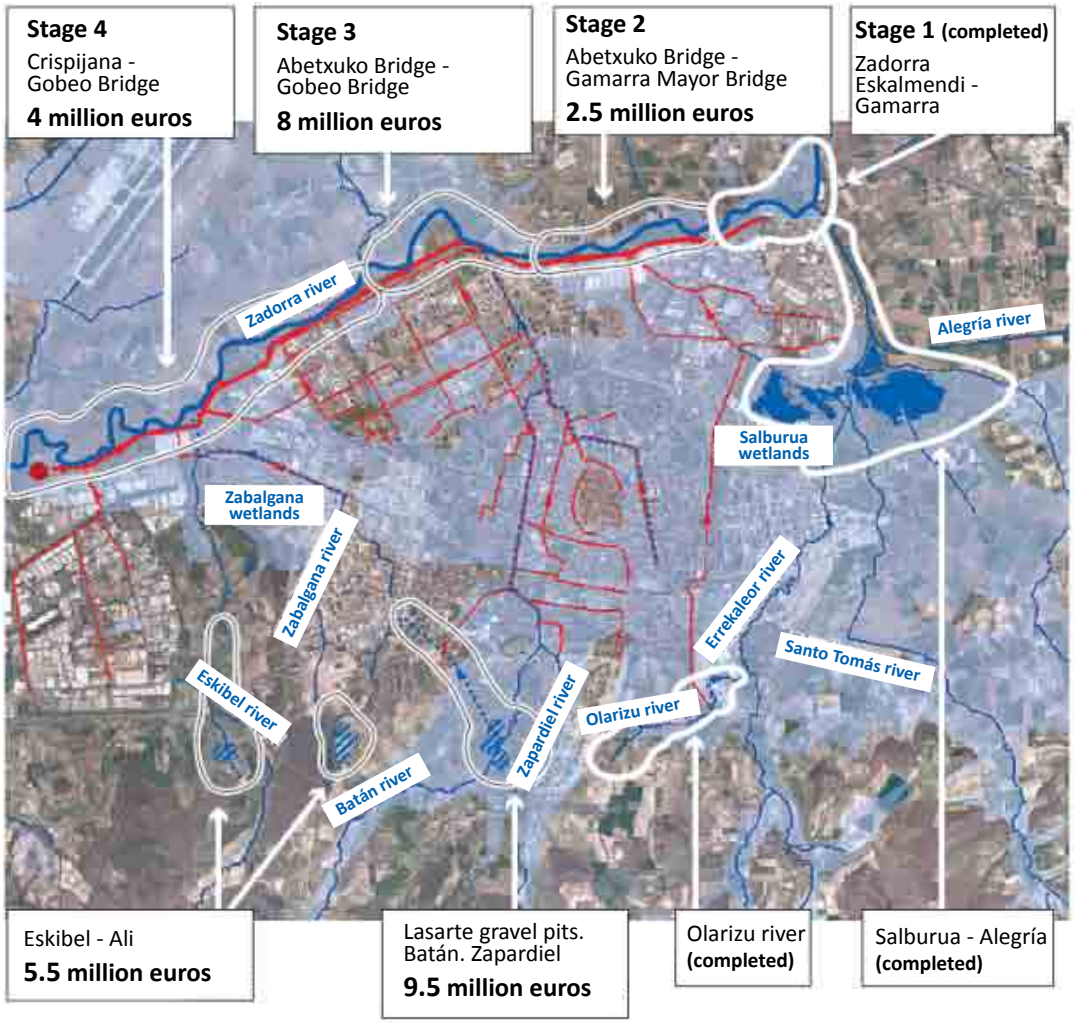
3.2 Actions in progress

Some of the aforementioned lines of action have paved the way for preliminary planning and current management in some areas of activity, such as the Green Belt of Vitoria-Gasteiz. In this environment, natural solutions in line with the precepts of the Green Infrastructure have shown themselves to be efficient from the environmental, social and economic viewpoint.

Based on this experience, two ambitious initiatives have been undertaken with the aim of finding a solution for two of the most relevant and persistent problems on the Green Belt, namely, hydrological planning and the lack of a connection between core elements. Besides contributing to an improvement in ecosystem services, these initiatives will strengthen a key role played by the Green Belt as a structural element of the Urban Green Infrastructure System of Vitoria-Gasteiz.

The first of these refers to the agreement and framework of collaboration established between Vitoria-Gasteiz City Council and the Basque Water Agency URA for the performance of work that will reduce the effects of flooding that occurs on a periodic basis. The aforementioned agreement includes a works programme with a cost of 29.5 million euros from 2013 to 2020, borne mainly by the Basque Government.

The actions included within the aforementioned programme are based on a hydrological plan, already partially completed, which attempts to correct the problem of flooding in the urban area by means of “green” solutions that affect the complex hydrological system formed by rivers, streams, lakes, wetlands, the aquifer and the sewage network. The aim of these actions is to prevent the waste water treatment plant from being used to treat good quality water, to prevent this plant from becoming overloaded during periods when floods are more frequent, leading to the dumping of waste water into the river and allowing sufficient water to flow along fluvial corridors to guarantee their ecological functionality.



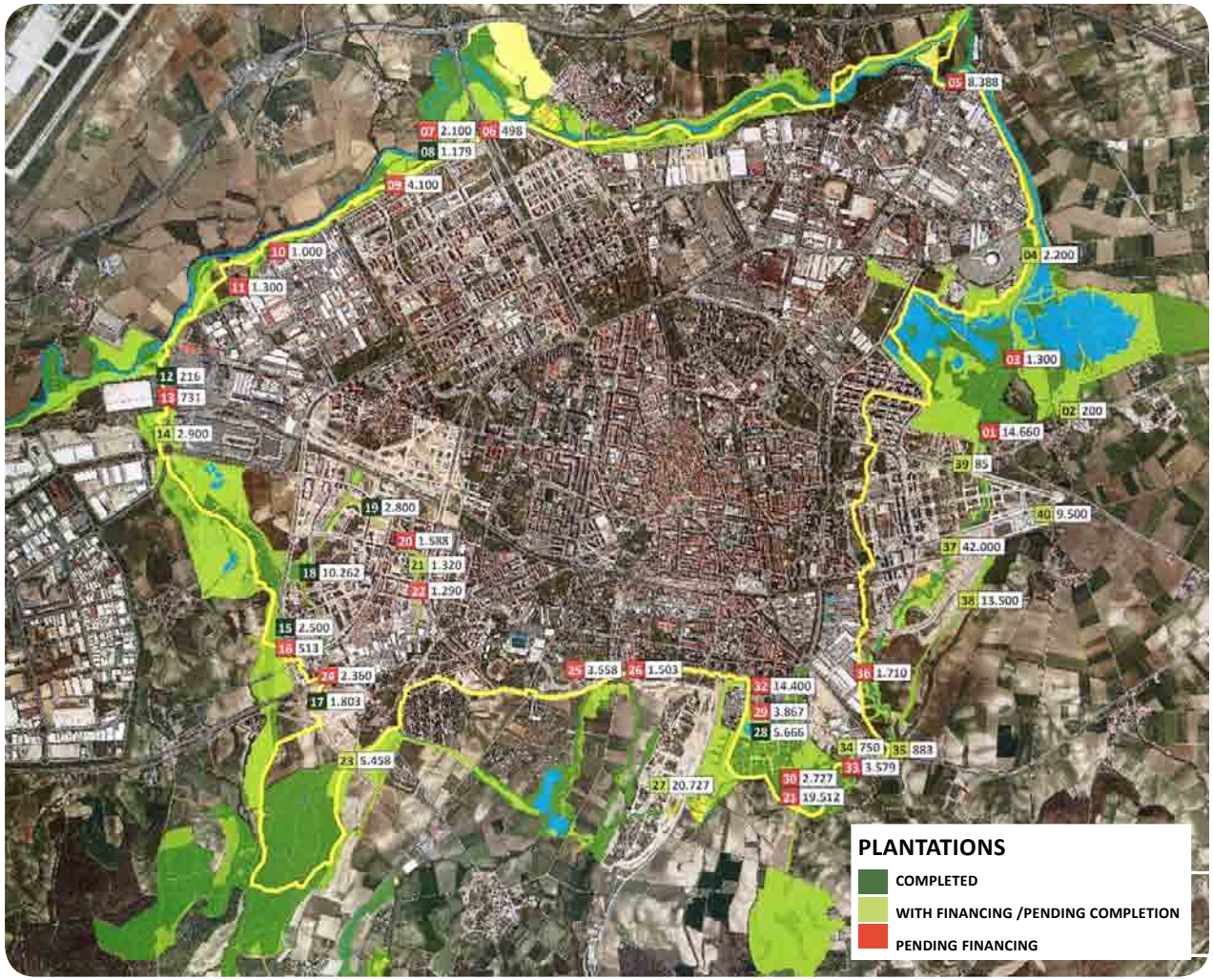
In addition to bringing about a considerable reduction in the problem of flooding, this series of actions (as detailed in the enclosed chart) will help to consolidate those water-linked elements that form part of the Urban Green Infrastructure System of Vitoria-Gasteiz.

The second initiative, called “The Roots of Tomorrow, 250,000 trees and citizens”, was conceived with the ultimate aim of improving the ecological functionality of the Green Belt as the main element of the Green Infrastructure System.

Using a number of different formulae, Vitoria-Gasteiz City Council invited both the general public and different levels of the private sector to take part in efforts to ensure the long-term survival and improvement of the Green Belt by planting 250,000 trees and shrubs.

The “Green Belt linking” project defined a series of extremely varied interventions: some, involving the restoration of riverbanks in rivers and streams; others, the correction of erosive processes; some, to improve habitats in order to encourage biodiversity and others, to resolve problems of ecological connectivity between the parks of the Green Belt and surrounding green spaces.

In total, 51 spaces were selected. These were extremely varied with regard to their surface areas, tipology and state of conservation and ranged from small residual and border spaces, associated with the edges of roadways, industrial areas or abandoned pedestrian



tracks, to the banks of streams in urban environments or nearby agricultural spaces.

Although each space has its own problems and identity and may require specific work, they all have sparse or nonexistence tree coverage and offer clear possibilities for ecological and landscape enhancement through the planting of trees and shrubs.

The interventions planned for each one of these small locations (distributed as shown in the enclosed map) involve the planting in total of around 250,000 trees and shrubs on the Green Belt, bringing clear and recognised environmental, economic and social benefits.

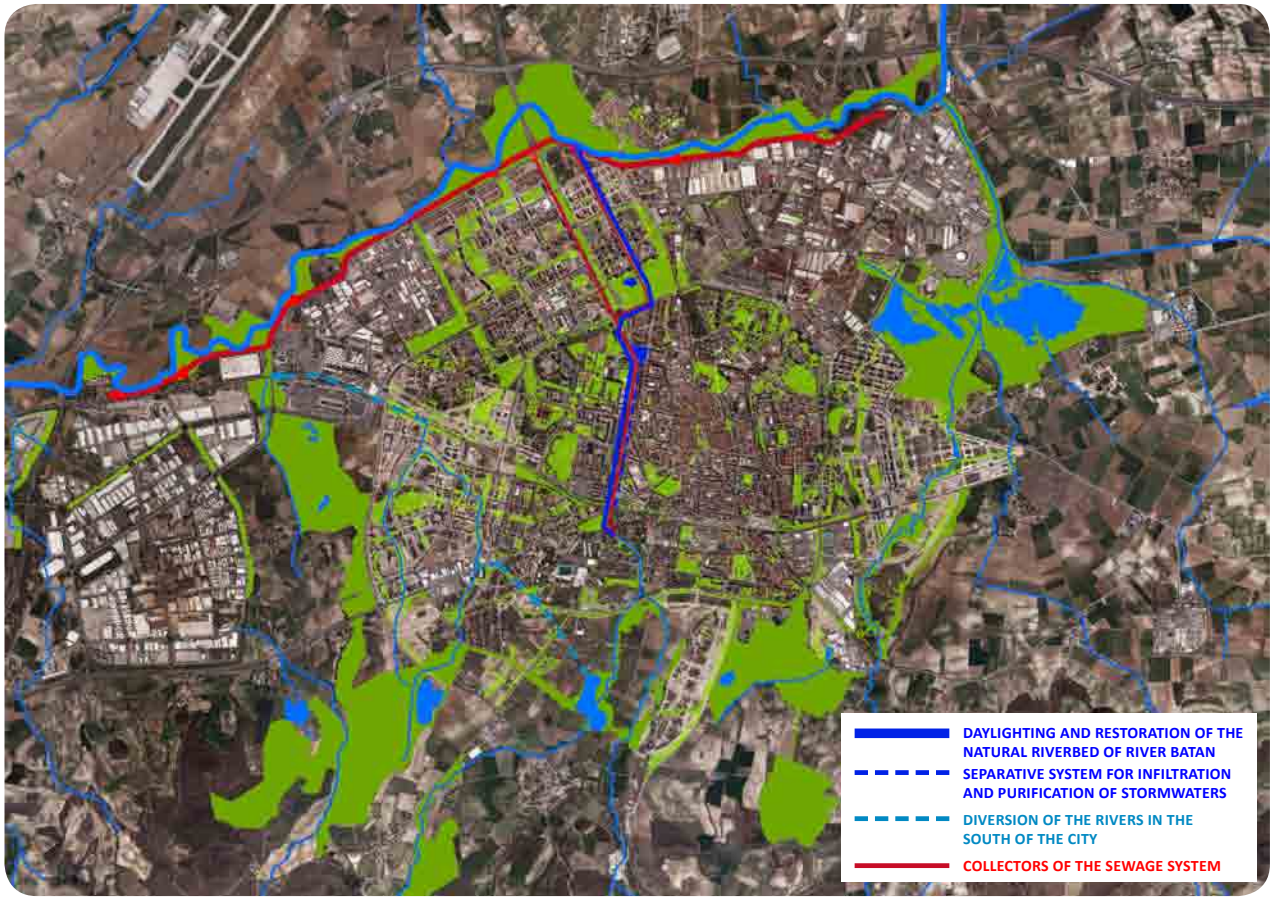
In addition to resolving a number of environmental problems linked to the deterioration and disconnection of the Green Belt, the initiative has also secured the intense involvement of the public. In this way, besides the more than 2000 members of the public who have taken part in popular planting campaigns or school campaigns, we should also mention a large number of companies, professionals and other types of entities that have become Protectors of the Green Belt, a figure that allows economic contributions to be made in order to finance the project.

To date, 71,863 trees have been planted (22 projects in 2012-2013). In 2013-2014, it is expected that another 124,000 trees and shrubs will be planted (18 actions),









and another 54,137 will be planted in 2014-2015.

Both initiatives, i.e., the configuration of a new hydrological system based on the premises of the Green Infrastructure and the strengthening of the ecological continuum through the planting of 250,000 trees and shrubs, complement each other in two key areas of action, the hydrological system and the green system of very urban parks.

The external “green and blue sections” combine in order to seek their integration in the system of free spaces in the city.

The treatment of the rivers Santo Tomás, Errekaleor, Perretxin and Zarauna, integrated in the new sections of urban expansion as “key” infrastructure systems, are magnificent examples of projects involving work of this kind. In this regard, the most paradigmatic action is, without doubt, the urban remodelling of Avenida Gasteiz with the recreation of a fluvial park that strengthens native biodiversity, rationalises the hydrological management and stimulates sustainable mobility (see sheet 27).

Typology of intervention spaces:

Urban park
Urban Avenue
Square
Linear green area
Agricultural area
Thoroughfare node
Urban vegetable garden
Edge of industrial area
Periurban Park
Urban stream
Botanical Garden
Passage for fauna
Wet zone in urban park
Historical garden
Separation pools
Railway corridor
Passage for fauna
Hill
Fluvial Park
Medieval water pipes
Rural green area
Urban green area
Vacant plots

3.3 Pilot projects

This section describes some of the actions which, in the form of pilot schemes, are planned in different spaces within the Green Infrastructure System and areas adjacent to these, in order to improve their ecological, environmental and/or social functionality. Some actions are simply proposals, while others are currently at the project or draft project stage and some are being developed or executed.

They form a set of 46 pilot schemes and model interventions that will allow different techniques and solutions to be tested in a number of different spaces. These may be extrapolated to other spaces with similar typologies and circumstances, in order to foster ecosystem functions and services throughout the System.

An attempt has been made to ensure that the list of schemes is representative of the System as a whole and therefore work on all its components (nodes, connectors and core spaces) have been planned, as well as on all the identified typologies. Actions are also planned in spaces that are not strictly part of the System but which, nevertheless, act as ancillary elements, such as the case of certain vacant plots owned by the municipality.

They involve extremely varied and heterogeneous interventions that attempt to respond to the broad range of problems and situations. Some aim to improve the urban management of water; others to promote urban biodiversity through the creation of new habitats or differentiated management systems, some to increase the ecological connectivity of the Green Belt, etc.

All the pilot schemes can also be interpreted as interventions on the landscape and, in this sense, in addition to functional changes linked to their specific aims, they will bring about considerable transformations in the urban and periurban landscapes of the municipality and in their perception by the public.

Within the periurban environment, the proposed schemes seek to integrate actions taken on the landscape as well to strengthen the nature of the different landscapes characteristic of this environment and to improve their quality:

- The **landscape of the Green Belt**, which already has its own identity, recognisable to the inhabitants of the city, and which is based on ecological and functional connectivity and on the responsible management of public use and which is identified with “relic landscapes” and “water landscapes”.
- The **landscape of the Agricultural Belt**, which is based on the traditional landscapes of the rural environment, renewed and updated with new uses associated with ecological agricultural pilot schemes.
- **Industrial landscapes** associated with the large industrial developments in the city such as Júndiz, Ali, Gamarra and Uritiasolo, which evoke the business activity of the city.

- The **landscape of road infrastructures**, which mark the point of access to the city and which, inevitably, condition the overall perception we have of it.
- The **degraded landscapes of the border areas**, associated with places such as the Lasarte gravel pits, the area around the Gardélegi landfill site, which are still awaiting ecological and landscape recovery to put both them on the same footing as the other periurban spaces of the Green Belt which have already been restored.

In the urban environment, the projects planned involve the creation of new technologies of urban landscapes; diverse and inclusive functional landscapes that comprise:

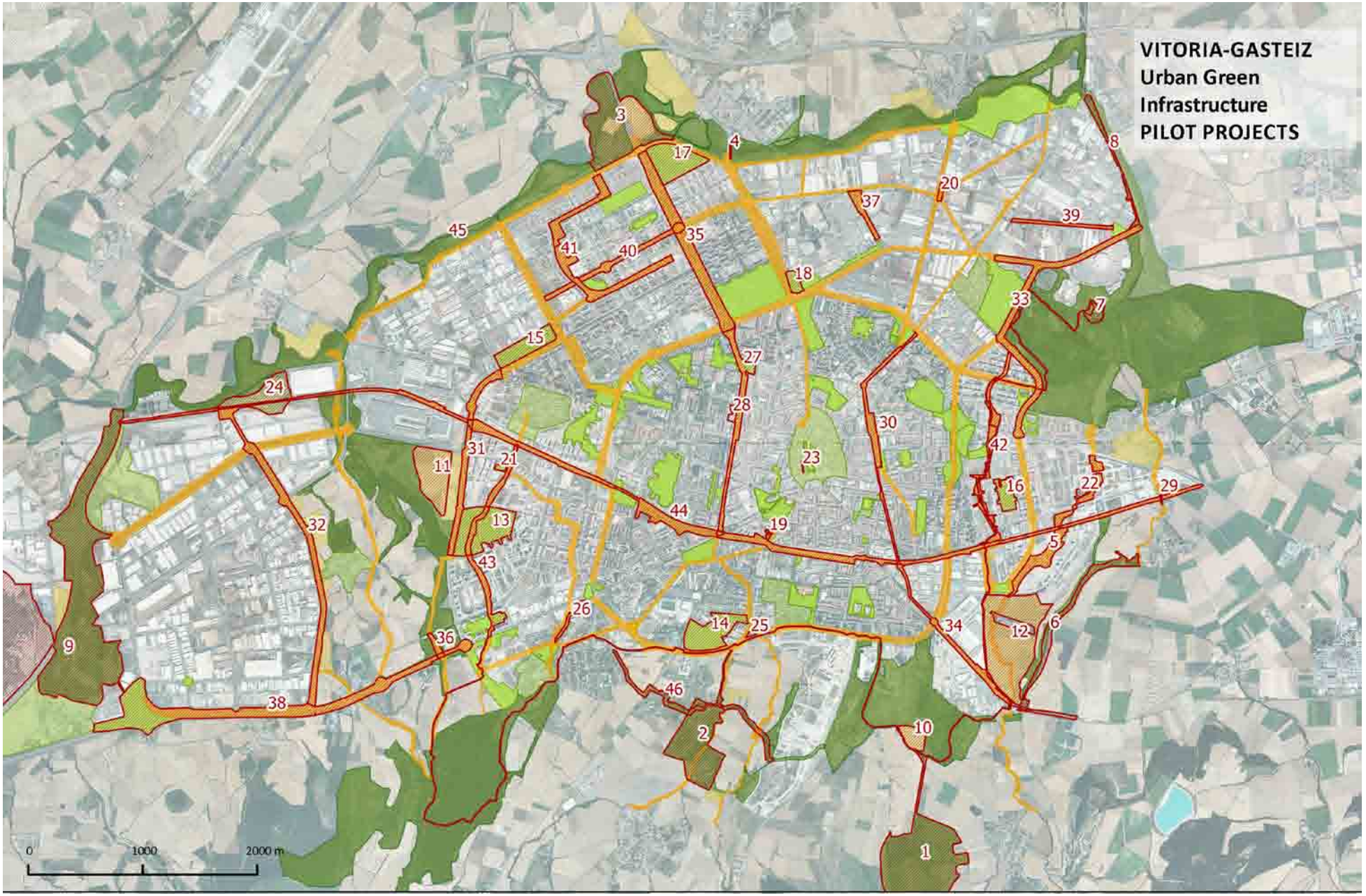
- The **landscape of flowers and vegetables**, which is growing in importance within the city through urban horticulture and floriculture.
- The **vertical landscape of green roofs and facades**, which take as a reference the stunning facade of the Europa conference centre.
- **Green linear landscapes** associated with tree-lined avenues and urban axes.
- **Blue linear landscapes**, represented by the possibilities of restoring rivers that crossed the city many years ago and which in the future may become genuine streams of life for the public.
- The **landscapes of the park**, both small and large, that form part of the collective imagination of the public and which can now develop toward small naturalised and ecological functional forms.
- The **interstitial landscapes** that can be found in the diffuse nodes, made up of a multitude of corners and fragments that acquire coherence and unity when they are understood as being a single element.
- **The landscapes of day and night**, which we basically perceive with our visual sense but which have important energy and ecological functions.

Our Landscapes, which, when perceived, felt and interpreted by the inhabitants of the city, acquire an important social component and may be seen landscapes that “belong” to districts and the city for everyone’s benefit.








VITORIA-GASTEIZ
Urban Green
Infrastructure
PILOT PROJECTS
0
1000
2000 m

SIVU ELEMENTS CORE-NODES		ACTIONS
1	Olarizu	Project to improve the ecology, landscaping and accessibility of the hill known as the Olarizu Hill and the area surrounding the Environmental Studies Centre
2	Lasarte-Larragorri	Flood defences in the area around the Lasarte gravel pits
3	Zadorra (stage III)	Project to build flood defences on the River Zadorra. Stage III: Yurre Bridge – Abetxuko Bridge
4	Zadorra (stage II). Abetxuko Bridge	Restoration of the "Old Bridge" of Abetxuko
5	River Errekaleor	Project to improve the ecological connectivity of the River Errekaleor
6	Las Neveras Hill	Preparation of the hill known as the Las Neveras Hill as a Green Belt park
7	Salburua Wetlands	Functional improvement project of the area around ATARIA-BIODIVERSITY OBSERVATORY
8	River Alegría	Strengthening plantations and application of Starlight criteria to the illumination of the linear park of the River Alegría
9	Júndiz Area	Ecological and landscape improvement actions in the Júndiz area
10	Olarizu Botanic Garden	Work to build the garden of useful and endangered plants in the Olarizu Botanic Garden
11	Aldaia (Sector 5)	Pilot project of agro-ecological practices in the Aldaia area
12	Olaran (Sector 14)	Pilot project of agro-ecological practices in the Olaran area
13	Salinillas de Buradón	Measures for the conservation of relict vegetation in Salinillas de Buradón Park and reinforcement of plantations
14	Mendizabala Hill	Measures for the conservation of relict vegetation on the hill known as the Mendizabala Hill and reinforcement of plantations
15	Antonio Machado Park	Proposal of measures to favour biodiversity in Antonio Machado Park
16	East Park	Proposal of measures to favour biodiversity in East Park
17	Municipal nursery	Ecological and landscape improvement of the area around the municipal nursery
18	Biodiversity Park	Proposal of ecological improvement measures in the Biodiversity Park
19	Palacio Zulueta	Creation of a space for biodiversity in the historic garden of Palacio Zulueta
20	Santo Tomás Roundabout	Ecological and landscape improvement of the Santo Tomás roundabout
21	Zabalortu Horicultural Gardens	Preparation of the "Zabalortu " urban community horticultural gardens
22	Salburua Horticultural Gardens	Preparation of an urban horticultural garden in Salburua
23	"Caños" in the Medieval Quarter	Restoration and ecological management of mediaeval "Caños" or open sewers
24	Crispijana green area	Ecological and landscape improvement of the green area of the village of Crispijana

SIVU ELEMENTS CONNECTORS		ACTIONS
25	Batán-Zapardiel	Project to create a riverbank woodland at the point where the Rivers Batán and Zapardiel meet
26	River Ali	Differentiated management of mowing operations and reinforcement of plantations on the river Ali, between Jacinto de Quincoces Street and San Prudencio Avenue
27	Gasteiz Avenue/América Latina Square	Urban redevelopment project with eco-design techniques along the axis of Gasteiz Avenue-America Latina Square
28	Europa Conference Centre	Installation of a green facade and roof on the Europa Conference Centre
29	River Santo Tomás-Railway	Project to improve the ecological connectivity of the River Santo Tomás
30	Los Herrán-Portal de Villarreal	Project for the comprehensive transformation of the Los Herrán Street-Portal de Villarreal Street-Old Vasco Navarro railway line axis
31	Mariturri Boulevard-Bremen Street	Ecological and landscape improvement of the Bremen Street – Mariturri Boulevard axis
32	Zuazobidea	Ecological and landscape improvement in the area around Zuazobidea Street
33	Portal Zurbano-Salburua Boulevard	Ecological and landscape improvement in the Portal de Zurbano-Paseo de los Humedales-Salburua Boulevard axis
34	Heraclio Fourner Street-Vasco Navarro	Project to transform the Heraclio Fournier Street – Vasco Navarro Railway axis
35	Portal de Foronda	Ecological and landscape improvement of the linear green area of Portal de Foronda Street
36	Armentia-Zabalgana-Zadorra connection	Underpasses for fauna and improvement in accessibility for public use in Zabalgana
37	La Peña Street	Ecological and landscape improvement in La Peña street
38	Road access via the N-102	Differentiated management of mowing operations and reinforcement of plantations in access roads to Vitoria-Gasteiz (N-102)
39	Larragana Street	Ecological and landscape improvement of Larragana Street
40	Baiona Street	Differentiated management of mowing operations and the reinforcement of plantations on Baiona Street

AUXILIARY ELEMENTS VACANT PLOTS		ACTIONS
41	Lakuabizkarra Corridor	Ecological and landscape improvement of the Lakuabizkarra Corridor
42	Salburua Corridor	Ecological and landscape improvement of the Salburua interior corridor
43	Zarauna-Salinillas de Buradón Corridor	Ecological and landscape improvement of the Zarauna-Salinillas de Buradón Corridor
44	Railway Line Corridor	Ecological and landscape improvement of the railway corridor
ELEMENTOS AUXILIARES PEDESTRIAN AND CYCLISTS		ACTIONS
45	Green Belt Circuit	Project to improve the accessibility and signposting of the Green Belt Circuit
46	Southern Pathway	Project to create the Southern Pathway

PILOT PROJECT 01

PROJECT TO IMPROVE THE ECOLOGY, LANDSCAPING AND ACCESSIBILITY OF THE HILL KNOWN AS THE OLARIZU HILL AND THE AREA SURROUNDING THE ENVIRONMENTAL STUDIES CENTRE

CURRENT STATUS

The pastures, the Olarizu horticultural gardens, the Botanic Garden, the Casa de la Dehesa (Environmental Studies Centre), the emblematic hill known as the Olarizu Hill and the many paths and tracks that link the nearby villages and the Montes de Vitoria mountain with the city, make Olarizu Park one of the most highly frequented parks in the Green Belt. Moreover, it has great popular and festive significance as it is the place where the traditional pilgrimage to the top of the hill, the Alto de Olarizu, takes place in September.

The hill known as the Alto de Santa Cruz de Olarizu is a small, 709-m high hill. It features the archaeological site of Kutzemendi, containing important remains dating from the Iron Age, the Roman and late mediaeval periods. From the top, one can get a magnificent panoramic view of the city and the Llanada Alavesa plains. From the naturalistic viewpoint, it contains plants of great botanical interest including several species of orchids.

Several factors, especially the indiscriminate proliferation of tracks, have led to the ecological and landscape deterioration of the hill and its slopes.

At the foot of the hill lies the Casa de la Dehesa de Olarizu, the current headquarters of the Environmental Studies Centre of Vitoria-Gasteiz City Council and the future Interpretation Centre of the future Natural Park of the Montes de Vitoria. The area surrounding the Centre is of an excessively urban nature and there are a number of mobility conflicts between pedestrian and motor vehicles that require work to be done in order to bring about overall improvements in terms of access and landscaping.

Considering the singular nature of the location, its current status and its role as a core element in the Urban Green Infrastructure System, it is proposed to establish a series of measures designed, on the one hand, to strengthen the ecological and landscape values of the hill and to enhance the accessibility conditions to it and, on the other hand, to improve the landscape integration of the area surrounding the Casa de la Dehesa de Olarizu.



AIMS

- Preserve and promote the natural, landscape and cultural values of the Olarizu Hill.
- Improve accessibility conditions to the Olarizu Hill.
- Improve the landscape integration of the area surrounding the Casa de la Dehesa de Olarizu (Environmental Studies Centre).

PROJECT DESCRIPTION

The project comprises the following actions:

- Delimitation and preparation of access roads to the top of the hill in order to avoid the creation of uncontrolled tracks as occurs today.
- Reforest the slopes with native species (representative of gall-oak groves) to avoid erosion and to reduce water run-off, taking into consideration that this action will be dependent on the area being declared of archaeological interest.
- Maintain the existing meadow at the top of the hill.
- Draft a landscape integration project for the areas surrounding the Casa de la Dehesa de Olarizu.

LINKS

The Green Belt of Vitoria-Gasteiz.
http://www.vitoria-gasteiz.org/anilloverde





BENEFITS/ECOSYSTEM SERVICES

- Maintenance, protection and enhancement of natural habitats, wildlife and biodiversity.
- Landscape enhancement.
- CO_2 capture and oxygen production.
- Reduce the risk of erosion and loss of water due to run-off.
- Improve the area's physical and ecological connectivity.
- Increase the feeling of belonging and identity.

INNOVATING AND EXEMPLARY FEATURES

This initiative could be replicated in other degraded spaces of the Green Belt and of the municipality with similar characteristics and problems.

ELEMENT
CORE ELEMENT

TYPOLOGY
PERIURBAN PARK

LOCATION
OLARIZU

PILOT PROJECT 02

FLOOD DEFENCES IN THE AREA AROUND THE LASARTE GRAVEL PITS

CURRENT STATUS

One of the main problems relating to water management in Vitoria-Gasteiz is the situation of the rivers to the south of the city. Rivers such as the Batán and the Zapardiel, which until recently connected the Montes de Vitoria mountain range and the River Zadorra, were channelled at the point where they entered the city, becoming collectors for the sewage network.

Apart from the total loss of their ecological and social functionality, at times of heavy rainfall the channelling of these rivers also causes other problems such as flooding in urban areas near the channelling points and overloads in the sewage system. As a result of the excess water in the network, untreated waste water with a high contaminant load is dumped directly into the River Zadorra, leading to the unnecessary treatment of relatively clean water in the sewage processing plant.

Before entering the city, these rivers cross an environmentally degraded area featuring two abandoned gravel pits, which have become uncontrolled landfills. Were these to be restored, they could be used as retention pools during a flood. Moreover, by diverting the course of these rivers towards the Perretxin, a river that runs to the west of the city, the entry of a large annual volume of clean water into the urban sewage system could be avoided.

AIMS

- Limit the entry of clean river water into the sewage network.
- Prevent the flooding caused by the rivers Batán and Zapardiel at times of heavy rainfall and the entry of flood waters in the sewage system.
- Avoid water overload problems in the sewage network and in the sewage treatment plant (dumping into the river of untreated water, etc.).
- Use degraded spaces for flood control.
- Transform an environmentally degraded area into a new green area for extensive use.
- Prepare a new periurban park between the parks of Armentia and Olarizu (Larragorri Park), improving the connectivity of the Green Belt to the south.
- Strengthen the ecological values of a highly degraded area, generating spaces of great environmental interest such as wetlands and forests of native species.



PROJECT DESCRIPTION

Basically, the work would consist of the following:

- Creation of two flood retention pools, taking advantage of two abandoned gravel pits in the village of Lasarte.
- Diversion of a part of the flow towards new, seminatural riverbeds created in western areas of the city.
- Convert the degraded environment of the Lasarte gravel pits into a periurban park: the Larragorri Park.



BENEFITS/ECOSYSTEM SERVICES

- Water regulation and flood prevention.
- More efficient operation of the city's waste water drainage and treatment system.
- Prevent the contamination of the River Zadorra.
- Improvement in the quality of water of the River Zadorra.
- New habitat for species (aquatic habitat) in Lasarte.
- Improvement in the ecological connectivity between the parks that make up the Green Belt and between the Montes de Vitoria and the city.
- New spaces for public use and recreation.
- Landscape enhancement.
- Green employment.

INNOVATING AND EXEMPLARY FEATURES

Innovation in the approach: the intervention goes beyond the resolving of hydrological problems to develop an overall concept in which the water cycle in the city is closely linked to the operation of the entire urban system as an ecosystem.

Technical innovation: the overall nature of the proposal and the high complexity and heterogeneity of the hydrological system in which action is taken, require the application of innovating tools and technologies. It is therefore an opportunity to develop the R&D sector.

The project proposed here could be used as a model and example for similar projects and its contribution to resolving the problems described above could be extrapolated to other hydrological management projects of river basins aimed at preventing flooding and the management of storm water.

ELEMENT
CORE ELEMENT

TYPOLOGY
SEPARATION POOLS

LOCATION
LASARTE

PILOT PROJECT 03

PROJECT TO BUILD FLOOD DEFENCES ON THE RIVER ZADORRA. STAGE III: YURRE BRIDGE - ABETXUKO BRIDGE

CURRENT STATUS

For several years, since the natural system of the River Zadorra was modified through the construction of a system of reservoirs and the occupation of these floodplains, the northern area of the city has been subjected to frequent flooding when the River Zadorra bursts its banks, causing major economic losses.

In order to resolve this problem and to improve the ecological status of the river, since 2003, the ambitious *Hydraulic modification and environmental restoration plan of the River Zadorra* has been undertaken along the entire length of the river that comes in contact with the city, from Eskalmendi to Gobeo. This plan is being carried out in a number of stages and in different sections of the river.



AIMS

- Reduce the current risk of flooding within the city of Vitoria-Gasteiz.
- Ecologically restore the River Zadorra and its riverbanks (SCI space) to foster its role as an ecological corridor between the parks of Salburua and Zabalgana.



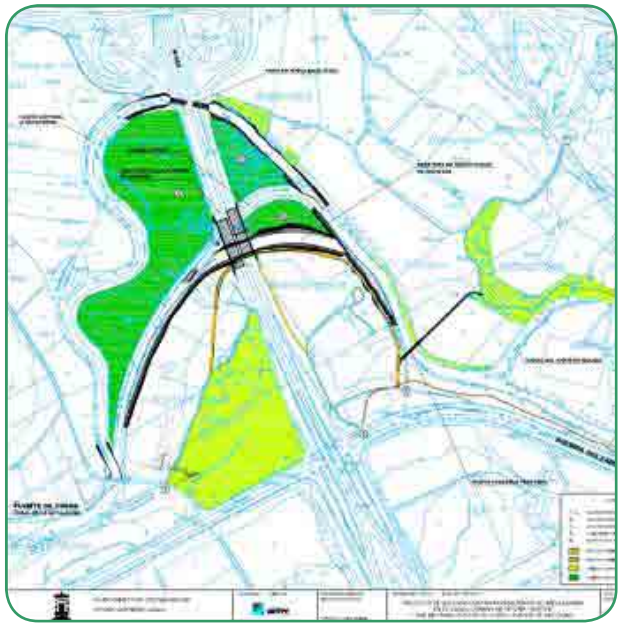
PROJECT DESCRIPTION

The project sets out the work to be done on the section of the River Zadorra between the bridges of Yurre and Abetxuko. This work consists basically of the following:

- Modify sections of this stretch of the river in order to guarantee the safety of residential and industrial areas located upstream against the possibility of flooding with a 100-year return period.
- Replacement of the bridges built at this time along the N-622 road with others of sufficient capacity to drain the design flood.
- Restitution of the water circulation along the natural bed of the river through the construction of a passage beneath the N-622 road, of sufficient capacity to drain ordinary flows.
- The environmental and landscape adaptation of the area affected by the work.

LINKS

The Green Belt of Vitoria-Gasteiz.
http://www.vitoria-gasteiz.org/anilloverde





BENEFITS/ECOSYSTEM SERVICES

- Flood prevention.
- Improved ecological permeability.
- Maintenance, protection and improvement of natural habitats, wildlife and biodiversity.
- Landscape enhancement.
- Feeling of belonging and identity.

INNOVATING AND EXEMPLARY FEATURES

Compared with harsher solutions (channelling, etc.), soft hydraulic management technologies.

Triple focus: hydraulic, environmental and social.

This initiative could be replicated in other contexts and situations.

ELEMENT
CORE ELEMENT

TYPOLOGY
RIVER PARK

LOCATION
ZADORRA (STAGE III)

PILOT PROJECT 04

RESTORATION OF THE “OLD BRIDGE” OF ABETXUKO

CURRENT STATUS

The restoration of the old bridge in Abetxuko is included within the flood defence plan of the River Zadorra where it passes through Vitoria-Gasteiz.

Stage II of this plan, which affects the section of the river that flows through Abetxuko, includes actions to facilitate the passage of water that periodically floods both the neighbouring industrial area and the Abetxuko district itself.

Within the work carried out on the hydraulic system in order to facilitate the water flow at this point, in 2006, a new, larger bridge was built parallel to and just a few metres from the old bridge of Abetxuko.

Today, the old, damaged bridge of Abetxuko, which is presently disused following its replacement by the new bridge, prevents water from circulating, trapping this against the road embankments.

Given the historical and cultural significance of the old bridge, it would be inadvisable to resolve this problem by demolishing it. Instead, a number of actions are proposed to help to improve the hydraulic capacity of the river and guarantee the hydraulic functionality of the new bridge.

AIMS

- Improve the hydraulic section of the river bed in order to prevent flooding in Abetxuko.
- Improve the biodiversity of the River Zadorra.
- Preserve our historical, artistic and cultural heritage.

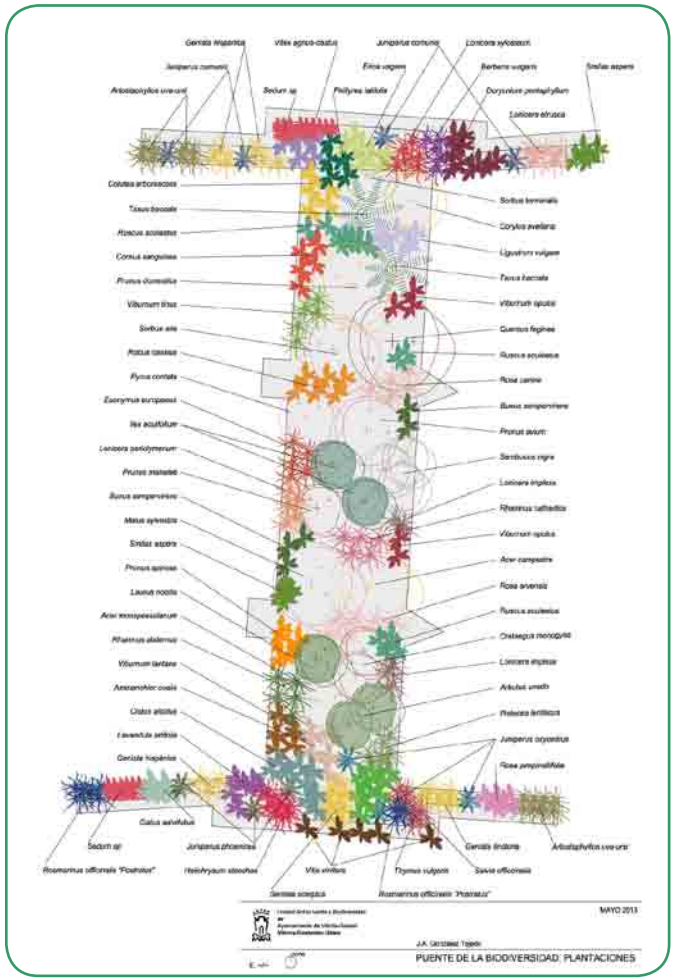


PROJECT DESCRIPTION

- Elimination of the embankments built on the sides of the bridge.
- Removal of filling material above the arches, consolidation of the structure of the bridge and earth fill.
- Planting of native vegetation.







BENEFITS/ECOSYSTEM SERVICES

- Flood prevention.
- Increase in biodiversity.
- Landscape integration.
- Feeling of belonging and identity.

INNOVATING AND EXEMPLARY FEATURES

Trial of solutions that resolve both environmental and cultural objectives.

ELEMENT
CORE ELEMENT

TYPOLOGY
RIVER PARK

LOCATION
ZADORRA (STAGE II)

PILOT PROJECT 05

PROJECT TO IMPROVE THE ECOLOGICAL CONNECTIVITY OF THE RIVER ERREKALEOR

CURRENT STATUS

The River Errekaleor is the main ecological connector between the Montes de Vitoria mountain range and the Salburua wetlands, two of the areas of greatest environmental value in the municipality. Both have been declared Sites of Community Importance. Moreover, the river is inhabited by two endangered species: the European Mink and the Sand Martin.

The banks and area of influence of large stretches of the River Errekaleor have been affected by development work on the new residential estates of Salburua, reducing the connective role of the river and threatening the survival of endangered species of fauna.

AIMS

The main objective of the project is to ensure that the River Errekaleor can function as an ecological connector. Likewise, it is also proposed to build a S-N pedestrian connection between the periurban parks to continue the Green Belt Circuit to the east. For this purpose, a number of actions have been proposed in order to:

- Restore the riparian vegetation along the edges of all the urban development sectors it crosses: Sector 11, 12, 13 and 14.
- Foster the movement and reproduction of threatened species that use this river and are the subject of Management Plans, such as the European Mink (*Mustela lutreola*) and the Sand Martin (*Riparia riparia*).
- Extend pedestrian and cyclist paths along the edges of the river in the form of a greenway.









PROJECT DESCRIPTION

Urban development projects of urban sectors include raising the height of bridges required by the flood potential study, remodelling the slopes of the river bed at some points and carrying out the necessary earthmoving work to achieve this.

The ecological-landscape modification project includes:

- Provision of topsoil and the formation of slopes in eroded areas.
- Forestry plantation in planting squares for the formation of riverbank vegetation according to its proximity to the river bed: willow, alder, ash and elm.
- Planting of trees in landscaped areas and along alignments parallel to the tracks in the park.
- Planting of ground cover and climbing plants and the planting of tree cuttings on slopes and rockfills in the river bed.
- Planting of shrub hedges separating the natural areas from the landscaped areas.
- Measures to favour biodiversity: the creation of small wetlands throughout the length of the corridor to facilitate the connection of populations of agile frog in Salburua and the Montes de Vitoria, the installation of bat boxes on the bridges across the river throughout the entire stretch or in a small number of sufficiently large trees existing on the riverbank, the elimination of invasive flora (especially *Budleja*) existing on the edges of overdeveloped roadways, annual autumn cleaning of vegetation on the tops of the slopes in order to favour the presence of the Sand Martin, etc.
- Installation of pedestrian footbridges to guarantee the continuity of the routes in the park.
- Installation of playing areas for children.
- Installation of prefabricated walls under bridges and vegetation barriers to guide fauna.

LINKS

The Green Belt of Vitoria-Gasteiz.
http://www.vitoria-gasteiz.org/anilloverde

BENEFITS/ECOSYSTEM SERVICES

- Maintenance, protection and improvement of natural habitats, wildlife and biodiversity.
- Improved ecological permeability.
- Protect the habitats of endangered species.
- Landscape enhancement.
- Control the erosion of river banks.
- Increase in resources for sports and leisure pursuits.
- Increase in resources for training and environmental education.

INNOVATING AND EXEMPLARY FEATURES

Hydrological-environmental restoration techniques of rivers and streams in urban environments.

ELEMENT
CORE ELEMENT

TYPOLOGY
URBAN STREAM

LOCATION
RIVER ERREKALEOR

PILOT PROJECT 06

PREPARATION OF THE HILL KNOWN AS THE LAS NEVERAS HILL AS A GREEN BELT PARK

CURRENT STATUS

The hill known as the Las Neveras Hill is a strategic space for the ecological connection of the periurban parks of Olarizu and Salburua, reinforcing the role of the River Errekaleor as an ecological corridor, severely affected by the development of the residential sectors of Salburua, which are built virtually next to the river in some of its sections.

It involves a site of great landscape value as its height affords broad panoramic views of the city and the rural-natural environment that extends to the south of the municipality.

Likewise, it is of great cultural significance as a point of entry into the city of Vitoria-Gasteiz from Arkaia, along ancient tracks and paths such as the Saint James' Way.



AIMS

- Join the Las Neveras Hill to the Green Belt.
- Create a new periurban park of more than 23 ha.
- Connect the parks of Olarizu and Salburua, consolidating the Green Belt to the south-east.
- Extend the Green Belt Circuit between Olarizu and Salburua through the new park of Las Neveras.



PROJECT DESCRIPTION

The work to modify the Las Neveras Park will include earthmoving work, the preparation of land, sowing and planting, as well as the construction of a track from Puente Alto to the point where it meets the track that joins Arkaia and sector 13 of Salburua in order to consolidate the Green Belt Circuit.





LINKS

The Green Belt of Vitoria-Gasteiz.
http://www.vitoria-gasteiz.org/anilloverde

BENEFITS/ECOSYSTEM SERVICES

- Maintenance, protection and improvement of natural habitats, wildlife and biodiversity.
- Improved ecological permeability.
- Improved aesthetic values.
- Control of soil erosion.
- Increase in resources for sports and leisure pursuits.
- Increase in resources for training and environmental education.

INNOVATING AND EXEMPLARY FEATURES

Overall modification of a new periurban park that fulfils environmental objectives and the promotion of public use.

This initiative could be replicated in other similar spaces for conversion into periurban parks.

ELEMENT
CORE ELEMENT

TYPOLOGY
HILL

LOCATION
LAS NEVERAS HILL

PILOT PROJECT 07

FUNCTIONAL IMPROVEMENT PROJECT OF THE AREA AROUND ATARIA-BIODIVERSITY OBSERVATORY

CURRENT STATUS

The aim is to convert ATARIA, Interpretation Centre of the Salburua Wetlands, into an International Observatory for the study of Biodiversity and the Green Infrastructure.

In its role as an Educational and Research Centre and in addition to its research and communications programme, the installations themselves (both exterior and interior) must be used as an exhibition and experimentation space.

In this sense, there are a number of actions that could improve the appearance and ecological functionality of the area surrounding the Centre and the small lakes situated near ATARIA, thus strengthening its role as an educational resource.

It is also proposed to adapt the existing surroundings and interpretation elements both inside the building and in the exterior in accordance with universal accessibility requirements so that all its spaces and resources can be used and enjoyed by people of any physical ability, in a normalised, autonomous and safe manner.

AIMS

- Strengthen its ecological transition role between the urban environment and the RAMSAR Wetlands of Salburua, in the area surrounding ATARIA.
- Improve the external spaces adjoining ATARIA as an interpretive resource.
- Adapt ATARIA's internal and external spaces and interpretive resources to universal accessibility requirements.



PROJECT DESCRIPTION

The project proposes the following actions:

- Creation of an urban forest at the access point to ATARIA.
- Transformation of the lakes that partially surround ATARIA so that they can be fitted with new elements for the interpretation of and experimentation with the processes linked to wetland ecosystems. For example, the introduction of bird collections is being considered.
- Adapt and improve ATARIA's external interpretation elements in accordance with universal accessibility requirements.





BENEFITS/ECOSYSTEM SERVICES

- Improved ecological permeability.
- Maintenance, protection and improvement of natural habitats, wildlife and biodiversity.
- Increase in resources for naturalistic education and interpretation.

INNOVATING AND EXEMPLARY FEATURES

Opportunity to extend the work required in order to guarantee universal accessibility to all the interpretive elements of the Green Belt.

LINKS

The Green Belt of Vitoria-Gasteiz.
http://www.vitoria-gasteiz.org/anilloverde

Ataria
http://www.vitoria-gasteiz.org/ataria

ELEMENT
CORE ELEMENT

TYPOLOGY
PERIURBAN PARK

LOCATION
ATARIA (SALBURUA)

PILOT PROJECT 08

STRENGTHENING PLANTATIONS AND APPLICATION OF STARLIGHT CRITERIA TO THE ILLUMINATION OF THE LINEAR PARK OF THE RIVER ALEGRÍA

CURRENT STATUS

Today, and following the actions taken within the framework of the Green Belt, the river Alegría is an important ecological corridor between the River Zadorra and the Salburua wetlands and a space for leisure and walking that connects Salburua and Gamarra.

The design of this space exploits the urban nature of this location and the more natural quality of a walkway along the riverbank. Today, it is proposed to reduce the urban character of the walkway through a number of naturalisation actions.

One of the interventions proposed is to reduce the lighting along the walkway. This action comes within the Strategic Sustainable Lighting Plan of Vitoria-Gasteiz which, based on an analysis of the public lighting in the city, sets out the work to be carried out in order to adapt the present lighting system to the needs existing in each location, in accordance with the Starlight initiative, for the defence of the star filled sky and the protection of nocturnal biodiversity.

The analyses conducted in this sense have shown that lighting levels in the city are excessively high, leading to unnecessary energy consumption and economic cost, as well as other problems arising from light pollution generated by the excess illumination, both on the health of people and on biodiversity. Especially concerning is the light pollution of the outlying districts of the city due to their proximity to natural areas and protected spaces, which are highly sensitive to this problem.

This is the case of the walkway along the river Alegría, which connects two spaces that have been declared Community Interest Sites.

AIMS

- Naturalise the Alegría walkway, strengthening its role as an ecological corridor.
- Reduce the light pollution in urban spaces close to areas of naturalistic interest.
- Protect nocturnal biodiversity.
- Reduce the energy consumption of the public lighting system of the city.



PROJECT DESCRIPTION

- Reduce lighting levels, by applying partial or total blackouts of streetlamps and reducing the power of lamps installed.
- The gradual elimination of lamp models with polluting characteristics, especially those with emissions in spectra of under 520 nm (white light) and the use of low pressure sodium vapour lamps.
- Reinforce the planting of trees along the river bed.





BENEFITS/ECOSYSTEM SERVICES

- Reduction in environmental contamination (light).
- Reduction in energy consumption.
- Protection of wildlife and nocturnal biodiversity.
- Improvement in ecological permeability.
- Awareness and environmental education resource.
- Resource for contemplation and spiritual welfare.

INNOVATING AND EXEMPLARY FEATURES

Can be extrapolated to other urban spaces close to natural areas.

ELEMENT
CORE ELEMENT

TYPOLOGY
PERIURBAN PARK

LOCATION
RIVER ALEGRÍA

PILOT PROJECT 09

ECOLOGICAL AND LANDSCAPE IMPROVEMENT ACTIONS IN THE JÚNDIZ AREA

CURRENT STATUS

The Western Plains are highly fragmented by large linear infrastructures that cross the territory in a Northeast/Southwest direction (A-1 dual carriageway, N-622 road and the Madrid-Irún railway) and through the industrial areas of Júndiz and Subillabide. Within this geographical context, the hill known as the Júndiz Hill and the green area associated with the service area of the Júndiz industrial estate, have emerged as the only possible connecting area between the River Zadorra and the Sierra de Badaia mountain range to the north, and the Montes de Vitoria mountain range to the south.

The Júndiz Hill features important species of flora and fauna, as well as several features of archaeological and landscape interest. Today, work is being done on a plan to improve the landscape of the hill, in order to revitalise and promote its role as a connecting element.

Near the Júndiz Hill, on the other side of the N-1 road, there is the Júndiz Services Area. This has a large park with few trees as well as picnic and playing areas subject to frequent mowing, far more often than is needed, in view of its low level of public use. Next to the park, a large, treeless strip of land runs next to the city's bypass. For legal reasons, the protective strips on both sides of the road are not occupied by any buildings and offer a great opportunity to reduce the sound and visual impact of this major road and to promote ecological connectivity, in the form of a green corridor parallel to the N-1.

The strategic position occupied by this large area as a hinge element between the Urban Green Infrastructure System and the natural systems of the region has led to a number of different initiatives designed to protect and improve the ecological-landscape values of this environment.

AIMS

- Improve the landscape value of the roadway environment: entrance into Vitoria-Gasteiz via the N104 and the city's bypass.
- Create a green area of greater biodiversity by strengthening the ecological connection between the Montes de Vitoria and the River Zadorra.
- Correct the barrier effect of the dual carriageway.
- Reduce the maintenance costs of this green area, favouring a more sustainable management.
- Revitalise and highlight the value of the Júndiz Hill and its environment.



PROJECT DESCRIPTION

The project that is currently being drawn up includes the naturalisation of the area and comprises the following actions:

- Planting of native species form a green corridor parallel to the N-1 dual carriageway, facilitating the connection between the Montes de Vitoria and the River Zadorra.
- Differentiated management and a reduction in the number of times the grass is mowed. It is proposed to reduce the turfed surface area and the number of mowing operations in a large portion of the space, reducing these from the current seven operations to one or no mowing operations in some specific areas.
- Creation of a number of small wetlands with macrophyte beds to collect water drained from the road junctions and to treat this before this is dumped into local river beds.
- Creation of tree-lined strips that will be used to support and protect the greenways planned for the area (access points to the Júndiz Hill, Vitoria-Santa Catalina Botanic Garden itinerary, Saint James' Way, etc.).









BENEFITS/ECOSYSTEM SERVICES

- Increase in biodiversity.
- Improvement in ecological permeability.
- Landscape integration.
- Reduction in the cost of managing green spaces.
- Sport, leisure, tourism and education.

INNOVATING AND EXEMPLARY FEATURES

Trials of new ways of gardening with less intensive maintenance.

This initiative could be replicated perfectly in the treatment of green areas of industrial spaces located in the rural milieu.

ELEMENT
CORE ELEMENT

TYPOLOGY
INDUSTRIAL AREA

LOCATION
JÚNDIZ

PILOT PROJECT 10

WORK TO BUILD THE GARDEN OF USEFUL AND ENDANGERED PLANTS IN THE OLARIZU BOTANIC GARDEN

CURRENT STATUS

The Olarizu Botanic Gardens are located in the periurban park of Olarizu, in the Green Belt. In addition to being a public park containing collections of plant species, designed clearly for educational and information purposes, the Botanic Gardens are the subject of research and conservation activities.

The Gardens feature several spaces designed to house collections of live plants and a germplasm bank, in which genetic material is kept ex situ for conservation purposes and for the reintroduction into the environment of threatened species in danger of extinction.

Today, there are four spaces used for housing collections of live plants: the Arboretum of European Forests, the Olarizu Lake, the Orchid Meadows and the Olarizu Gardens viewing point. A new space will be prepared in the near future: the Garden of useful and threatened plants, which will reflect the historical development of the relationship between plants and human beings and will house collections dedicated to Ethnobotany and the endangered, rare, endemic and singular flora of the Basque Country.

LINKS

Olarizu Botanic Gardens.
http://www.vitoria-gasteiz.org/we001/was/we001Action.do?idioma=en&aplicacion=wb021&tabla=contenido&uid=u5e32f096_1370182b120__7fdb

AIMS

- Complete the Olarizu Botanic Garden with a new space designed for housing the useful and endangered plants of the Basque Country.
- Perform conservation and research functions.
- Secure the further specialisation of the Olarizu Botanic Gardens in the areas of ethnobotany, endemic and endangered regional flora.
- Demonstrate the benefits provided by plants, now and in the past, to the development of humanity.
- Promote an awareness of endangered species and the need for their protection.



PROJECT DESCRIPTION

The work will be carried out in three stages:

Stage 1. The required earthmoving work will be carried out as well as soil preparation, the drainage network and the masonry and concreting work throughout the site, as well as paths, installations and planting of the collection area.

Stage 2. The civil works corresponding to stage 1 will be completed and the growing area will be planted.

Stage 3. The park furniture and buildings will be installed.



BENEFITS/ECOSYSTEM SERVICES

- Biodiversity bank. Biodiversity conservation.
- Maintenance, protection and improvement of natural habitats and wildlife.
- Educational resource for training, education and awareness of flora and vegetation.

INNOVATING AND EXEMPLARY FEATURES

Specialisation in ethnobotany.

Initiative that can be extrapolated to other places and situations.



PILOT PROJECT 11

PILOT PROJECT OF AGRO-ECOLOGICAL PRACTICES IN THE ALDAIA AREA

CURRENT STATUS

In the transition area between the consolidated urban grid of the Zabalgana district (Aldaia sector 5) and the forestry park of Zabalgana (Green Belt periurban park) there is a large area of agricultural land owned by the municipality (19.25 ha). This land is classified in the city's urban development plan as a future plot for municipal installations and is currently being cultivated under precarious conditions.

In view of the nature and location of this space, it plays a vital role in efforts to strengthen and maintain a large amount of ecological processes that this agro-forestry mosaic contributes to the Urban Green Infrastructure System. For that reason, firstly, through this space it is proposed to improve the ecological connection between Zabalgana Park and the city and, secondly, it is proposed to convert the current agricultural production systems in favour of more integrated and environmentally-friendly systems.

Moreover, there is an important demand for agricultural land in the urban environment in order to test projects of an experimental nature for the production, distribution and consumption of locally produced foods (allowing the incorporation of young farmers into the sector), as well as for its management.

AIMS

- Integrate new spaces into the Urban Green Infrastructure System of Vitoria-Gasteiz, favouring the ecological connection between Zabalgana Park and the city.
- Increase the functionality of periurban agricultural spaces.
- Promote the development of "sustainable" agricultural activities.
- Create an awareness of the ecosystem benefits provided by the primary sector.
- Incorporate new spaces into the Urban Green Infrastructure System of Vitoria-Gasteiz.
- Improve the environmental and landscape quality of the urban agricultural environment.



PROJECT DESCRIPTION

The initiative proposes to define and develop a new type of agricultural production in this area to allow the introduction of new practices designed to bring about an improvement in the environmental and landscape conditions of the area and the maintenance of the local agricultural sector.

To do this, agreement and collaboration formulas will be drawn up between Vitoria-Gasteiz City Council and potential producers, allowing new conditions to be established for the use and production of these spaces.

The initiative comprises the following actions:

- Adopt growing techniques that protect and restore the agro-system and its different elements (hedgerows, streams and borders, aquifers, etc.) and guarantee product quality (ecological, transgenic-free, etc.).
- Promote forms of commercialisation and distribution in the local environment (in cooperation with the municipal marketplace and/or with other sales and consumption networks).
- Foster an awareness of the need to maintain and appreciate the value of the agricultural sector.



BENEFITS/ECOSYSTEM SERVICES

- Improvement in ecological permeability.
- Production and consumption of local foodstuffs.
- Maintain the fertility of the land.
- Improvement in biodiversity.
- Environmental improvement.
- Improvement in landscape quality.
- Generation of green employment.
- Reduction in carbon footprint and CO_2 emissions.

INNOVATING AND EXEMPLARY FEATURES

Initiative of an experimental nature through which it will be possible to analyse the opportunities of replicating and adapting this initiative in other periurban agricultural spaces, with the aim of strengthening the functionality of the Green Belt and of the transition area between the city and its natural surroundings.

ELEMENT
CORE ELEMENT

TYPOLOGY
AGRICULTURAL AREA

LOCATION
ALDAIA

PILOT PROJECT 12

PILOT PROJECT OF AGRO-ECOLOGICAL PRACTICES IN THE OLARAN AREA

CURRENT STATUS

Urban Development Sector 14, which has been given the name of OLARAN, lies in the transition area between the urban grid of the Salburua district and the hill known as the Las Neveras Hill (the next Green Belt park). Today, this 34.5 ha sector is still to be developed and is currently occupied by crop fields. In view of the current excess offer of residential land in the city as a whole (especially in this area) and the lack of movement in the real estate sector, this area is not expected to be developed in the near future.

On the other hand, in view of the agricultural nature of this space and its proximity to the ecological connector of the river Errekaleor (which is still in a good state of conservation), it is of high strategic value and could play a key role in maintaining a large number of ecological processes within the Green Infrastructure System of Vitoria-Gasteiz. In this sense, it is proposed to maintain its agricultural nature, either on a temporary or definitive basis, under a more sustainable and integrated production system.

AIMS

- Increase the functionality of periurban agricultural spaces.
- Promote the development of “sustainable” agricultural activities.
- Create an awareness of the ecosystem benefits provided by the primary sector.
- Incorporate new spaces into the Urban Green Infrastructure System of Vitoria-Gasteiz.
- Improve the environmental and landscape quality of the urban agricultural environment.



PROJECT DESCRIPTION

The initiative proposes to define and develop a new type of agricultural production in this space that will allow the incorporation of new practices aimed at bringing about improvements in the environmental and landscape conditions of the area and sustaining the local agricultural sector.

To do this, agreement and collaboration formulas will be promoted between Vitoria-Gasteiz City Council, land owners and potential producers, which will allow new conditions to be established for the use and production of these spaces while guaranteeing improvements in the environmental and landscape conditions of this valuable agricultural area of transition, as well as supporting the agricultural production sector.

The initiative comprises the following actions:

- The adoption of cultivation techniques that protect and restore the agro-system and its different elements (hedgerows, streams and borders, aquifers, etc.) and guarantee product quality (ecological, transgenic-free, etc.).
- The promotion of forms of commercialisation and distribution in the local environment (in cooperation with the municipal marketplace and/or with other sales and consumer networks).
- Creation of an awareness of the need to maintain and appreciate the value of the agricultural sector.



BENEFITS/ECOSYSTEM SERVICES

- Production and consumption of local foodstuffs.
- Maintaining the fertility of the land.
- Improving biodiversity.
- Environmental improvement.
- Enhance landscape quality.
- Generation of green employment.
- Reduction in carbon footprint and CO_2 emissions.

INNOVATING AND EXEMPLARY FEATURES

Initiative of an experimental nature that will allow an analysis to be made of the possibilities of replicating and adapting this initiative in other periurban agricultural spaces, with the aim of strengthening the functionality of the Green Belt and of the transition area between the city and its natural surroundings.

ELEMENT
CORE ELEMENT

TYPOLOGY
AGRICULTURAL AREA

LOCATION
OLARAN

PILOT PROJECT 13

MEASURES FOR THE CONSERVATION OF RELICT VEGETATION IN THE SALINILLAS DE BURADÓN PARK AND REINFORCEMENT OF PLANTATIONS

CURRENT STATUS

The Salinillas de Buradón Park is a large park located at the western end of the district of Zabalgana, bordering on the Zabalgana Forest Park, situated on the Green Belt, from which it is separated by a broad, urban boulevard.

From the naturalistic viewpoint, the park has two, clearly differentiated environments: one, a more formal urban park in the area closest to buildings, and the second, a more naturalised park, in the area closest to the Green Belt. One of the most noteworthy characteristics of the latter area is the existence of the remains of relict herbaceous vegetation of great botanical value, which has survived the urbanising process and which features the presence of several species of orchids.

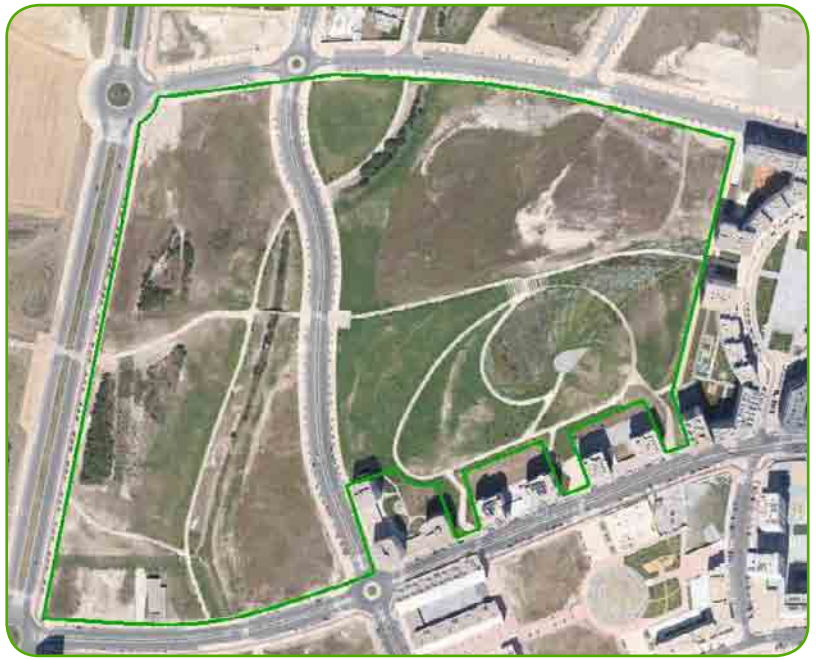
Both for its strategic position as a transition between the city and the Green Belt, and for its use as a genetic reservoir of species that have virtually disappeared in the urban environment, this park is of great strategic value.

Besides its considerable naturalistic quality, it is of great relevance from the landscape viewpoint as, in view of its physiographical position, raised in the form of a hill, it plays a key role in focusing vistas from different parts of the area and in turn offers magnificent panoramic views.

Both of these circumstances justify the establishment of a series of measures intended, on the one hand, to reinforce the plantations and, on the other, to organise and carry out a differentiated management of the space, allowing the creation of meadows with minimum investment and minimum maintenance requirements, representing an extremely interesting ecological niche in a highly transformed environment.

AIMS

- Preserve relict vegetation.
- Integrate habitats of interest for the biodiversity in the Urban Green Infrastructure System.
- Create the conditions for natural colonisation.



PROJECT DESCRIPTION

- Application of differentiated management measures between lawns, meadows and grasslands that ensure the survival of vestiges of existing natural vegetation and favour the conditions for the colonisation of neighbouring areas.
- Creation of shrub masses and blooms of flowers in the green areas located on the western slopes of the hill.
- Creation of a forest mass in the green zone triangle between Iruña Street and the stream.
- Reinforce the plantations of trees and shrubs.





BENEFITS/ECOSYSTEM SERVICES

- Increase biodiversity.
- Preservation of habitats of interest.

INNOVATING AND EXEMPLARY FEATURES

Trial of new forms of differentiated management in urban parks intended to favour the preservation of relict vegetation.

These actions can be extrapolated to other urban spaces with vestiges of natural vegetation.

ELEMENT
CORE ELEMENT

TYPOLOGY
URBAN PARK

LOCATION
SALINILLAS DE BURADÓN PARK

PILOT PROJECT 14

MEASURES FOR THE CONSERVATION OF RELICT VEGETATION ON THE HILL KNOWN AS THE MENDIZABALA HILL AND REINFORCEMENT OF PLANTATIONS

CURRENT STATUS

The hill known as the Mendizabala Hill is a small promontory on the southern outskirts of the city, near the Green Belt, in an area of contact and transition between the urban milieu and the natural environment.

Its northern slopes have the form of an urban park, combining woodland and grassland, while the rest is a hill populated with wild vegetation, but with little tree coverage. Nevertheless, it has a number of herbaceous formations and relict shrubs which have survived the urban development process and are of great botanical value. The hill is also inhabited by several species of orchids of special interest.

The hill's raised, obstacle-free situation makes it an important landmark from which magnificent panoramic views can be had, especially towards the slopes of the Montes de Vitoria and the agro-forestry mosaic of high landscape quality that extends over the bottom of the valley.

Public access to the raised area of this space is via two formal tracks and a multitude of small, spontaneous and highly eroded access points as a consequence of the fact that they are used frequently by walkers and vehicles and are subject to water run-off.

These characteristics justify the need and the opportunity to establish, on the one hand, a set of management measures and differentiated vegetation management aimed at maintaining and strengthening the ecological value of this space, and on the other hand, actions that facilitate access and compatible public use and which allow the contemplation of an environment of high landscape quality.

AIMS

- Preserve relict vegetation.
- Restore the ecological and landscape quality of the Mendizabala Hill.
- Increase the tree coverage of the eroded slopes of the Mendizabala Hill.





PROJECT DESCRIPTION

The project comprises the following actions:

- Application of differentiated management measures between lawns, meadows and grasslands to ensure the survival of vestiges of existing natural vegetation and favour conditions for the colonisation of neighbouring areas.
- Delimitation and preparation of access tracks to the raised part of the hill in order to avoid the creation of illegal tracks, as occurs today.
- Partial reforestation of embankments in order to avoid soil erosion and reduce water run-off.





BENEFITS/ECOSYSTEM SERVICES

- Maintenance, protection and improvement of natural habitats, wildlife and biodiversity.
- Preservation of habitats of interest.
- Landscape improvements.
- CO_2 collection and the production of oxygen.
- Reduce the risk of erosion and of the loss of water due to run-off.
- Increase in the sense of belonging and identity.

INNOVATING AND EXEMPLARY FEATURES

Trial of slope reforestation techniques.

Actions that can be extrapolated to other natural elements or spaces with similar characteristics and problems (Olarizu Hill, etc.).

PILOT PROJECT 15

PROPOSAL OF MEASURES TO FAVOUR BIODIVERSITY IN ANTONIO MACHADO PARK

CURRENT STATUS

This large, green area, which is used as a barrier between the Ali-Gobeo industrial estate and the districts of Sansomendi and Lakua, has an extension of more than 8 ha. It involves a space which has been converted into pastureland and with trees distributed virtually in a uniform manner throughout its surface area.

It has two playing areas, one for children and another for skateboards, and an extensive network of paths with benches and lighting on both sides. Without a doubt, the most characteristic element is a large elongated pool, used for irrigation, with an area of 2753 m^2 and a depth of 50 cm, distributed in three differentiated water masses, separated by a footbridge and a small waterfall. It is made up of prefabricated walls and has some interior vegetation in planters.

The large size of the park, the presence of water, its location within the Green Infrastructure System and its non-intensive use by members of the public who keep to the formal tracks, point to the interest and opportunity of carrying out a number of pilot interventions that will allow an increase in its biodiversity, fundamentally associated with aquatic ecosystems, in a manner compatible with public use.

AIMS

- Favour the biodiversity associated with water masses in the city.
- Establish refuge areas for aquatic fauna.
- Eradicate invasive exotic fauna.
- Limit the frequency of mowing.



PROJECT DESCRIPTION

The project comprises the following actions:

- Naturalisation of the lake and the creation of refuges for the fauna typical of aquatic ecosystems in the green areas adjacent to the lake, by means of a more adequate management of these areas and a reduction in the number of mowing operations.
- Emptying of the lake in order to eliminate the American Perch or Black Bass (*Micropterus salmoides*), a non-native fish species introduced into the lake.
- Combine the reduction of mowing operations with the plantation of small-size woody species on the strip of lawn located under the electric power lines.
- Creation of small woods through the diversification of strata in existing tree plantations in order to favour biodiversity.
- Monitoring of the ecology of the lake following the elimination of fish, including the participation of local residents: monitorisation of possible populations of amphibians, etc.



BENEFITS/ECOSYSTEM SERVICES

- Increase in biodiversity.
- Creation of new habitats.

INNOVATING AND EXEMPLARY FEATURES

Trial of new, more naturalised designs in order to favour the biodiversity associated with aquatic ecosystems in urban areas.

Can be replicated in other urban green areas with the presence of bodies of water.





ELEMENT
NODE

TYPOLOGY
URBAN PARK

LOCATION
ANTONIO MACHADO PARK

PILOT PROJECT 16

PROPOSAL OF MEASURES TO FAVOUR BIODIVERSITY IN EAST PARK

CURRENT STATUS

East Park is a recently created park, located in the district of Salburua. It consists of several paved areas and large areas of lawns with trees that surround a large pond of some 1163 m². This body of water, formed by vertical concrete embankments, with a depth of 40 cm and with a footbridge placed over its centre, does not house any kind of vegetation or animal formation typical of wetland areas.

The location of the park, next to the Salburua wetland and the River Errekaleor, and the physical characteristics of the pond itself, offer the opportunity to naturalise and improve its ecological functionality as a small aquatic ecosystem.

Three areas of intervention are being considered: the pond, the surrounding park and the connectors of Tallin Street and Vilnius Street.

The naturalisation of the pond and its surrounding area, in addition to improving the biodiversity conditions of this space, will involve its aesthetic enhancement, which will also strengthen its social function as a leisure and meeting space for the district of Salburua.

AIMS

- Facilitate the ecological connection of the East Park with the linear corridor that crosses the district of Salburua, from north to south.
- Favour the biodiversity associated with bodies of water in the city.
- Establish refuge areas for aquatic fauna.
- Limit the frequency of mowing operations.



PROJECT DESCRIPTION

Actions to be taken on the pond:

- Installation of aquatic vegetation in pots.
- Creation of access/escape ramps in the area of the perimeter that looks onto the green area, which does not have vertical embankments.
- Installation of rocks on the platform to clear the existing 5 cm difference in height.
- Creation of refuges for fauna on the edges of the pond through the plantation of shrub masses and/or by bringing about changes in the management of mowing operations. Refuges could also be made by placing rocks or dead wood near the pond.

Actions on the surrounding area:

- Measures to reduce light pollution in areas near the pond.
- Strengthening the vegetation structure between the East Park and the route around the Green Belt (Tallin Street and Vilnius Street), by means of plantations and by leaving an area where mowing operations are carried out less frequently, in view of the width of the green area.
- In view of the fact that adjacent housing is semi-detached, with private gardens, a composting plant could be installed in order to manage the plant waste from these homes and in order to generate refuges (pruning waste, dead leaves, etc.), together with information and signposting for local residents.
- Remove invasive flora from plots adjacent to the park.



BENEFITS/ECOSYSTEM SERVICES

- Increase biodiversity.
- Creation of new habitats.
- Landscape enhancement.
- Leisure and education resource.

INNOVATING AND EXEMPLARY FEATURES

Trial of new, more naturalised designs in order to favour the biodiversity associated with aquatic ecosystems in urban areas.

Can be replicated to other urban green areas with bodies of water.

ELEMENT
NODE

TYPOLOGY
URBAN PARK

LOCATION
EAST PARK

PILOT PROJECT 17

ECOLOGICAL AND LANDSCAPE IMPROVEMENT OF THE AREA AROUND THE MUNICIPAL NURSERY

CURRENT STATUS

The plot occupied by the municipal plant nursery is surrounded by lateral green strips situated along the edges of busy roadways. Due to their strategic location within the Urban Green Infrastructure System, they are expected to be the subject of ecological enhancement actions.

To the north, the plot borders on the Zadorra Avenue, which separates the nursery from the Zadorra Park, within the Green Belt.

To the east it borders on the Portal de Foronda, an urban avenue which provides an entrance into the city from the North. A number of actions are being planned on the linear green area, involving a greater naturalisation of the space together with low maintenance requirements.

In this context, the plot occupied by the nursery acts as a green node, of great importance for the ecological connection of the Portal de Foronda and the Green Belt.

An elongated plot, which has been earmarked for municipal installations but which is at present empty, is situated to the south of the nursery. By annexing this space it would be possible to increase the green surface area of the space and therefore its ecological functionality.

AIMS

- Improve the landscape quality of the entrance into Vitoria-Gasteiz from the North.
- Create a green area of greater biodiversity.
- Reduce maintenance costs by favouring more sustainable management.
- Improve the ecological connectivity of the Urban Green Infrastructure System between Portal de Foronda and the Green Belt, via the River Zadorra Park.



PROJECT DESCRIPTION

- Plantation of trees and shrubs, in combination with the sowing of native flower meadows in order to naturalise the space, creating new ecological niches and increasing biodiversity levels.



BENEFITS/ECOSYSTEM SERVICES

- Landscape integration.
- Increase in biodiversity.
- Improvement in ecological permeability.
- Sustainable management of green spaces.

INNOVATING AND EXEMPLARY FEATURES

Trial of new, more naturalised designs in urban green areas.



ELEMENT
NODE

TYPOLOGY
NURSERY

LOCATION
MUNICIPAL NURSERY

PILOT PROJECT 18

PROPOSAL OF ECOLOGICAL IMPROVEMENT MEASURES IN THE BIODIVERSITY PARK

CURRENT STATUS

This project involves a 1.85 ha green space located at the vertex between a large industrial estate, one of the largest parks in the city, the Arriaga Park, and the Santa Isabel Cemetery, a historic and very mature park of great interest for biodiversity.

Initially, it was designed as a conventional park made up of extensive lawns requiring intensive management and trees of different sizes with a very simple ecosystem. The park was conceived merely as a thoroughfare for pedestrians.

Bearing in mind its small size and strategic position, in 2006, this area was remodelled in order to generate a space designed in accordance with criteria that would favour a greater biodiversity. For this purpose, a shallow pond was created together with a stone wall that would be used as a refuge for fauna. The night-time lighting was reduced, the grass was allowed to grow taller in some areas, several plantations of native woody species were created, nest boxes were placed on trees and a number of interpretation panels were installed to explain all of the above actions. Likewise, a study of flora and nesting birds was carried out in order to determine a number of biological parameters prior to carrying out the proposed actions.

Seven years later, a number of problems have occurred, such as the release of invasive exotic species of fish into the pool by uninformed members of the public. On the other hand, over the years, despite the undoubted interest of the vegetation management plan originally proposed, the need for this to be complemented with other actions designed to improve its ability to improve the biological diversity of the area has become clear.

AIMS

- Secure the role of this park as a space to demonstrate those biodiversity-friendly interventions that can be carried out in the urban environment.
- Reduce park maintenance costs.
- Promote the park with regard to its environmental interpretation by the public.



PROJECT DESCRIPTION

In spite of their interest, the objectives reached in this space can clearly be improved upon in order to increase its capacity to attract a greater wealth of biodiversity. In this sense, the project proposes a series of actions that redirect or complement those taken until now, together with efforts to encourage the participation of the public in the processes to monitor the environmental development of the park:

- Strengthen the management of vegetation in order to favour a greater diversity of ecological niches: increase in shrub masses, creation of flower masses, changes in the frequency of mowing operations, introduction of small aquatic vegetation masses within the pond, etc.
- Generate new spaces of ecological interest: refuges in the form of piles of dead wood, installation of nest boxes, etc.
- Eliminate the invasive exotic fauna from the pond.
- Monitor the ecological evolution of the area: variety of flora, the community of dragonflies and damselflies and nesting birds, with the possible participation of members of the public interested in the data collecting process.



BENEFITS/ECOSYSTEM SERVICES

- Creation of new habitats.
- Increase in urban biodiversity.
- Eradication of invasive exotic fauna.
- Reduction in the cost of urban management (less irrigation, fewer mowing operations, etc.).
- Educational and social resource.

INNOVATING AND EXEMPLARY FEATURES

The space demonstrates the biodiversity-friendly management techniques that can be carried out in the urban environment.

PILOT PROJECT 19

CREATION OF A SPACE FOR BIODIVERSITY IN THE HISTORIC GARDEN OF PALACIO ZULUETA

CURRENT STATUS

This historic garden is located in the city centre, next to the Palacio Zulueta, in a closed area, surrounded by hedgerows and stone walls. It is open to the public during the day and is closed at night.

In spite of the quality and aesthetic harmony of its well-kept garden, there is a small area at one end, next to the wall that divides the garden and the grounds of a neighbouring building, which has a damaging effect on the quality of the whole.

From the naturalistic viewpoint and despite being in the urban centre, thanks to the large size of the trees present in the garden, there is a large community of forest dwelling birds such as Tree Creepers, Bullfinches, Chaffinches and Linnets. The management of the night-time lighting appears to have favoured nocturnal birds such as the Little Owl. Moreover, the area is located next to spaces of great natural interest such as the corridors generated by the railway, the Paseo de la Senda promenade and Florida Park, which features among other fauna, a population of Midwife Toads.

These circumstances justify the interest in increasing its value as a focal point of urban biodiversity based precisely on the transformation of the area that needs to be improved. It is proposed therefore to develop a pilot project that combines the aesthetic improvement and maintenance of this historic place with efforts to improve its biodiversity.

In view of its position in a privileged location in the city centre, the opportunity to convert this space into a place for environmental education and actions designed to increase the public's awareness of urban biodiversity is also proposed.

AIMS

- Creation of new biodiversity habitats in the city centre.
- Integration of historic, aesthetic and naturalistic values in the design and maintenance of urban green spaces.



PROJECT DESCRIPTION

The following actions are proposed:

- Creation of a small pond, surrounded by a flower meadow in the form of a small aquatic ecosystem.
- Creation of a xerophytic wood, which, in addition to isolating the garden from the neighbouring building, has all the vegetation strata required in order to favour its use as a refuge for urban birds.
- Introduction of artificial elements that provide the necessary conditions for insects, birds, amphibians, etc., and help to discover and interpret some of the main ecological processes of these urban ecosystems.





BENEFITS/ECOSYSTEM SERVICES

- Creation of new habitats.
- Increase in urban biodiversity.
- Landscape enhancement.

INNOVATING AND EXEMPLARY FEATURES

Trial of new, more naturalised designs to favour urban biodiversity.

Can be replicated in other urban green spaces.



ELEMENT
NODE

TYPOLOGY
HISTORIC GARDEN

LOCATION
PALACIO ZULUETA

PILOT PROJECT 20

ECOLOGICAL AND LANDSCAPE IMPROVEMENT OF THE SANTO TOMÁS ROUNDABOUT

CURRENT STATUS

The Santo Tomás roundabout is a small green area located on the Gamarra industrial estate, which acts like a traffic distribution junction at the meeting point of four streets, at one of the main access points to the city via the Portal de Gamarra.

It involves a turfed green area, edged by an alignment of tall Poplar trees and by several plots of an industrial nature (one of them is currently abandoned). It has little naturalistic value and a somewhat abandoned and marginalised appearance, which reduces its landscape interest.

However, its strategic location as a secondary node and meeting point between three connectors of the Green Infrastructure System, argues in favour of developing a project that brings together aesthetic improvement and the fostering of biodiversity in this road junction.



AIMS

- Improve the landscape quality of this road junction.
- Create a green area of greater biodiversity.
- Reduce the maintenance costs of this green area, favouring a more sustainable management.

PROJECT DESCRIPTION

In order to transform this space, it is proposed to create a wood, which, in addition to creating volume and improving the landscape at this entrance into the city, will introduce a structural complexity through the generation of several vegetation strata, diversifying the ecological niches and favouring biodiversity and ecological permeability.

Specifically, large trees will be planted on a 2647 m² plot.



BENEFITS/ECOSYSTEM SERVICES

- Landscape integration.
- Increase in biodiversity.
- Improved ecological permeability.
- CO_2 capture and production of oxygen.

INNOVATING AND EXEMPLARY FEATURES

Can be replicated perfectly in other junctions.



ELEMENT NODE

TYPOLOGY STREET JUNCTION

LOCATION SANTO TOMÁS ROUNDABOUT

PILOT PROJECT 21

PREPARATION OF THE "ZABALORTU " URBAN COMMUNITY HORTICULTURAL GARDENS

CURRENT STATUS

Today, in the city and fundamentally in the new districts, there are a large number of empty plots awaiting development for different uses. In general, they exhibit an abandoned and marginal appearance.

The opportunity has arisen to give some of the currently empty plots a transitory and, in some cases, even definitive use. Among possible uses, the creation of urban horticultural gardens is being considered in spaces that offer the adequate conditions, taking into consideration the considerable demand for activities relating to urban horticulture.

AIMS

- Highlight the importance and make provisional or definitive use of currently unexploited vacant plots.
- Incorporate new spaces into the Urban Green Infrastructure System of Vitoria-Gasteiz.
- Improve the environmental and landscape quality of vacant plots.
- Favour public participation initiatives.
- Promote ecological horticulture and healthy eating.





PROJECT DESCRIPTION

The project consists of the creation and setting up in the district of Zabalgana of a public area of ecological urban horticultural gardens that can be managed by local residents.

It involves an initiative promoted jointly by a neighbourhood association and Vitoria-Gasteiz City Council, which intends to transform a currently vacant municipal plot into a community horticultural garden.

In order to put this initiative into motion, it is necessary to prepare the space and carry out a number of management tasks:

- Create approximately 60 ecological horticultural gardens measuring 50 m² each.
- Prepare access roads, water tanks, sitting areas, storage and composting areas and a perimeter fence.
- Establish a public-private collaboration system between the City Council and neighbourhood groups, in order to establish the conditions and form of management.

BENEFITS/ECOSYSTEM SERVICES

- Use of marginal spaces.
- Production of ecological foodstuffs.
- Maintain the fertility of the soil.
- Generate spaces for biodiversity.
- Create spaces for learning and experimentation.
- Foster social cohesion.
- Generate a spirit of belonging to the community and of strengthening the identity of the district.

INNOVATING AND EXEMPLARY FEATURES

Innovating schemes for public-private collaboration, self-management and public participation.

Eco-innovation in processes of ecological horticultural production.

A trial that will enable an analysis to be made of the possibility of replicating this scheme in other parts of the city in order to generate a network of urban horticultural gardens and to extract conclusions that may be extrapolated to other cities with similar characteristics.

LINKS

CEA Urban Horticultural Garden blog.
http://colaboradores.vitoria-gasteiz.org/hiribaratzeak/en

ZABALORTU neighbourhood association: Urban Horticultural Garden Project.
http://www.zabalganabatuz.org/baratz-ekologikoaren-proiektua-zabalortu-proyecto-de-huerto-ecologico/

PILOT PROJECT 22

PREPARATION OF AN URBAN HORTICULTURAL GARDEN IN SALBURUA

CURRENT STATUS

Today, in the city and fundamentally in the new districts, there are a large number of empty plots awaiting development for different uses. In general, they exhibit an abandoned and marginal appearance.

The opportunity has arisen to give some of the currently empty plots a transitory and, in some cases, even definitive use. Among possible uses, the creation of urban horticultural gardens is being considered in spaces offering adequate conditions, taking into consideration the considerable demand for activities relating to urban horticulture.

In the specific case of Salburua, there is a vacant plot in the area near the River Errekaleor that could be converted into an area for community horticultural gardens.



AIMS

- Highlight the importance and make provisional or definitive use of currently unexploited vacant plots.
- Incorporate new spaces into the Urban Green Infrastructure System of Vitoria-Gasteiz.
- Improve the environmental and landscape quality of empty plots.
- Favour public participation initiatives.
- Promote ecological horticulture and healthy eating.



PROJECT DESCRIPTION

At present, the project involves a proposal that is currently being studied and analysed. This includes the establishment of management and public-private collaboration systems for its preparation, start-up and operation as a community vegetable garden.

LINKS

CEA Urban Horticultural Garden blog.
http://colaboradores.vitoria-gasteiz.org/hiribaratzeak/

BENEFITS/ECOSYSTEM SERVICES

- Use of marginal spaces.
- Production of ecological foodstuffs.
- Maintain the fertility of the soil.
- Generate spaces for biodiversity.
- Create spaces for learning and experimentation.
- Foster social cohesion.
- Generate a spirit of belonging to the community and of strengthening the identity of the district.

INNOVATING AND EXEMPLARY FEATURES

Innovating schemes for public-private collaboration, self-management and public participation.

Eco-innovation in processes of ecological horticultural production.

A trial that will enable an analysis to be made of the possibility of replicating this scheme in other parts of the city in order to generate a network of urban horticultural gardens and to extract conclusions that may be extrapolated to other cities with similar characteristics.



PILOT PROJECT 23

RESTORATION AND ECOLOGICAL MANAGEMENT OF MEDIAEVAL "CAÑOS" OR OPEN SEWERS

CURRENT STATUS

The "caños" are urban spaces of mediaeval origin located within the residential blocks of the Historical Quarter of Vitoria-Gasteiz. Their initial function was to drain waste water from homes built on the hill which was the site of the old city of Gasteiz. Their name derives from the gully-like form of the channels used to drain away sewage. For centuries, water was conducted in uncovered channels, provoking continuous outbreaks of diseases. Following the cholera epidemic in the city in 1878, the cleaning regulations were modified to include measures to make the gullies more hygienic through the channelling of water and by paving over the ground.

Although many of the houses have been modernised over the years and despite the fact that the pipes have been modified to drain sewage to new pipes underneath the main streets, even just a few years ago there were channels that still performed their original function and were a focal point of rubbish and degradation.

Over recent years and thanks to the joint efforts of the Gaia Ecologist Group Association, the government and local residents, 8 of the existing 18 sewers have been transformed. These municipally-owned public spaces of restricted use have changed from being dirty, unkempt spaces situated in the back yards of a number of houses, into clean, well-kept places full of plants that improve the quality of life of local residents.

The almost total absence of large-sized green elements in the mediaeval quarter and the scanty opportunities for the preparation of a large Green Infrastructure elements in the city centre, justifies its classification as a diffuse node in the Urban Green Infrastructure System of Vitoria-Gasteiz. In these diffuse nodes, the aim is to take maximum advantage of all the potential that any green element, however small, might contribute to the system as a whole. In this sense, it is considered to be of interest to make progress in the preparation of these mediaeval sewers in accordance with the precepts of the Green Infrastructure, by generating small "green spaces".

AIMS

- Continue improving and highlighting the importance of the old mediaeval gullies in order to improve the quality of life of local residents.
- Plant trees and shrubs to embellish public spaces of difficult access.
- Improve the level of naturalisation of the mediaeval quarter and contribute to its decongestion.



PROJECT DESCRIPTION

The initiative includes interventions to improve and prepare the entire network of mediaeval sewers through the introduction of vegetation elements of different kinds to favour their aesthetic and environmental quality.

The different interventions will be based on natural solutions that will increase biodiversity, biocapacity and reduce the heat island effects. In this way, less hard urban spaces will be generated and green systems will be strengthened.

LINKS

GAIA ECOLOGIST GROUP
http://grupoecologistagaia.es/caños.aspx





BENEFITS/ECOSYSTEM SERVICES

- Improvement in aesthetic values.
- Increase in community resources.
- Cultural resource.
- Improvements in environmental quality (air, etc.) and for sitting.
- Increase in the sense of belonging and identity.
- Creation of new habitats.

INNOVATING AND EXEMPLARY FEATURES

Trial of new, more naturalised designs in urban areas.

Several actions will be undertaken in order to make these spaces and the interventions carried out in them known to the public and demonstrate their associated benefits (publications, guided visits, etc.).

ELEMENT
NODE

TYPOLOGY
MEDIAEVAL SEWERS

LOCATION
HISTORICAL QUARTER

PILOT PROJECT 24

ECOLOGICAL AND LANDSCAPE IMPROVEMENT OF THE GREEN AREA OF THE VILLAGE OF CRISPIJANA

CURRENT STATUS

In the village of Crispijana, located along the edge of the Zadorra River Park, situated within the Green Belt, there is a large green area designed and managed in accordance with the parameters of conventional gardening, more appropriate for urban green spaces.

In view of its location as a core area of the Urban Green Infrastructure System and considering the important naturalistic value of its natural environment, it is considered appropriate to transform this space in accordance with new criteria that foster other functions associated with efforts to improve biodiversity and environmental/landscape quality, without harming its use as a recreational and leisure area.

AIMS

- Transform the landscaped garden of a rural green area in order to create a space with greater biodiversity.
- Improve the landscape quality.
- Reduce the maintenance costs of this green area by favouring a more sustainable management.



PROJECT DESCRIPTION

The transformation of the green area is to be carried out by means of creating small wooded masses, which, in addition to generating volume and improving the aesthetics of the environment, introduce a structural complexity to favour biodiversity and ecological permeability.

Application of new differentiated management systems with fewer water requirements and less need for mowing operations.





BENEFITS/ECOSYSTEM SERVICES

- Landscape integration.
- Increase in biodiversity.
- Improvement in ecological permeability.

INNOVATING AND EXEMPLARY FEATURES

Trial of new, more naturalised designs in rural green areas.

Can be replicated in other green areas of rural population centres.

ELEMENT
NODE

TYPOLOGY
GREEN RURAL AREA

LOCATION
CRISPIJANA

PILOT PROJECT 25

PROJECT TO CREATE A RIVERBANK WOODLAND AT THE POINT WHERE THE RIVERS BATÁN AND ZAPARDIEL MEET

CURRENT STATUS

The Rivers Batán and Zapardiel are two of the water courses, which, at the point where they enter the city, were channelled to form part of the urban sewage network. This circumstance has brought about a number of problems ranging from the overloading of the network at times of heavy rainfall, to the total loss of the ecological functionality of these streams, including flood episodes in first-floor premises and garages in those districts where these streams are channelled.

In order to tackle these problems, a number of actions are being taken. These include a project to regulate the flows of the Rivers Batán and Zapardiel to divert part of the water from the streams towards other natural river beds. At the same time, the aim is to improve the ecology of these watercourses.

Within this context, it is proposed to create a riverbank woodland at the point where the Rivers Batán and Zapardiel meet before being channelled into the city's sewer system. Today, there is a large, well-kept woodland at this point associated with the River Batán and an extensive green area without any shrubs or woodland vegetation.

The project examines the possibility of reforesting the existing green area between Zumabide Street and the area around the Psychiatric Hospital of Alava, in order to extend the wooded area associated with the River Batán and to create an authentic riverbank woodland.

AIMS

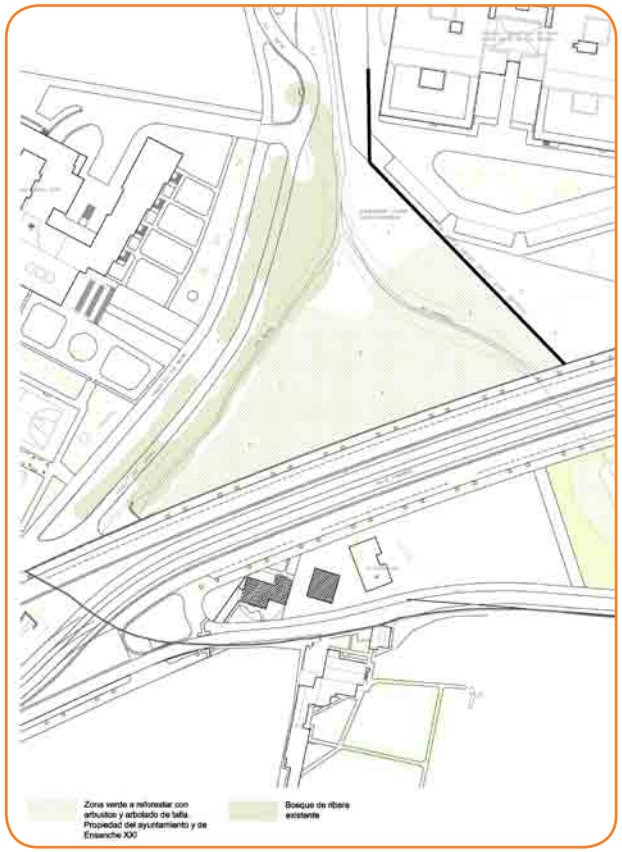
- Increase the wooded area at the point where the Rivers Batán and Zapardiel meet.
- Create an urban riverbank woodland.
- Improve the ecological and landscape quality associated with urban watercourses.



PROJECT DESCRIPTION

The project considers the planting of shrubs with mulching and large trees in order to create a riverbank woodland.





BENEFITS/ECOSYSTEM SERVICES

- Maintenance, protection and improvement of natural habitats, wildlife and biodiversity.
- Improvement in landscape.
- CO_2 capture and production of oxygen.

INNOVATING AND EXEMPLARY FEATURES

Action that can be extrapolated to other urban spaces associated with watercourses.

ELEMENT
CONNECTOR

TYPOLOGY
GREEN RURAL AREA

LOCATION
RIVERS BATÁN AND ZAPARDIEL

PILOT PROJECT 26

DIFFERENTIATED MANAGEMENT OF MOWING OPERATIONS AND REINFORCEMENT OF PLANTATIONS ON THE RIVER ALI, BETWEEN JACINTO DE QUINCOCES STREET AND THE SAN PRUDENCIO AVENUE

CURRENT STATUS

One of the causes of the "poor" biodiversity of the urban green spaces of many cities is the large number of mowing operations that are carried out in these spaces, involving the systematic elimination of any species of wild flowers that disrupt their overall uniformity.

With the aim of improving this situation and allowing the development of new species of flora in our parks, it has been proposed, as a pilot scheme, to reduce the number of mowing operations in a total of 12 different green spaces distributed throughout the city. Through this measure, the economic and energy costs of maintaining large turfed surface areas can also be reduced.

One of these spaces in which it is proposed to act is the one formed by the section of the River Ali between San Prudencio Avenue and Jacinto de Quincoces Street, in the neighbouring park, next to the La Antonia roundabout.

The proposal is to reduce the number of mowing operations in a large part of the surface area of this space, reducing the 14 mowing operations to a single operation or even none in those areas in which it is proposed to carry out forest plantations, as is the case of the park next to the La Antonia roundabout. In this way, the surface areas subjected to regular mowing operations would be reduced.

This measure would involve a reduction in irrigation.

AIMS

- Reduce the number of mowing operations in urban green spaces.
- Diversify the habitats of urban green spaces.
- Increase the wealth of flora species and biodiversity in the parks and gardens of the city.
- Reduce the management costs of urban green spaces.



PROJECT DESCRIPTION

- Mark out the surface areas and strips on which to act.
- Establish mowing rates and create forestry plantations.



BENEFITS/ECOSYSTEM SERVICES

- Creation of new habitats.
- Increase in biodiversity.
- Reduction in the management cost of the urban green (energy, environmental and economic).

INNOVATING AND EXEMPLARY FEATURES

This project involves a pilot initiative and therefore the aim is to gradually extend this practice to other green areas in the city.



ELEMENT
CONNECTOR

TYPOLOGY
GREEN URBAN AREA

LOCATION
RIVER ALI

PILOT PROJECT 27

URBAN REDEVELOPMENT PROJECT WITH ECO-DESIGN TECHNIQUES ALONG THE AXIS OF GASTEIZ AVENUE-AMERICA LATINA SQUARE

CURRENT STATUS

The overall redevelopment (already begun) of this urban axis in accordance with the premises of Green Infrastructures, includes the improvement of several aspects relating to the efficient operation of the urban ecosystem.

The actions that have already been taken have allowed:

- An increase in the surface area given over to pedestrians and cyclists.
- An increase in the presence of vegetation.
- The installation of a green facade associated with the energy rehabilitation of the Europa Conference Centre.

Other actions designed to improve the efficiency of sewage and water purification systems from Prado Park to Portal de Foronda Street, using natural solutions and the redevelopment of a number of key public spaces as places for meeting and social relations (Constitution Square) have yet to be put into motion.





AIMS

- Transform Gasteiz Avenue into a more energy-efficient urban corridor with a greater presence of vegetation and more space for pedestrians.
- Improve urban water management through natural systems of purification and use.
- Increase the environmental, sensorial, coexistencial quality of the location.
- Reinstate ecological conductivity and public use between the natural spaces of the south and north of the city, following the old course of the River Batán to the River Zadorra.



PROJECT DESCRIPTION

Pending interventions include:

- The division of the sewer network and the creation of two separate networks, thereby preventing sewage from mixing with rainwater.
- Recreation of the natural bed of the river Batán with clean water that does not need to be treated in the sewage plant.
- Installation of sustainable urban drainage systems associated with natural rainwater purification systems, by means of macrophyte beds.
- Supply irrigation water tanks with a part of the flow of clean water.
- Use of purified water for community gardens and for irrigating large parks, such as Arriaga.
- Preparation of a new biodiversity corridor in Honduras Street as a continuation of that of Gasteiz Avenue.
- Creation of a wet area in Latin America Square.
- Remodelling of Constitution Square as a meeting space.
- Introduction of a new lighting system according to Starlight criteria.

LINKS

Interior Green Belt
http://www.vitoria-gasteiz.org/wb021/http/contenidosEstaticos/adjuntos/es/44/11/44411.pdf

BENEFITS/ECOSYSTEM SERVICES

- Increase in biodiversity and ecological permeability.
- Improvement in air quality, associated with the reduction in motor-driven traffic and the increase in biodiversity.
- Increase in the efficiency of the sewage system and natural purification of water.
- Savings in irrigation water.
- Recreation of a new river ecosystem.
- Improvement of the energy efficiency of the lighting system and in construction.
- Increase in the possibilities for social interaction.
- Improvement in the environmental and sensorial quality of public spaces.

INNOVATING AND EXEMPLARY FEATURES

Introduction of novel systems for the urban management of water (sustainable urban drainage systems).

Recreation of a natural river bed in an urban development area.

Incorporation of energy efficient construction systems and elements (building, public lighting, etc.).

The total or partial redevelopment of Gasteiz Avenue could be extrapolated to other road axes and connectors in the Urban Green Infrastructure System in the form of energetically more efficient urban corridors with a greater presence of vegetation and more space for pedestrians.



ELEMENT
CONNECTOR

TYPOLOGY
URBAN AVENUE

LOCATION
GASTEIZ AVENUE

PILOT PROJECT 28

INSTALLATION OF A GREEN FACADE AND ROOF ON THE EUROPA CONFERENCE CENTRE

CURRENT STATUS

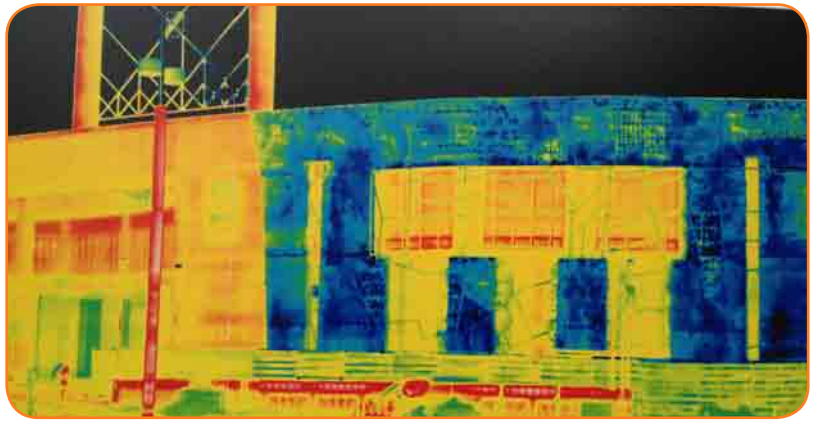
The overall refurbishment of this municipal installation, which responds in the first instance to the need to increase the capacity of the city for holding conferences, comes within the framework of the overall urban transformation process of Gasteiz Avenue in accordance with eco-design criteria, an essential and priority project in the implementation and introduction of the Urban Green Infrastructure in Vitoria-Gasteiz.

For this reason, from the beginning and in addition to being an environmental refurbishment project of the building intended to reduce its ecological footprint, it has been treated as a demonstration project intended to disseminate and communicate solutions in accordance with the infrastructure principle within the construction sector.



AIMS

- Increase the capacity of the building to 5700 people (currently this stands out 1499 people).
- Improve the functionality and comfort in the building's interior.
- Improve its energy efficiency, achieving savings of 70% compared to current consumption.
- Improve its efficiency in the use of water and materials (both during the refurbishment stage and during its use).
- Decrease the ecological impact and footprint (lower CO_2 emissions and waste generation).



PROJECT DESCRIPTION

This project was the subject of a preliminary analysis of the life cycle of the environmental vectors of energy, water, materials and waste, that enabled a definition to be made of the best options both regarding the passive and active aspects of the refurbishment and extension of the building, and concerning the use itself of the installations (event planning, building management, etc.).

In accordance with the premises and conditioning factors established in this analysis, the project (which is being carried out in stages) includes the following interventions:

- Refurbishment and energy management of the whole building, introducing self management systems that allow temperature, humidity and air quality conditions to be controlled in accordance with the meteorological conditions outside and consuming the lowest amount of energy possible.
- Installation of a 900 m² plant facade with some 65,000 plants of 33 species (25 native). The design of this digital facade is based on the idea of recreating the nature of the natural surroundings of Vitoria-Gasteiz by means of a wild vertical garden that contains the main plant species of the municipality. In addition to recreating the different ecosystems of the municipality, it offers the installation heat and acoustic insulation as well as protection against exposure to the sun.
- Preparation of five rooms and an auditorium for large-format exhibitions and conference activities with a capacity of up to 5700 people. These rooms will be able to function both together and separately to improve their efficiency.
- Creation of a green roof on a cylindrical module from the main entrance, on which a space will be provided for a new cafeteria. On the ground floor, under the cafeteria, a space will be created for a restaurant.



BENEFITS/ECOSYSTEM SERVICES

- Increase in biocapacity and biodiversity in the urban environment.
- Improvement to landscape.
- Improvement in energy and efficiency.
- Reduction in carbon footprint and CO_2 emissions.

INNOVATING AND EXEMPLARY FEATURES

The project sets out to be a model of environmental refurbishment that establishes the procedures and guidelines for future refurbishment work on other buildings.

Moreover, it intends to be an example of the use and introduction of natural solutions in urban and built-up environments.

PILOT PROJECT 29

PROJECT TO IMPROVE THE ECOLOGICAL CONNECTIVITY OF THE RIVER SANTO TOMÁS

CURRENT STATUS

The River Santo Tomás is one of the main south-north fluvial connectors of the Urban Green Infrastructure System of Vitoria-Gasteiz, connecting the Montes de Vitoria mountain range and the RAMSAR wetlands of Salburua.

Where the stream flows under the railway line near the village of Arkaia, it passes through a very narrow gap, thus limiting its potential as a passageway for fauna.

Likewise, it does not have sufficient width and height for a pedestrian route to run parallel to the river bed, linking the village of Arkaia with the hill known as the Las Neveras Hill and with Saint James' Way.

For this reason, an intervention is proposed that would correct these deficiencies, favouring ecological connectivity and pedestrian accessibility connections.

AIMS

- Eliminate the ecological and functional fragmentation generated by the Madrid-Irun railway line in the connection of the River Santo Tomás between Salburua Park and the Las Neveras Hill, which forms part of the Green Belt.



PROJECT DESCRIPTION

A widening of the passageway under the railway lines is projected to allow the preparation of a pedestrian pathway along the river bed (creation of a swinging footbridge, tunnel, etc.).

The proposed solution must also include its use as a passageway for fauna, especially designed for the European Mink, including the reinforcement of the riparian vegetation on both sides of the passage.





BENEFITS/ECOSYSTEM SERVICESS

- Improvement in ecological permeability.
- Maintenance, protection and improvement of natural habitats, wildlife and biodiversity.
- Increase in resources for the practice of sport and leisure pursuits.

INNOVATING AND EXEMPLARY FEATURES

Construction techniques for fauna passageways in periurban environments.

This initiative can be replicated in other areas of fragmentation in the Green Belt or in other spaces with similar characteristics and problems.

ELEMENT
CONNECTOR

TYPOLOGY
FAUNA PASSAGEWAY

LOCATION
RIVER SANTO TOMÁS

PILOT PROJECT 30

PROJECT FOR THE COMPREHENSIVE TRANSFORMATION OF THE LOS HERRÁN STREET-PORTAL DE VILLARREAL STREET-OLD VASCO NAVARRO RAILWAY LINE AXIS

CURRENT STATUS

Following the construction of a new intercity bus station in the district of Lakua, the closure and possible dismantling of the current station, situated in Los Herrán Street, will bring about a clear change in the physiognomy and functionality of this large urban road axis. Thus, any thoroughfare designed to support intense traffic (with a large surface area given over to the circulation and parking of motor vehicles) will give way to a quieter space, which will have to be adapted to new urban functions.

In view of the fact that this road forms part of one of the main north-south connectors of the Urban Green Infrastructure System, which links Olarizu and the River Zadorra, it is considered that the adaptation of the "freed up" urban space offers an excellent opportunity for experimenting with new solutions presented in accordance with the precepts of Urban Green Infrastructures.

This connector runs along the route of the old Vasco Navarro Railway through Vitoria-Gasteiz. The old railway route has been converted into a successful greenway used by pedestrians and cyclists. It has a total length of 50 km in the province of Alava and represents a first-class tourist resource. This Greenway is interrupted, precisely, on its way through the city, by the section studied here.

AIMS

- Transform this roadway into a more energy-efficient urban corridor, with a greater presence of vegetation and more space for pedestrians and cyclists.
- Use the bus station for other purposes.
- Improve the environmental and recreational quality of the axis and its surrounding area.
- Increase biodiversity.
- Continue the Vasco Navarro Railway Greenway along its route through Vitoria-Gasteiz.



PROJECT DESCRIPTION

The comprehensive transformation project of this roadway axis will include the following actions:

- Creation of a cycleway that will allow the connection of two sections of the Vasco Navarro Railway Greenway, which are currently unconnected, on its route through Vitoria-Gasteiz, and will give the route a greater functionality linked to leisure pursuits and promote sustainable mobility in daily movements.
- Transformation and integration of the bus station and neighbouring spaces in order to form a new urban plaza, which, in addition to representing a place for social intercourse, may be linked to the promotion and development of commercial, leisure, exhibition or service activities (flowers and agricultural market, covered playing areas, etc.).
- Improvement in the accessibility and integration of the electric vehicle promotion centre and car sharing, located within the axis dealt with in the project.

The different interventions will be based on natural solutions that will increase biodiversity, biocapacity, reduction of the heat island effect and hydrological functionality. In this way, softer urban spaces will be created, the permeable surface will be increased and green systems will be strengthened.





BENEFITS/ECOSYSTEM SERVICES

- Improvement in air quality, associated with the reduction in motor-driven traffic and an increase in biodiversity.
- Improvement in physical and ecological connectivity.
- Fostering of sustainable mobility.
- Increase in the possibilities for social interaction.
- Improvement in the environmental and sensorial quality of the public space.

INNOVATING AND EXEMPLARY FEATURES

Solutions for the adaptation of greenways to urban environments.

Proposals for the transforming of buildings in accordance with green infrastructure principles.

The transformation of this axis could be extrapolated to other road axis and connectors of the Urban Green Infrastructure System, in the form of more energy-efficient urban corridors, with a greater presence of vegetation and more space for pedestrians.

ELEMENT
CONNECTOR

TYPOLOGY
URBAN AVENUE

LOCATION
LOS HERRÁN STREET-VILLARREAL STREET-VASCO NAVARRO

PILOT PROJECT 31

ECOLOGICAL AND LANDSCAPE IMPROVEMENT OF THE BREMEN STREET - MARITURRI BOULEVARD AXIS

CURRENT STATUS

This project involves a high-capacity road corridor that runs along the eastern edge of the city, establishing the boundary between Zabalgana Park, a space of high natural value that forms part of the network of green spaces of the Green Belt and the large, new district built in recent years on this western edge of the city. On the other hand, this road element also makes contact with the railway corridor, which goes into the city centre and might play an interesting collective role from the ecological viewpoint. Lastly, at its extreme northern end, this road axis comes very close to the Antonio Machado Park, which is another element of high environmental interest and a node in the Urban Green Infrastructure System.

This axis is currently made up of three lanes in each direction, separated by a broad, landscaped central reservation with an extremely simple vegetation structure, made up of turfed areas and large trees. The use by the public of this high maintenance space is non-existent. Apart from parking spaces on both sides of the road, there are wide paved areas with linear plantations of trees and shrubs in individual tree wells. Under these circumstances, today, the axis represents an important generator of ecological discontinuity.

AIMS

- Transform the current ecological hostility of this road axis, by generating in its central reservation opportunities for plants and fauna to establish themselves, as well as facilitating the ecological flows between the different elements that come in contact with this axis: Zabalgana Park and District, the railway corridor and Antonio Machado Park.
- Reduce the maintenance costs of the vegetation of this space.
- Favour a reduction in the acoustic and light pollution coming from this area.



PROJECT DESCRIPTION

The action consists basically of an in-depth transformation of the current vegetation design in the central reservation, through the following actions:

- Cessation or reduction in the frequency of mowing operations in turfed areas, in order to facilitate the transformation of these spaces into wild meadows, which are more interesting from the ecological viewpoint and with lower management costs.
- Generation of a central, continuous, linear strip populated with native woody species of both shrubs and trees, which contribute to increasing the structural diversity of the central reservation, generating ecological niches of interest, reducing maintenance costs, facilitating the longitudinal and transversal ecological flow through the axis and to reducing sound and light pollution.
- As a complementary action, other measures will be undertaken such as the creation of refuges for small-sized fauna, the creation of wild flower beds, etc.





BENEFITS/ECOSYSTEM SERVICES

- Creation of new habitats.
- Increase in urban biodiversity.
- Improvement in landscape integration.
- Improvement in ecological permeability.
- Reduction in environmental contamination.
- Reduction in the cost of managing green spaces.

INNOVATING AND EXEMPLARY FEATURES

Can be extrapolated to the treatment of green areas associated with road axes in periurban environments, with heavy traffic.

ELEMENT
CONNECTOR

TYPOLOGY
URBAN AVENUE

LOCATION
BREMEN STREET- MARITURRI BOULEVARD

PILOT PROJECT 32

ECOLOGICAL AND LANDSCAPE IMPROVEMENT IN THE AREA AROUND ZUAZOBIDEA STREET

CURRENT STATUS

The eastern boundary of the Júndiz industrial estate consists of a broad linear green area, the design of which, based on large, turfed areas with a number of lines of trees, involves high maintenance costs (mowing, irrigation, pruning, etc.). Its management includes frequent mowing which is not appropriate in a place used very little by the public.

The strategic situation of this linear green area as a collector of the Urban Green Infrastructure System between other connectors and core spaces of the Green Belt, justifies the opportunity to transform this space in accordance with criteria oriented more towards improving biodiversity and environmental and landscape quality, which, moreover, allow for less intensive maintenance.

AIMS

- Improve the landscape integration of the Júndiz industrial estate in its environment.
- Create a green space of greater biodiversity, fostering its collective role between spaces of high naturalistic value.
- Reduce the maintenance costs of this green area by favouring a more sustainable management.





PROJECT DESCRIPTION

The naturalisation measures include:

- Planting native trees and shrub masses with their associated flora, which, in the form of a linear wood, generate volume, improve the aesthetics of the place and favour an increase in biodiversity.
- Differentiated management and a reduction in the number of mowing operations. It is proposed to reduce the turfed surface area and the number of mowing operations in a large part of the space, reducing these from the 7 operations currently undertaken to 1 or none, in some specific areas.



BENEFITS/ECOSYSTEM SERVICES

- Increase in biodiversity.
- Improvement in ecological permeability.
- Landscape integration.
- Reduction in the cost of managing green spaces (energy, environmental, etc.).

INNOVATING AND EXEMPLARY FEATURES

Trial of new ways of less maintenance-intensive gardening.

Can be replicated perfectly in the treatment of green areas in industrial estates located within the rural environment.



ELEMENT
CONNECTOR

TYPOLOGY
EDGE OF AN INDUSTRIAL ESTATE

LOCATION
ZUAZOBIDEA

PILOT PROJECT 33

ECOLOGICAL AND LANDSCAPE IMPROVEMENT IN THE PORTAL DE ZURBANO-PASEO DE LOS HUMEDALES-SALBURUA BOULEVARD AXIS

CURRENT STATUS

The Salburua wetlands represent the location of greatest ecological value in the municipality, and for that reason they have been included within the Natura 2000 Network and the Ramsar agreement. This space is confined in its most westerly position by the city of Vitoria-Gasteiz itself, the external boundaries of which are made up of the communications routes which are focal point of this project.

It involves large-size traffic corridors, designed for large volumes of vehicles and for this reason they have been provided with three lanes in each direction, to which we must add the parking spaces present on both sides, broad pavements and a landscaped central reservation also of great magnitude. This central reservation is populated with conventional turf, with high maintenance costs, and large trees, except in the northern end of the Avenida de los Humedales, where a linear woody element has been planted in the centre of the central reservation which makes this section of the road of much greater ecological interest. Use by the public of the central reservation is negligible. The pavements located on the side that looks onto the wetlands have a vegetation design which is in general very adequate from the environmental viewpoint, while on the external pavement the vegetation is simpler.

In general, these communications routes drastically reduce the ecological flow between the wetlands and the spaces of opportunity offered within the city, such as the area around the village of Betoño and the Salburua district itself.

AIMS

- Modify the vegetation design of the central reservation of these avenues within the aim of generating spaces of a very much wilder nature, so that the ecological flow on both sides of the roads can be made more permeable and in order to generate spaces of interest within the central reservations for the biota typical of the place to establish itself.
- Reduce the maintenance costs of the vegetation in this space.
- Favour a reduction in sound and light pollution, especially in order to improve the existing impact on the wetlands.



PROJECT DESCRIPTION

The intention is to carry out an in-depth modification of the vegetation design of the central reservations on these roadways, through the following actions:

- Rationalisation of the intensity of mowing operations in turfed areas so that these spaces can be transformed into wilder meadows with a major reduction in maintenance costs.
- Provide the central strip existing in the northern section of the Avenida de los Humedales with a greater degree of continuity, which is very interesting from the ecosystem viewpoint, as it increases the structural diversity of the central reservation, generates ecological niches of interest, reduces management costs, facilitates both the longitudinal and transversal ecological flow through the axis and reduces sound and light contamination.
- Other complementary measures will be taken on the central reservation, such as the lateral green areas and the generation of refuges for small-sized fauna, the creation of wild flower beds, etc.



BENEFITS/ECOSYSTEM SERVICES

- Creation of new habitats.
- Increase in urban biodiversity.
- Improvement in ecological permeability.
- Improvement in landscape integration.
- Reduction in environmental contamination.
- Reduction in the cost of managing green spaces.

INNOVATING AND EXEMPLARY FEATURES

Can be extrapolated to the treatment of green areas associated with roads in periurban environments with heavy traffic.

ELEMENT
CONNECTOR

TYPOLOGY
URBAN AVENUE

LOCATION
PASEO DE LOS HUMEDALES - SALBURUA

PILOT PROJECT 34

PROJECT TO TRANSFORM THE HERACLIO FOURNIER STREET - VASCO NAVARRO RAILWAY AXIS

CURRENT STATUS

Heraclio Fournier Street is a major point of entry into the city of Vitoria-Gasteiz from the south-east. Apart from the road surface, this street has an extensive linear green area which separates it from the Uritiasolo industrial estate.

The green area associated with this street contains large unturfed areas with scattered trees and requires a high level of maintenance (mowing, irrigation and pruning).

The old route of the Vasco-Navarro railway line runs through this green area and today has been converted into a greenway. It represents a major tourist resource with more than 50 km in the province of Alava and is interrupted on its way through Vitoria-Gasteiz. Today, a cycle path runs through this green area and is interrupted suddenly in the Olarambe area, preventing the connection between the city of Vitoria-Gasteiz and the Vasco Navarro Railway Greenway.

In view of the fact that this road access forms part of one of the main north-south connectors of the Urban Green Infrastructure System, the interest of transforming this space in accordance with criteria that foster improvements in biodiversity and environmental and landscape quality and allow a connection with the Vasco Navarro Greenway in the Olarambe area is being considered.

AIMS

- Improve the landscape quality of the main entrance to the city from the south-east.
- Continuing the Vasco Navarro Greenway where it crosses the city of Vitoria-Gasteiz.
- Transform the landscaped nature of this area to create a green area with greater biodiversity.
- Reduce the maintenance cost of this green area by favouring a more sustainable management.



PROJECT DESCRIPTION

- Creation of a linear wood through the introduction of native trees and shrubs masses with their associated flora. These woods, in addition to generating volume and improving the aesthetics of the landscape at the entrance to the city, will create a structural complexity, providing a refuge and shelter for a richer and more diverse biological community.
- Application of new, differentiated management systems, both in new and existing vegetation formations, with fewer water and mowing requirements.
- The creation of a small wetland in the form of a permanent, replacement habitat, for the installation of several pairs of Little Ringed Plovers that currently breed in a provisional manner in an abandoned plot in the Esmaltaciones area, where there are a few plots prone to flooding and which also support a rich aquatic community of flora and fauna.
- Preparation of a bicycle path from Heraclio Fournier Street to its junction with the Vasco Navarro Greenway in Olarambe.



BENEFITS/ECOSYSTEM SERVICES

- Landscape integration.
- Increase in biodiversity.
- Improvement in ecological permeability.
- Improvement in physical and ecological connectivity.
- Fostering of sustainable mobility.

INNOVATING AND EXEMPLARY FEATURES

Trial for new, more naturalised designs in urban green areas.

Can be replicated in other green areas of low public use.





ELEMENT
CONNECTOR

TYPOLOGY
LINEAR GREEN AREA

LOCATION
HERACLIO FOURNIER-VASCO NAVARRO

PILOT PROJECT 35

ECOLOGICAL AND LANDSCAPE IMPROVEMENT OF THE LINEAR GREEN AREA OF PORTAL DE FORONDA STREET

CURRENT STATUS

Foronda Avenue represents the main entrance point to the city of Vitoria-Gasteiz from the north. This broad urban avenue is formed by several lanes of traffic for motor vehicles, trams and bicycles and its central part consists of a linear green area that acts like an enormous central reservation.

The width of the linear, turfed green area is occupied by an extensive open space, through which the tram runs in one of its sections, two, double avenues of chestnut trees on each of its sides and a number of rose beds along the edge of the road.

From the leisure and recreational viewpoint, this long, green area is used by joggers along two narrow strips in the form of a track and the rest of the space is scarcely used. Its design and configuration based on large turfed areas requires high maintenance (mowing, irrigation, pruning and weeding). For this reason and as a trial, a number of changes associated with a lower frequency of mowing operations in the central turfed area have been introduced in order to reduce maintenance costs and promote natural vegetation cycles.

This experience has proved to be a success and together with the strategic location of this linear green area as part of the north-south connector of the Urban Green Infrastructure System that connects the Montes de Vitoria mountain range and the River Zadorra through the city, justifies the interest in transforming this space in accordance with criteria that by fostering other functions, linked to an improvement in the biodiversity and environmental quality, improve its landscape quality.

AIMS

- Improve the landscape quality of the main entrance to the city from the north.
- Transform the landscaped nature of a space to make up a green area of greater biodiversity.
- Reduce the maintenance costs of this green area by favouring a more sustainable management.



PROJECT DESCRIPTION

The transformation of this space comprises the following actions:

- Introduction of native trees and shrubs masses with their associated flora. In addition to generating volume and improving the aesthetics of the landscape at the entrance to the city, they will create a structural complexity (tree, shrub and herbaceous stratum), providing a refuge and shelter for a richer and more diverse biological community.
- Application of new, differentiated management systems, both in the new and existing vegetation formations. Differentiated management means leaving a number of turfed areas unmown every year in the form of reservations (long-term clearing of certain sectors), avoiding the need to clear the entire area at the end of the summer (as has been done until now), as this measure may be an ecological trap for some species of fauna.
- Replacement of the present rose beds with native flowers in order to favour pollinators, or with different species of shrubs, some of which will produce fruit.
- Installation of elements that favour specific species of fauna: bird nest boxes on lines of chestnut trees, piles of dead wood in order to favour the installation of invertebrates, etc.



BENEFITS/ECOSYSTEM SERVICES

- Landscape integration.
- Increase in biodiversity.
- Improvement in ecological permeability.

INNOVATING AND EXEMPLARY FEATURES

Trial for new, more naturalised designs in urban green areas.

Can be replicated in other green areas of low public use.



ELEMENT
CONNECTOR

TYPOLOGY
LINEAR GREEN AREA

LOCATION
PORTAL DE FORONDA STREET

PILOT PROJECT 36

UNDERPASSES FOR FAUNA AND IMPROVEMENT IN ACCESSIBILITY FOR PUBLIC USE IN ZABALGANA

CURRENT STATUS

The Green Belt project is at an advanced stage of execution. Of the planned 1000 ha of surface area, currently it occupies almost 700 ha. The main parks are virtually completed and the system of eco-recreational corridors that connect some parks with others is highly developed. However, there remain a number of discontinuities caused by large-scale transport infrastructures.

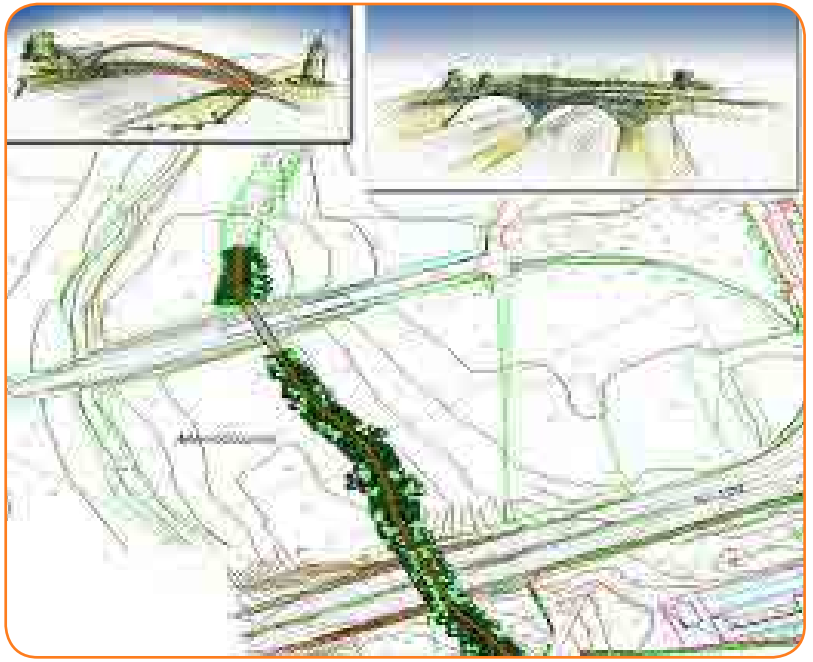
One of the main discontinuities or fragmentation points is located in the connection between the parks of Zadorra and Zabalgana, caused by the Madrid-Irun railway line. Another major discontinuity can be found in the connection between the parks of Zadorra and Armentia, caused by two road infrastructures: the N-102 and the A-4303.

Although of less importance, other points of discontinuity include the crossroads between the A-4163 and the streets: Zurrupitieta, Lermandabide and Las Arenas.



AIMS

- Eliminate the ecological and functional fragmentation generated by the Madrid-Irun railway at the connection between the Green Belt parks of Zadorra and Zabalgana.
- Eliminate the ecological and functional fragmentation generated by the N-102 dual carriageway and to a lesser extent, by the local A-403 road at the connection between the Green Belt parks of Zabalgana and Armentia.
- Make progress in the consolidation of the Green Belt.



PROJECT DESCRIPTION

The project includes the construction of a false tunnel with an approximate width of 25 m in order to overcome the barrier created by the N-102 dual carriageway, which will continue the pedestrian cyclist paths between the parks of Zabalgana and Armentia.

In order to overcome the discontinuity caused by the local A-4303 road, which is less wide (8-10 m, approximately), the construction of a wooden footbridge is planned.

In order to overcome the barriers created by the railway line, it is planned to construct a false tunnel of approximately 25 m in width to continue the pedestrian and cyclist paths of the Green Belt between the parks of Zadorra and Zabalgana.

One mass of vegetation will surround the aforementioned paths in order to favour ecological connectivity by reducing the barrier effect on fauna.

In addition to these main actions, other measures will be promoted to improve the ecological permeability at the intersections with other adjacent streets and roads.





BENEFITS/ECOSYSTEM SERVICES

- Improvement in ecological permeability.
- Maintenance, protection and improvement of natural habitats, wildlife and biodiversity.
- Increase in resources for the practice of sports and leisure.

INNOVATING AND EXEMPLARY FEATURES

Techniques for the construction of underpasses for fauna in periurban environments.

This initiative can be replicated in other fragmentation points in the Green Belt and in other spaces with similar characteristics and problems.

ELEMENT
CONNECTOR

TYPOLOGY
FAUNA PASSAGEWAYS

LOCATION
ARMENTIA-ZABALGANA-ZADORRA

PILOT PROJECT 37

ECOLOGICAL AND LANDSCAPE IMPROVEMENT IN LA PEÑA STREET

CURRENT STATUS

The project involves an enormous green strip located in an industrial estate. From Zadorra Park this penetrates in the form of a wedge towards the city centre, making this a feature of considerable ecological interest.

Today, along the northern section of La Peña Street between the Zadorra Avenue and Artapadura Street, there is, on its western side, a turfed strip of approximately 5 m without any other vegetation structure. This feature is therefore of little environmental interest and requires periodic management. Over most of this strip lies a medium voltage electricity line which limits the height of the possible vegetation to be introduced. Adjacent to this strip there is a large industrial plot which is currently unoccupied, and for this reason it is populated by abundant wild vegetation, generating an interesting ecological environment.

On the other side, the situation between Artapadura Steet and Cantabria Avenue is similar, but taking into consideration that here the turfed strip has a width of some 25 metres, it therefore offers greater possibilities for the generation of new ecological environments. Over this strip there is a high voltage electricity line which limits the possible vegetation managements to be carried out underneath. Neighbouring the industrial boundary, there is a linear hedgerow made up of conifers. The entire section is highly conditioned by the presence of motor traffic and by the noise both of the traffic itself and nearby industries. The public use of this green strip is limited.

AIMS

- Promote this green strip ecologically, basically by means of different vegetation managements.
- Reduce the maintenance costs of the vegetation in this space.
- Favour the aesthetic improvement of the location.



PROJECT DESCRIPTION

In its northern section, taking into consideration its narrowness and the limitation posed by the existing electricity lines, it is proposed to regulate the mowing of the turfed area so as to generate different meadow typologies with reduced management, representing an ecological enrichment and a reduction in management costs. On the other hand, the width of the central reservation allows the plantation, apart from the aforementioned lawn management, the introduction, in those areas where the overhead electricity lines allow this, of woody masses that provide the place with a greater structural complexity. These vegetation management methods may be complemented throughout the section on which the project focuses, with others such as the generation of different types of refuges, the introduction of beds of wildflowers, etc.





BENEFITS/ECOSYSTEM SERVICES

- Creation of new habitats.
- Increase in urban biodiversity.
- Improvement in ecological permeability.
- Improved aesthetics.
- Reduction in environmental contamination.
- Reduction in the management cost of green spaces.

INNOVATING AND EXEMPLARY FEATURES

Can be replicated perfectly in the treatment of the green areas of industrial zones located in the rural environment.

ELEMENT
CONNECTOR

TYPOLOGY
EDGE OF INDUSTRIAL ESTATE

LOCATION
LA PEÑA STREET

PILOT PROJECT 38

DIFFERENTIATED MANAGEMENT OF MOWING OPERATIONS AND REINFORCEMENT OF PLANTATIONS IN ACCESS ROADS TO VITORIA GASTEIZ (N-102)

CURRENT STATUS

The Jundiz industrial estate is bordered to the south by the N-102 highway, the main access road to Vitoria-Gasteiz from the west.

Throughout the length of this entrance into the city, there is a broad, linear green area based on extensive turfed areas with a number of avenues of trees, involving high maintenance costs (mowing, irrigation, pruning, etc.). Until recently, its management included frequent mowing operations, which are inappropriate considering its low level of use by the public.

On the other hand, there are problems relating to a lack of road connections between the N-104 and Goikoberaza Street, causing many conductors to cross the landscaped strip.

The strategic situation of this linear green area as a connector of the Urban Green Infrastructure System between the loamy Júndiz Hill and the Green Belt, justifies the interest and opportunity of transforming this space in accordance with criteria oriented more towards improving the biodiversity and environmental and landscape quality, which, furthermore, will allow for less intensive maintenance.

AIMS

- Improve the landscape quality of the main entrance to the city from the west.
- Create a green area of greater biodiversity, strengthening its role as a connector between the Júndiz Hill and the Green Belt.
- Reduce the maintenance costs of this green area, favouring a more sustainable management.
- Improve the access to Jundiz by reducing parasitic traffic in Armentia and Gomecha.





PROJECT DESCRIPTION

The project includes naturalisation measures and solutions to improve traffic.

- Planting of native trees and of shrub masses and associated flora, which, in the form of a linear wood, generate volume, improve the aesthetics of the place and favour an increase in biodiversity, between the Júndiz and Armentia service stations.
- Differentiated management and a reduction in the number of mowing operations. It is proposed to reduce the turfed surface area and the number of mowing operations in a large portion of the space, reducing such operations from the current 7 to 1 or none, in some specific areas.
- Construction of a roundabout that links Zuazobidea Street directly, without the need to go as far as the Mendigorritxu Street junction, thus avoiding in an indirect manner, the parasite traffic that crosses Gomecha at this time.
- The establishment of a number of small wetlands with macrophytic beds that will collect the drainage water from the traffic junctions and purify this before being dumped into the riverbeds of the area.





BENEFITS/ECOSYSTEM SERVICES

- Increase in urban biodiversity.
- Improvement in ecological permeability.
- Landscape integration.
- Reduction in the management cost of green spaces (energy, environmental, etc.).

INNOVATING AND EXEMPLARY FEATURES

Testing of new, less maintenance-intensive gardening methods.

Can be replicated perfectly in the treatment of the green areas of industrial zones located in the rural environment.

ELEMENT
CONNECTOR

TYPOLOGY
EDGE OF INDUSTRIAL ESTATE

LOCATION
JÚNDIZ

PILOT PROJECT 39

ECOLOGICAL AND LANDSCAPE IMPROVEMENT OF LARRAGANA STREET

CURRENT STATUS

The project involves a roadway that represents the backbone of a large industrial estate. At its western end, it approaches the Alegria River Park, which forms part of the Green Belt, a space of high environmental interest, from which it is separated by a short section of Concejo Street. At its western end, although it ends in Portal de Vergara Street, a thoroughfare with high-density traffic, it passes close to the strategic ecological corridor that forms part of the Vasco-Navarro Greenway, that acts like a connecting element between the River Zadorra and the city centre.

Today, this street is made up of one lane running in each direction, between which there is a landscaped central reservation with a width of 10 m. The aforementioned central reservation has a very simple vegetation structure, based on a fully turfed surface requiring intensive management, except for two external rows of trees made up of medium size trees of the Platanus family. Under these circumstances, the structural simplicity of the central reservation has a strong influence on its ecological capacity as well as on its role as a possible element to favour ecological connectivity.

An additional noteworthy element is an overgrown vacant plot, located halfway along the roadway, which is of interest in order to strengthen the ecological value of the corridor as a whole. However, it contains a number of mature examples of invasive flora, mainly pampas grass and a large colony of cats which are fed by members of the public, which might have a large effect on the establishment of wild fauna typical of this kind of habitat.

AIMS

- Promote this axis as an environmental connection element between the Green Belt and the Vasco-Navarro Greenway, improving its availability for ecological niches.
- Reduce the maintenance costs of the vegetation of this space.
- Reduce the environmental pressures generated by the presence of invasive species.



PROJECT DESCRIPTION

A series of measures is proposed that can be summed up as follows:

- Reduction of mowing rates throughout the central reservation, except where this may be required for road safety reasons (junctions, etc.).
- Generation of native tree masses throughout the length of the road as well as flower meadows.
- Elimination of invasive flora in the neighbouring vacant plot and application of management measures to control the large colony of feral cats.
- Publication of other measures to favour the establishment of a richer and more diverse biological community in the area, such as: installation of nest boxes for birds, installation of bat boxes, the creation of piles of dead wood, etc.





BENEFITS/ECOSYSTEM SERVICES

- Creation of new habitats.
- Increase in urban biodiversity.
- Improvement in ecological permeability.
- Better aesthetics.
- Reduction in environmental contamination.
- Reduction in the management cost of green spaces.
- Elimination of exotic invasive species.

INNOVATING AND EXEMPLARY FEATURES

Can be extrapolated to the treatment of green areas associated with roadways in industrial environments.

ELEMENT
CONNECTOR

TYPOLOGY
URBAN AVENUE

LOCATION
LARRAGANA STREET

PILOT PROJECT 40

DIFFERENTIATED MANAGEMENT OF MOWING OPERATIONS AND THE REINFORCEMENT OF PLANTATIONS ON BAIONA STREET

CURRENT STATUS

Lakuabizkarra is a relatively new district, with a large amount of green areas made up fundamentally of turfed spaces.

With the idea of diversifying habitats and especially of creating a greater structural complexity (digital stratification) that would increase the biodiversity both of flora and fauna, it is proposed to create plantations of large trees and in some cases, of shrubs, in several spaces in the district of Lakuabizkarra. It involves small spaces associated with roadways, roundabouts and central reservations, and small squares which, in total, make up about 20,000 m².

One of the spaces in which it is proposed to act is the central reservation of Baiona Street, between the Duque de Wellington roundabout and the Portal de Betoño roundabout, which acts as a connector within the Urban Green Infrastructure System. The plantations created at the time were made without taking into consideration the volume of earth required. Hence, today, the Street, which is extremely broad, does not have the necessary woody vegetation.

The action will be taken in parallel to a reduction in irrigation, as the presence of trees reduces evaporation and, therefore, the need for irrigation.

AIMS

- Transform turfed green spaces into treed spaces.
- Increase the vegetation stratification in order to increase urban biodiversity.
- Improve ecosystem services associated with plantations (reduction in environmental contamination, reduction in the urban heat island effect, etc.).



PROJECT DESCRIPTION

- Planting projects
- Plantations of large trees in selected spaces.



BENEFITS/ECOSYSTEM SERVICES

- Creation of new habitats.
- Increase in urban biodiversity.
- CO_2 capture and production of oxygen.
- Improvement in aesthetics and environmental quality.
- Reduction in urban management costs (less irrigation, fewer mowing operations).

INNOVATING AND EXEMPLARY FEATURES

The idea is to extend the practice to other green spaces in the city.



ELEMENT
CONNECTOR

TYPOLOGY
URBAN AVENUE

LOCATION
BAIONA STREET

PILOT PROJECT 41

ECOLOGICAL AND LANDSCAPE IMPROVEMENT OF THE LAKUABIZKARRA CORRIDOR

CURRENT STATUS

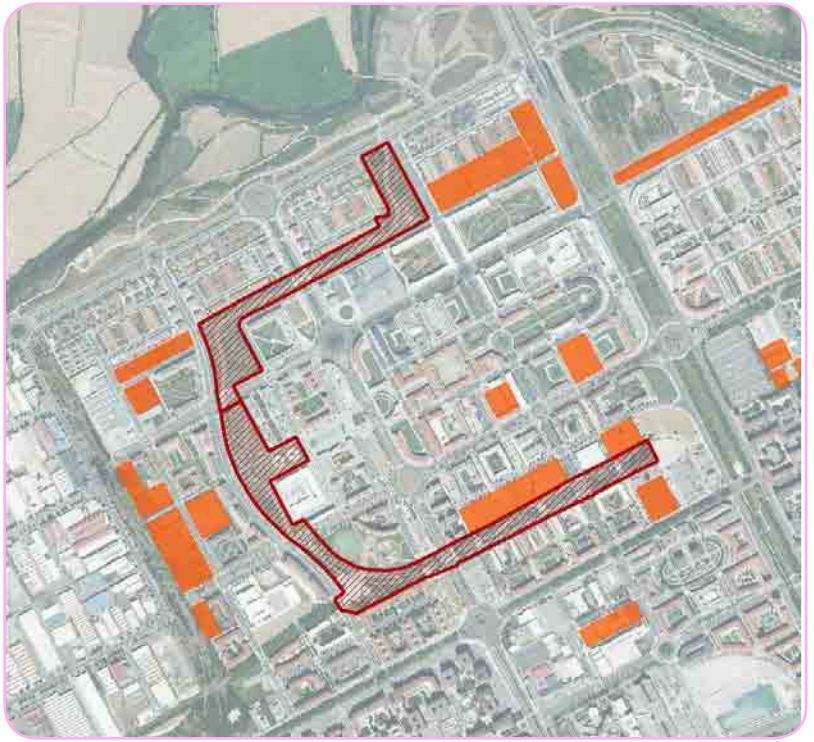
This project involves a space, which, as a whole, is of high environmental interest, as it articulates this sector of the Lakua district from the ecological viewpoint. In this way, at its northern end it allows the connection with the River Zadorra Park, within the Green Belt, and with the Portal de Foronda corridor, which, in turn, leads into the city centre. In its western portion, it allows contact with the Zorrostea corridor via Belate Street and Baiona Street. Lastly, at its southern end, it makes contact once again with Portal de Foronda.

Today, it consists of a broad strip of vegetation that combines green areas of grass and large trees with unused, vacant plots, which are currently populated by wild vegetation at different stages of development. The turfed areas are managed by conventional, high-intensity means while the vacant plots are, in many cases, cleared on an annual basis and frequently at the most inappropriate times. Of special interest as a differentiating element within the corridor, is the pond associated with the Galeón Park, with an adequate coverage of vegetation in its most immediate area, but without marsh vegetation and highly affected by the presence of the American crayfish.

In this circumstances, the role of this corridor is very expensive conditioned properly fulfil its role of ecological connectivity and to host a rich and diverse biota.

AIMS

- Implement measures to create a greater biological wealth in this corridor and to strengthen its role as an ecological connector.
- Reduce the maintenance costs of the vegetation in this space.
- Reduce environmental pressures generated by the presence of invasive species.



PROJECT DESCRIPTION

The measures to apply can be summed up as follows:

- Plan clearing operations in vacant plots to be used for municipal installations so as to respect the biological cycles of the wild species present in them, by proposing areas to be cleared on a rotation basis, creating some areas to be left uncleared as reservations.
- Rationalise the management of turfed areas by carrying out a differentiated management policy.
- Generation of shrub masses and native trees throughout the length of the corridor, as well as flower meadows.
- Creation of new pools throughout the length of the corridor.
- Apply measures to reduce the densities of red crayfish in the El Galeón pond.
- Application of other measures to favour the establishment of a richer and more diverse biological community in the area, such as: the installation of bird nesting boxes, creation of composting bins, installation of bat boxes or insect hotels, creation of piles of dead wood, etc.





BENEFITS/ECOSYSTEM SERVICES

- Improvement in ecological permeability.
- Creation of new habitats.
- Increase in urban biodiversity.
- Eradication of exotic invasive fauna.
- Reduction in the cost of the management of green spaces.
- Revaluation of vacant and marginal plots.

INNOVATING AND EXEMPLARY NATURE

Example of joint intervention on connectors and adjacent vacant plots to strengthen the ecological functionality of the Green Infrastructure System.

PILOT PROJECT 42

ECOLOGICAL AND LANDSCAPE IMPROVEMENT OF THE SALBURUA INTERIOR CORRIDOR

CURRENT STATUS

The district of Salburua is a recently created urban area. When its design was being drawn up, a linear interior green space of variable width was reserved. This can act like the backbone of the district with regard both to its ecological and leisure-recreational operation. Moreover, this interior corridor enables the ecological connection between the Salburua wetlands to the north and the River Errekaleor to the south, as well as towards the centre of the city through the Arana Park. The East Park is situated nearby, an element of high environmental potential as well as the pond is associated with the end of Juan Carlos I street, in which a number of easily correctable environmental distortions have been detected.

Today, this corridor is made up of green areas in which simple vegetation structures predominate, based on high-maintenance turfed meadows and large trees, on occasions with problematic invasive species. A singular feature of this corridor is the fact that today it is flanked by a high number of vacant plots earmarked for municipal installations, currently populated by wild vegetation, managed by means of clearing operations of varying intensity, carried out on occasions at times of the year when a great deal of damage is done to the biological communities that inhabit them. Species of invasive flora are also frequent in these spaces.

Lastly, adjoining the corridor between Paris Street and Juan Carlos I street there is a diaphanous glass barrier that separates the urban plot, causing frequent fatal collisions of the birds that inhabit the area.

AIMS

- Implement measures to create a greater biological wealth in this corridor and to strengthen its role as an ecological connector.
- Reduce the maintenance costs of the vegetation in this space.
- Reduce environmental pressures generated by the presence of invasive species.
- Resolve occasional problems of high environmental impacts such as the collisions of fauna against glazed panels and the escape of young aquatic birds from urban ponds.



PROJECT DESCRIPTION

The measures to apply can be summed up as follows:

- Plan the clearing operations of vacant plots so that these respect the biological cycles of the wild species present in them, by proposing areas that are left uncleared on a rotary basis and that act as reservations.
- Rationalise the management of turfed areas by carrying out a differentiated management.
- Generation of shrub masses and native trees throughout the length of the corridor, as well as flower meadows.
- Install the means whereby fauna can access/exit the ponds on Juan Carlos I Street.
- Install elements that enable birds to see the diaphanous glass panels existing in the area.
- Creation of new wetlands throughout the corridor.
- Eliminate invasive flora detected in the area.
- Application of other measures to favour the establishment of a richer and more diverse biological community in the area, such as: the installation of bird nesting boxes, creation of composting bins, installation of bat boxes or insect hotels, creation of piles of dead wood, etc.



BENEFITS/ECOSYSTEM SERVICES

- Improvement in ecological permeability.
- Creation of new habitats.
- Increase in urban biodiversity.
- Eradication of exotic invasive fauna and flora.
- Reduction in the cost of the management of green spaces.
- Revaluation of vacant and marginal plots.

INNOVATING AND EXEMPLARY NATURE

Example of joint intervention in connectors and adjacent vacant plots to strengthen the ecological functionality of the Green Infrastructure System.

ELEMENT
AUXILIARY ELEMENT

TYPOLOGY
CORRIDOR

LOCATION
SALBURUA

PILOT PROJECT 43

ECOLOGICAL AND LANDSCAPE IMPROVEMENT OF THE ZARAUNA-SALINILLAS DE BURADÓN CORRIDOR

CURRENT STATUS

Zabalgana is a new district located at the western end of the city. Compared with the ordinary dynamics of traditional urban developments, the two streams that cross the area from south to north, the Zarauna and the Perretxín, have not been channelled and have maintained their fluvial ecological functionality, conditioned logically by the heavy urban development suffered along their edges. Thus, both streams are interesting ecological reservations and ecological connecting elements from Armentia Park with the corridor of the railway line and to a lesser extent, with Zabalgana Park.

Next to the beds of the aforementioned streams, green spaces have been introduced, designed in general with a very simple vegetation structure, based on high maintenance lawns and dispersed large trees. An interesting feature of the River Zarauna is the presence of several extensive, empty plots, populated with wild vegetation communities and with lax management, in which there is an interesting biological community, even with medium-sized mammals (hedgehog, weasel, hare, rabbit), conditioned by the presence of dogs and a lack of refuges. On these plots, invasive flora appears frequently. In one of them there are also a number of ponds that appear in times of heavy rainfall, in which are a relevant point of reproduction of the Natterjack Toad (Bufo calamita), a species catalogued as “vulnerable” at a regional level. The future of these ponds is very uncertain in view of the urban development planned for the area, and for this reason it would be very interesting to create new seasonal ponds in nearby areas, unaffected by these uncertainties. Another interesting feature of this corridor due to its high environmental value is the presence of the few relict gall-oak groves, representing one of the few examples of semi-mature wild habitats within the city. This specific area is the subject of a different pilot project.

Another singular feature of this corridor is the small pond located in Viñaspre Park, the environmental capacity of which could be improved by carrying out a number of simple corrective measures. The same can be said of the bridges that cross these streams as they could be provided with structures to favour species of interest such as bats. Lastly, the glazed paddle court located between Juan Pablo I Street and Derechos Humanos Street should also be mentioned as it poses a high risk of collision for birds.

AIMS

- Ensure the long-term survival of populations of Natterjack toads in the area.
- Implement other measures to foster a greater biological wealth in this corridor and strengthen its role as an ecological connector, especially towards Zabalgana Park.
- Reduce the maintenance costs of vegetation in this space.
- Reduce environmental pressures generated by the presence of invasive species.
- Resolve occasional problems of high environmental impact such as the collisions of fauna against glazed panels.



PROJECT DESCRIPTION

- Integrate within the green areas of the left bank of the River Zarauna, with a less abrupt terrain, the creation of three seasonal ponds that might establish themselves as reproduction habitats for Natterjack Toads, as alternatives to existing habitats.
- Redesign the flood ponds in which the Natterjack Toad reproduces at this time, eliminating the dumping of inert waste and increasing their surface slightly.
- Install bat boxes under the bridges that cross the streams.
- Plan the clearing operations of vacant plots so that these respect the biological cycles of wild species present in them, by proposing areas that are left and cleared on a rotary basis and that act as reservations.
- Rationalise the management of turfed areas by carrying out differentiated management, reducing the frequency of mowing operations.
- Generate shrub masses and native trees, as well as flower meadows, generating as far as possible a digital continuum throughout the route in order to strengthen its connecting role.
- Install the means whereby fauna can access/exit the pond in Viñaspre Park, and eliminate exotic fish.
- Install elements that allow birds to see the diaphanous glass panels of the indoor paddle court in the area.
- Eliminate examples of invasive flora detected in the area.
- Application of other measures to favour the establishment of a richer and more diverse biological community in the area, such as: the installation of bird nesting boxes, creation of small pools, introduction of flower beds, creation of composting bins, installation of bat boxes or insect hotels, creation of piles of dead wood, etc.
- Explain all the above measures to the public, who in turn would be able to take part in some of the ecological monitoring work introduced after the actions have been completed (counts of Natterjack Toad eggs, orchid community, etc.).





BENEFITS/ECOSYSTEM SERVICES

- Improvement in ecological permeability.
- Creation of new habitats.
- Increase urban biodiversity.
- Eradication of invasive exotic species.
- Reduction in the cost of managing green spaces.
- Revaluation of vacant and marginal plots.

INNOVATING AND EXEMPLARY NATURE

Example of joint intervention on connectors and adjacent vacant plots to strengthen the ecological functionality of the Green Infrastructure System.

ELEMENT
AUXILIARY ELEMENT

TYPOLOGY
CORRIDOR

LOCATION
ZARAUNA - BURADÓN

PILOT PROJECT 44

ECOLOGICAL AND LANDSCAPE IMPROVEMENT OF THE RAILWAY CORRIDOR

CURRENT STATUS

The railway line crosses the city from east to west, forming a space of high natural interest as parallel to most of its route there are a number of linear green spaces that make up an interesting environmental corridor. In this way, the railway corridor allows the connection between spaces of high ecological value such as the River Zadorra, Zabalgana Park and the River Errekaleor and the heart of the city. Therefore, this railway corridor is a first-rate structuring element from the ecological viewpoint and therefore also it is extremely important to ensure its correct connection with other strategic urban corridors, such as the Mariturri Boulevard, the River Zarauna, Zabalgana Avenue, the interior corridor of the district of Salburua and the River Errekaleor.

However, the functional capacity of the aforementioned environmental passageway is highly conditioned by the very configuration of many of these green spaces, made a generally of high management intensity spaces and poor structural quality from the ecosystem viewpoint. However, it is possible to observe spaces in a better state of conservation in several sections, especially a number of vacant plots adjacent to the railway line and the eastern section of the Mediterranean Avenue, which have been taken over by nature.

Another aspect that should be mentioned is that the segregation from public use of the railway platform itself has allowed the generation of a number of wild habitats of high conservation interest, such as is the case of some amphibians such as newts and small mammals such as rabbits, hedgehogs and reasons. However, the vegetation treatments that the railway authorities carry out within the railway platform, based on high impact herbicides, may be placing in jeopardy the survival of these populations of interest. It must be remembered that these same treatments have been eradicated from the ordinary practices gardening developed in the rest of the city.

AIMS

- Increase the ecological capacity of the green areas adjacent to the railway line in order to promote their role as structural ecological corridors.
- Reduce the maintenance costs of the vegetation in the spaces.
- Intermediate in order to get the railway authorities to carry out mechanical treatments of vegetation on the railway platform.



PROJECT DESCRIPTION

- Rationalise the management of turfed areas by carrying out a differentiated management, reducing the frequency of mowing operations.
- Generate shrub masses and native trees, as well as flower meadows, generating as far as possible a digital continuum throughout the route in order to strengthen its connecting role.
- In the case of the connection with other strategic environment corridors, ensure an adequate ecological flow between both by means of the correct re-vegetation of the contact areas (Mariturri Boulevard embankments, the bed of the River Zarauna, downstream of the railway line, etc.). In the case of Zabalgana Avenue, between the railway line and the final roundabout of Borinbizkarra Park, the generation of a central, continuous linear strip populated with native woody species, both trees and shrubs, that contribute to increasing the structural diversity of the central reservation, generate ecological niches of interest, reduce management costs, facilitate the longitudinal and transversal ecological flow through the axis and to reduce sound and light pollution.
- Application of other measures to favour the establishment of a richer and more diverse biological community in the area, such as: the installation of bird nesting boxes, creation of small pools, introduction of flower beds, creation of composting bins, installation of bat boxes or insect hotels, creation of piles of dead wood, etc.
- Plan the clearing operations of vacant plots so that these respect the biological cycles of wild species present in them, by proposing areas that are left and cleared on a rotary basis and that act as reservations. Specifically, the vacant plots next to the Palacio Zulueta could be planted as an example for the public of different rhythms of herbaceous management in different sectors (several mowing operations a year, only one mowing operation a year, mowing operations at intervals of several years, an area for natural development, etc.), so that in just a few years it will be possible to interpret, with paths cut into the grass itself and a simple signposting system to separate the different sectors, the repercussions of the different management systems on the biodiversity, aesthetics, costs.
- Eliminate invasive flora detected in the area.



BENEFITS/ECOSYSTEM SERVICES

- Improvement in ecological permeability.
- Creation of new habitats.
- Increase in wildlife and biodiversity.
- Revaluation of vacant and marginal plots.
- Improvement in environmental quality (atmospheric, acoustic and aesthetic).
- Improvement in landscape integration of communications infrastructures.

INNOVATING AND EXEMPLARY NATURE

Innovation in the incorporation of measures to increase biodiversity in urban spaces associated with railway lines.

Example of joint intervention on connectors and adjacent vacant plots to strengthen the ecological functionality of the Green Infrastructure System.

ELEMENT
AUXILIARY ELEMENT

TYPOLOGY
CORRIDOR

LOCATION
RAILWAY LINE

PILOT PROJECT 45

PROJECT TO IMPROVE THE ACCESSIBILITY AND SIGNPOSTING OF THE GREEN BELT CIRCUIT

CURRENT STATUS

The Green Belt Circuit is the main itinerary of the network of walkways and tracks in the periurban environment. With more than 30 km, it allows users to travel right round the city, visiting all the parks in the Green Belt.

In order to facilitate their use by all members of the public and groups, the need is seen to improve accessibility conditions in an attempt to adapt this itinerary to the requirements of universal accessibility so that the spaces and resources of the Green Belt may be used and enjoyed by everyone with any physical capacity in a normalised, autonomous and safe manner.

This itinerary is included within the Network of Green Itineraries of Alava (regulated by the Provincial Regulations of Green Itineraries of the Province of Alava). The aim of this Network is to guarantee both its physical functionality (for non-motorised transport means) and ecological functionality, ensure road safety, introduced ecological and landscape restoration measures and promote a healthy and respectful treatment of nature by the public.

AIMS

- Improve the current conditions of accessibility to the itinerary “Green Belt Circuit” by attempting to adapt this to the requirements set out in regulations on universal accessibility, so that it may be used in a safe manner by any person, irrespective of his or her physical ability.
- Favour the use and enjoyment of the Green Belt by all members of the public.
- Contribute to the creation of a network of Green Itineraries in the province of Alava that guarantees both its physical and ecological functionality.



PROJECT DESCRIPTION

Project to adapt and improve the elements that make up the Green Belt Circuit itinerary by providing solutions to the problems of safety and the specific uses of each situation.

The project will include a diagnosis of the current status of accessibility in the walkways of the Green Belt and will identify the optimum route in order to guarantee a complete circuit in compliance with the conditions of universal accessibility.

A programme of actions will also be drawn up to allow its adaptation and progressive development.

LINKS

The Green Belt of Vitoria-Gasteiz.
http://www.vitoria-gasteiz.org/anilloverde





BENEFITS/ECOSYSTEM SERVICES

- Improvement in physical permeability.
- Increase in resources for the practice of sports and leisure pursuits.
- Improvement in health and well-being.
- Community resource.

INNOVATING AND EXEMPLARY NATURE

Opportunity to further expand the work necessary in order to guarantee universal accessibility to all the itineraries that make up the Network of Green Itineraries of the province of Alava.

ELEMENT
AUXILIARY ELEMENT

TYPOLOGY
CIRCULAR WALKWAY

LOCATION
GREEN BELT CIRCUIT

PILOT PROJECT 46

PROJECT TO CREATE THE SOUTHERN PATHWAY

CURRENT STATUS

The projects to extend and consolidate the Green Belt to the south of the city include the creation of a new periurban park in the area surrounding the old abandoned gravel pits of Lasarte, with the essential function of regulating hydraulically the streams that run through the area but also with a social and public use function.

The future transformation of this space into a new park within the Green Belt will consolidate this as a key element to favour the connection and closure of the Green Belt. In this sense, it is considered essential to look for a new pedestrian connection that will allow access to the core of the future park of Lasarte, by linking the periurban parks of Armentia and Olarizu.

The discovery of a historic track offers the chance to recover this old, historic route and of including it in the pedestrian itineraries of the Green Belt. This track, traces of which had disappeared, started in the Uleta area and ran through fields as far as the future park, linking up later with the village of Aretxabaleta,.



AIMS

- Facilitate the pedestrian and ecological connection between the parks that make up the Green Belt to the south of the city.
- Recover a historic track for social use and open air sports.
- Facilitate access to the natural milieu.
- Favour the urban-rural connection.



PROJECT DESCRIPTION

The work will consist basically of preparing an itinerary for pedestrians and cyclists between Alto de Uleta and the village of Aretxabaleta through the following actions:

- Establish the track.
- Eliminate conflictive points at crossroads used by motor vehicles.
- Signposting and interpretation work.





BENEFITS/ECOSYSTEM SERVICES

- Improvement in ecological connectivity.
- Resource for the practice of sports.
- Resource for environmental awareness and education.
- Resource for contemplation and spiritual well-being.

INNOVATING AND EXEMPLARY NATURE

Opportunity to contribute to the consolidation of a network of green itineraries within the municipality of Vitoria-Gasteiz and within the Province of Alava, that guarantees its physical and ecological functionality.

ELEMENT
AUXILIARY ELEMENT

TYPOLOGY
LINEAR WALKWAY

UBICACIÓN
ALTO DE ULETA-ARETXABALETA

ANNEX

The benefits of Green Infrastructure, por Janez Potočnik, Comisario Europeo de Medio Ambiente

OPINION of the Committee of the Regions – **Green infrastructure: enhancing Europe's natural capital**

OPINION of the European Economic and Social Committeeon theCommunication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the RegionsGreen Infrastructure (GI) — **Enhancing Europe's Natural Capital**

EUROPEAN COMMISSION

Janez Potočnik

European Commissioner for Environment

The Benefits of Green Infrastructure

Check Against Delivery
Seul le texte prononcé fait foi
Es gilt das gesprochene Wort

EESC-CoR Conference on Green Infrastructure/Brussels
5 November 2013

SPEECH/13/880

Dear colleagues, ladies and gentlemen,

- I am very pleased to be here today to discuss the benefits of Green Infrastructure for Europe's regions and cities, the role that different actors can play at all levels to deploy nature-based solutions across the EU, and how we can work together to make it happen.
- However, let me first thank the Committee of the Regions and the Economic and Social Committee for organising this conference. Let me also express my gratitude to the rapporteurs from both Committees -- Annabelle Jaeger and Adalbert Kienle – for the quality of the Opinions delivered. I also want to congratulate Sandrine Bélier for taking forward the Resolution on Green Infrastructure in the European Parliament; and thank again the Lithuanian Presidency for a very stimulating lunch discussion at the October Environment Council.

- This strong inter-institutional support for the Commission's Green Infrastructure Strategy is very encouraging, and together with awareness-raising events like this, will hopefully result in scaling up Green Infrastructure in the EU.
- Some of you are probably asking yourself what Green Infrastructure is and what can it do for me? Annabelle Jaeger has already answered the first part of the question, so I will focus on answering the second.
- Ms Jaerger mentioned that Green Infrastructure is about using a single area of land to deliver **multiple benefits**, which is possible if its ecosystems are in a healthy condition.
- The first and foremost benefit is, of course, **environmental**.
- As you know, one-fifth of EU territory is protected as part of the Natura 2000 network, which contains the ecosystems with our highest biodiversity value. It is a core element of green infrastructure across Europe and can benefit greatly from green infrastructure developments beyond the network itself. However, there is still a lot of biodiversity outside of Natura 2000 areas which should not and cannot be neglected if the EU is to meet its biodiversity headline target by 2020.
- The Green Infrastructure Communication which I presented in May this year sets out some ideas on how 'nature-based solutions' can protect biodiversity both *within* and *outside* Natura areas.

- The Opinion of the Economic and Social Committee describes very some of the benefits that Green Infrastructure can bring for the environment.
- For instance, the creation or maintenance of natural flood plains filter the water, stabilise the water table, store CO2, provide timber and help to link up natural habitats. Their 'grey' alternative, dikes, merely prevent floods.
- You will remember that we have just experienced another year of damaging floods in many parts of Europe – particularly severe floods in Mr Kienle's home country, Germany. Could it be any clearer that planning decisions to build on floodplains have been simply disastrous? Building heavy infrastructure to bank up rivers has been a waste of money; and the damaging effects of soil erosion from deforestation have also been underestimated. The focus must now turn towards investing in ecosystem services provided by flood plains, by woodland along river-banks, by forests in mountainous areas, by barrier beaches and coastal wetlands.
- It's also worth stressing how Green Infrastructure can contribute to climate mitigation and adaptation. What is more low-carbon than to let nature do the job? Green Infrastructure can help other sectors adapt to a changing climate, and contribute to mitigation efforts by improving carbon stocks and greenhouse gas balances.
- The second benefit provided by Green Infrastructure is **economic**. What we are seeing more and more across Europe is that Green Infrastructure solutions are often more cost-effective, more resilient and bring more long-term benefits than artificial, heavy infrastructure. If we can manage to scale up green infrastructure investments, then we can boost innovation and drive market opportunities, unlocking more sustainable growth and creating both high and low-skilled jobs.
- It is also a logical option in the face of current economic constraints, when we need more than ever to invest our money wisely.
- The third benefit which Green Infrastructure provides is **social**. Green spaces can improve mental and physical health and reduce heat-wave effects in cities. Green infrastructure has also played an important part in some highly successful urban rehabilitation projects, including in some of the poorest neighbourhoods. There is substantial evidence that people feel more responsible for their neighbourhood if it is green.

- As the Committee of the Regions has rightly underlined in its opinion, the social demand for natural areas in urban environments is increasing: for leisure and recreation, gardening and agriculture, improving public health, combating economic and social inequalities; and more generally for the well-being they bring to citizens.

Ladies and gentlemen,

- The big question today is: How can we help make green infrastructure investments happen?
- The Committees clearly highlight the need to provide adequate financing, whether from public or private sources.
- At EU level, the new multiannual financial framework provides significant opportunities.
    - For the first time, the Cohesion Fund will provide explicit support for Green Infrastructure.
    - Under Rural Development funding, 5 % of resources are intended to be spent on "integrated sustainable urban development measures", which could be used to finance urban green infrastructure.
    - There are also other opportunities within the reformed Common Agricultural Policy, the social funds and the LIFE Programme.
- So, all the openings are there, but they need to be taken up. For this to happen, Green Infrastructure needs to be prioritised in the Partnership Agreements, backed up by specific actions in the Operational Programmes. Investing in Natura 2000 also needs to be set out in the Prioritised Action Frameworks in order to attract the financial support needed.

- But we also know that while public funding from the EU and national budgets is essential, it will not be sufficient. Thankfully, the private sector has started to recognise the opportunities for investment in natural capital. This is a promising market, but the financial sector often perceives it as 'high risk', and is therefore reluctant to lend. Carefully targeted public funds can reduce the risk profile of these kinds of projects and attract even more investments from the private sector.

- That is why my services are working with the European Investment Bank to set up a pilot Natural Capital Financing Facility, which should be operational next year. One of the objectives will be to mobilise additional investment in Green Infrastructure from the private sector and support the competitiveness of EU businesses in this emerging market.
- Beyond financing, we also need to improve the knowledge base for Green Infrastructure and promote trans-boundary benefits and opportunities for a Trans-European Green Infrastructure Network.

- Here I would mention in particular the work already underway to map and assess ecosystems and their services across Europe, and efforts to integrate Green Infrastructure into the relevant policies – whether in the biodiversity context through the "No net loss initiative", or in sectoral policies such as agriculture and cohesion policy.
- There are already some excellent examples of Green Infrastructure being used in many countries, regions and cities in Europe, and you will hear about some of them later this morning. But if we are to draw all the benefits from Green Infrastructure which I just mentioned, these activities absolutely need to be scaled up. I'm confident that in our discussions today some ideas will emerge on how to make this happen.
- I would like to close by highlighting four points which have emerged from my discussions with Member States, Parliamentarians, the Economic and Social Committee and the Committee of the Regions:

    - First, **the exchange of best practices** is essential, whether for implementing large and cross-border Green Infrastructure or for improving the knowledge base and information for businesses, administration and spatial planners to make the right decisions. Capacities for information sharing need to be improved at all levels;

    - Second, **awareness raising and training** are needed to enable the broad-scale take-up of Green Infrastructure on the ground. Green Infrastructure is an ideal tool to communicate the importance of nature to the citizens, but more efforts are needed. Academic programmes for the education and training of specialists in Green Infrastructure should be set up;
    - Third, **citizens science and participatory processes** have an important role to play in planning, implementing, maintaining and monitoring Green Infrastructure. The best Green Infrastructure projects are those which have a strong involvement of citizens, in particular at local and regional level.
    - And fourth, the **private sector** also has an important role to play in the deployment of GI. Specific structures and initiatives need to be set up to ensure this happens, and I have mentioned the Natural Capital Financing Facility as one that the Commission is actively promoting, along with the EU Business and Biodiversity Platform.
- National, regional and local authorities, businesses and civil society all have a role to play in scaling up Green Infrastructure across the EU.
- Ladies and Gentleman,
- All the institutions sitting around the table – Council, European Parliament, Committee of the Regions and European Economic and Social Committee are strongly supporting Green Infrastructure concept and Commission's proposal. The interest in Green Infrastructure is high, sometimes even higher than expected. I was informed that for today's conference the organisers were forced to change the initially envisaged room for a bigger one. But if we will not collectively switch from talking the talk to walking the walk and change our own commitments to the follow up actions, nothing will really change on the ground. This is why I will end with a call to all of you, actually all of us, to engage in making Green Infrastructure a true European success story. Together we can show how investing in nature-based solutions can help achieve our environmental objectives, improve the well-being of our citizens, create jobs and business opportunities – and all that with cost-effective use of scarce public funds. It is a real win-win possibility. We can simply not afford not to make the most of it.

EUROPEAN UNION

Committee of the Regions

ENVE-V-039

103rd plenary session, 7-9 October 2013

OPINION

Green infrastructure – enhancing Europe's natural capital

THE COMMITTEE OF THE REGIONS

- stresses the primary role of local and regional authorities in defining and implementing the initiative and urges them to take steps in all the relevant sectorial policies, in particular through their spatial and urban planning, to plan and organise green infrastructure (GI); emphasises that the key to successful GI deployment lies in effective multilevel governance and in the participation of all parties and stakeholders;
- calls on the Commission to complete, as soon as possible, concrete implementation guides on integrating GI into the range of EU polices; and calls for additional fact-sheets on urban GI; GI should be included in the Reference Framework for Sustainable Cities and the future Urban Development Network;
- emphasises the urgency of establishing arrangements for including GI and its priority status in the partnership agreements and operational funding programmes as they are currently being designed for the cohesion and structural funds 2014-2020;
- calls on the Commission to incorporate requirements aimed at preventing any net loss of biodiversity and ecosystem services into EU legislation; asks the Commission to maintain and extend the eco-conditionality and biodiversity proofing of EU funding; advocates in addition allocating a certain percentage of all EU support for the deployment of grey infrastructure to a biodiversity fund;
- welcomes the announcement that the Commission, together with the EIB, will endeavour to establish by 2014 a special EU financing facility for promoters of GI projects; would like to see local and regional authorities involved in its design;
- welcomes the TEN-G initiative and calls for it to have the same pan-European relevance as transport, energy or ICT networks, and asks the Commission to explore the scope for EU legislation in this area.

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Rapporteur

Ms Annabelle Jaeger, Member of Provence-Alpes-Côte d'Azur Regional Council (FR/PES)

Reference document

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Green Infrastructure (GI) – Enhancing Europe's Natural Capital
COM(2013) 249 final

Opinion of the Committee of the Regions – Green infrastructure – enhancing Europe's natural capital

I. POLICY RECOMMENDATIONS

THE COMMITTEE OF THE REGIONS

General comments

1. warmly welcomes the Communication from the Commission entitled "Green Infrastructure (GI) – enhancing Europe's Natural Capital", which paves the way for the EU strategy in this area. It considers the proposals put forward to be extremely important for achieving Europe's objectives for 2020 in terms of resource efficiency, social and regional cohesion, smart and sustainable growth, attractiveness, improvement in biodiversity and landscape quality, protection against natural risks, promotion of a sustainable urban model, local job preservation and creation in small and medium enterprises, public health improvements and the fight against inequality, in support of the targets of the EU Biodiversity Strategy to 2020, and in compliance with and in support of the Habitats and Birds directives and the connectivity of Natura 2000 sites[1];

2. expects future GI implementation in the EU to contribute to achieving target 2 of the EU 2020 Biodiversity Strategy, which aims at restoring at least 15% of degraded ecosystems by 2020, and to halting the loss of biodiversity and restoring ecosystems throughout Europe, and not only in Natura 2000 sites;

3. moreover believes that the various international, European and national strategies and programmes implemented thus far have not yet produced results which are a match for the challenges facing biodiversity; that there is consensus on the need to review societal models of production and consumption in order to respond to the challenges of biodiversity loss, of which they are the main causes, due to destruction and fragmentation of natural habitats and the numerous forms of pollution. Unless this happens, the renewed commitments under the Convention on Biological Diversity and the EU 2020 Biodiversity Strategy will achieve nothing;

4. therefore emphasises the Commission's vital role in promoting a cross-cutting GI-based strategy, which is an unprecedented opportunity for all European national, local and regional governments, businesses, researchers and associations and the public at large to work together to reconcile the economy, society and the biosphere;

5. is pleased to note the proposed definition, which integrates the connectivity of species and habitats with the quality of ecosystems, at all scales, including urban settings, the remarkable

[1] CdR 22/2009 fin, CdR 112/2010 fin.

biodiversity of both protected and more ordinary areas, natural solutions and man-made nature-based solutions, but believes that this definition should be explained in concrete terms in the implementation guides to be published, including the concepts of permeability and the ability to host living organisms. It is important to highlight in this respect the creation and use of ecological and operational linkages across all scales;

6. welcomes the fact that the true value of the numerous economic, environmental, risk protection and social benefits of well-functioning ecosystems is recognised, and emphasises that this utilitarian aspect of producing goods or services for human consumption should always be used to support the ethical aspects of nature and biodiversity conservation;

7. points out that the concept of GI, by its very nature, cuts across administrative and territorial borders and that its development, protection or endangerment depends in the first instance on Member States' and regional and local authorities' policies on spatial planning and territorial development and on the conservation of natural resources;

8. welcomes and supports this comprehensive approach, which firmly ties GI to climate change mitigation and adaptation. It stresses the primary role of local and regional authorities in defining and implementing this strategy;

9. argues that it is far less expensive to preserve, develop and maintain GI in the medium to long term than grey infrastructure in view of its overall cost, including the external costs currently being borne by society. Solutions based on or inspired by nature, applied in synergy with biodiversity (environmental engineering), are less energy-intensive and require less maintenance and upkeep than conventional solutions and are therefore more efficient and sustainable;

10. stresses that the prevention of ecosystem degradation and the restoration of degraded ecosystem functionalities must be absolute priorities because measures to manage the consequences of ecological imbalances caused by human activity are always more costly, lengthy and, above all, uncertain in their outcomes;

11. considers that although the economic evaluation of ecosystem services could help decide between conflicting objectives in the context of certain cost-benefit studies, it has its methodological difficulties - to the point that it could even be unsuitable in many situations - and also has obvious ethical implications. It should also be emphasised that there is another way to evaluate the cost of biodiversity loss, i.e. calculating the cost of maintaining the environmental potential to restore this loss by calculating the cost of the investments required to maintain or improve biodiversity in order to ensure the continued flow of environmental services. This is the method that the Committee of the Regions would prefer to see adopted;

12. urges local and regional authorities to take steps in all the relevant sectoral policies, in particular through their spatial and urban planning responsibilities, to plan and organise green infrastructure;

13. therefore calls on the EU and the Member States to support their efforts by providing them with the human, technical and financial resources to meet these challenges[2];

Farming, forests, land and soil

14. believes that action against the loss of soil functions, land-use intensification and land degradation must be the absolute priority for spatial and urban planning. Ensuring "no net loss" of natural environments, forests and farmland is essential in the face of urban sprawl, and some local and regional authorities have already started to incorporate the concepts of GI and "no net loss" into their urban and regional planning, in different forms;

15. also reiterates its support for Member States to resume discussions to adopt a common European legal framework for protecting and restoring soil functionality, which is crucial to successfully addressing this key issue[3];

16. recalls that forestry contributes to GI, either actively, by restoring forest continuity or adopting environmental management practices, or passively, by preserving woodland boundaries. To be able to establish GI, particularly in regions where forests are under fragmented and private ownership, properly-functioning associations of owners need to established and regional and local authorities need to be given the tools to mobilise these private stakeholders, i.e. land ownership measures, training, technical support and assistance for mutualisation, including financial support;

17. notes the decisions taken by the EU for the Common Agricultural Policy for 2014-2020, and wonders how GI is to be efficiently implemented in these areas by 2020. The Committee of the Regions therefore emphasises the importance of the activities of the relevant authorities: they must make GI one of the guidelines for their use of resources in relation to maintaining and restoring biodiversity through the greening of direct payments in ecological focus areas and the use of the EARDF including the coherent localisation of and budget allocation for agri-environmental measures. At the same time they must free up resources to restore the biodiversity of agricultural environments, not least by supporting organic farming and agroforestry;

18. in view of promoting sustainable agriculture and forestry within GI, believes that developing bio-sourced building materials is crucial for solidarity between rural and urban areas since the use of traditional building materials in urban areas and for grey infrastructure exerts

2 CdR 22/2009 fin, CdR 112/2010 fin.

3 CdR 112/2010 fin.

considerable pressure on rural and also maritime environments. It is essential to encourage the use of wood and other materials originating from co-products of agriculture or complementary to usual crops (straw, hemp, flax, wool etc.) to the benefit of local stakeholders. The CoR believes that local growth dynamics need to be promoted, especially through aid for structuring sectors, for investing in industrial processing tools, and for structuring the market through exemplary public procurement practices or encouraging communities which use them. It is also necessary to develop research programmes on the technical properties of these materials and the proper conditions for producing them in terms of preserving ecosystems. Finally, appropriate labelling must be used to inform users of the agricultural provenance and conditions of these materials;

Shared governance

19. emphasises that the key to successful GI deployment lies in the cooperation between all governance levels and in the effective implementation of multilevel governance (MLG) principles as well as in participation of all parties and stakeholders, including local residents, in its development and implementation;

20. advocates participatory approaches, which will generate necessary and complementary bottom-up initiatives, from those who directly participate in spatial planning and land use management, and in particular local communities[4];

A new type of citizenship

21. notes the considerable social demand for natural areas in urban environments, which is just as much a response to the need for green areas in their various forms (leisure and recreation areas, areas dedicated to gardening and agriculture, landscaping and embellishment features, wilderness areas etc.) as to the sense of well-being they bring, as well as to public health issues, combating economic and social inequalities; these needs must be met for the sake not only of young people, but also of older or disadvantaged people;

22. notes with interest and encourages GI-related citizens' initiatives, especially in urban and peri-urban areas (participatory biodiversity inventories, involvement in the establishing new urban biodiversity areas, the rehabilitation of fallow or abandoned land, shared gardens, etc.). Connecting all these areas by means of access routes for non-motorised transport is crucial to improving people's quality of life;

Potential for innovation and new jobs

23. notes that GI generates research and innovation, which are development opportunities for planners, e.g. in relation to plant-based walls and roofing or ecological restoration;

4 CdR 112/2010 fin.

nevertheless points out that the real benefits of GI, in terms of climate adaptation for instance, depend on the quality of implementation. Only functional, climate-appropriate and biodiversity-friendly solutions should be encouraged;

24. supports the Commission's proposal to reduce the risks associated with innovation through financial instruments (such as risk-sharing practices) and backs its plans to support projects involving private and public funds;

25. is pleased to note the emergence of new GI-related jobs in the area of environmental engineering to restore, maintain and rehabilitate degraded ecosystems, and stresses the importance of indirect or secondary jobs (in the production of plant-based materials, farming sectors, etc.). Regions and local authorities with responsibility for economic development should facilitate and support this potential for job creation;

26. believes that GI is based on ecosystems and the associated human cultures, which are both extremely diverse for biogeographical and historical reasons. This is why it is a driver for developing local economic sectors and jobs that cannot be relocated. In this context, the CoR would point out that the EU legislation on public procurement is under review and that the Committee on the Internal Market of the European Parliament (EP), clarified on 11 January 2013 that the contracting authority should base the award of public contracts on the criterion of the most economically advantageous tender. The CoR supports the EP's view that that criterion should include, in addition to the price or costs, qualitative, environmental and social considerations, such as social, environmental and innovative characteristics, including cost-effectiveness of short-distance procurement where relevant;

Levers for action

27. calls on the Commission to draw up, as soon as possible, practical, precise and concrete implementation guides on integrating GI into the range of EU polices and suggests that regions and local authorities already promoting GI should be involved in designing them in order to co-develop, with the Commission, local versions of these guides, which would be more accurate with regard to local biotopes, knowledge and know-how; acknowledges in this regard that first guidance is already available with the "Guide to multi-benefit cohesion policy investments in nature and green infrastructure"[5];

28. calls for additional fact-sheets on urban GI, which would also help to mobilise projects using new measures under the Structural Funds, which set aside 5% of funds for investment in sustainable urban development;

5 http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/guide_multi_benefit_nature.pdf

29. calls for GI to be included in the Reference Framework for Sustainable European Cities[6] and in the future Urban Development Network envisioned as part of cohesion policy for 2014-2020;

30. calls for the future review of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment to include a reference to GI as an additional criterion for determining the likely significance of effects;

31. reiterates the need, when a grey infrastructure project is deemed essential following an upstream study of all the GI-based solutions, for it to be designed in such a way as to minimise its impact, for this residual impact then to be reduced and finally, for validated equivalent ecological and land-use offsets to be imposed[7]. The Committee of the Regions calls on the Commission to incorporate these requirements into EU legislation, taking into account the work carried out by the European Commission on action 7b of the EU Biodiversity Strategy 2020 aimed at preventing any net loss of biodiversity and ecosystem services;

Monitoring and evaluation

32. welcomes plans for a progress review on GI in 2017 and points out that the regions and local authorities are ready to contribute to this through their local observatories for biodiversity, economic activity, health, social inequalities, etc. in order to pass on the relevant data to the EU level;

33. wonders to what extent GI will be efficient, and stresses the need to support the development of a user-friendly and straightforward rapid tool to evaluate the functional health of ecosystems, not only to assess efficiency, but also to allow for comparison with grey infrastructure;

34. considers that it should be made possible to carry out a full assessment of grey infrastructure interactions with nature, and supports the Commission's work on the Mapping and Assessment of Ecosystems and their Services (MAES) in Europe; also emphasises the need to support the development of methodologies and measurement and calculation tools that will make it possible to draw up a transparent assessment of economic activities and products as a whole and their interactions with nature and ecosystem services, based on lifecycle analysis;

6 Reference Framework for Sustainable European Cities (RFSC), a joint initiative of the EU Member States, the European Commission and European organisations of local governments. See http://www.rfsc-community.eu/.

7 in order to achieve the goal of causing no net loss of biodiversity

Communication, awareness-raising and education

35. recommends that the EU carry out an ambitious communication campaign in partnership with all levels of governance and suitable for use by local and regional authorities in particular[8] as well as other local stakeholders (associations, businesses, etc.). This campaign could concentrate on the three benefits of GI: environmental, economic and social, and on current good practice in Member States;

36. points out that the promotion of good practices needs to be stepped up. The Commission, in conjunction with other institutions, associations, and local and regional authorities which already have this information, must continue to identify, disseminate and promote success stories through a discussion platform, as well as through regular meetings and training sessions, which the regions and local authorities are prepared to hold with its support since they play a key role in raising awareness about GI;

37. urges the Commission to include aspects of GI in existing or future EU Ecolabel schemes, whether they refer to spaces (natural parks in rural, peri-urban or urban areas) or products (materials, construction, etc.);

Funding

38. while recognising that cross-financing helps to steer sectoral policies towards biodiversity issues, the Committee of the Regions underlines the difficulties of mobilising these funds for a variety of reasons, ranging from designations that vary from one financial tool to another to complex financial engineering; therefore calls for precise user guides;

39. emphasises the urgency of establishing arrangements for including GI and its priority status in the partnership agreements and operational funding programmes as they are currently being designed for the cohesion and structural funds 2014-2020, thereby enabling the relevant authorities to fully meet their funding responsibilities in this area; encourages the competent regional or local authorities to take up the possibilities for financing site-adapted GI solutions proposed in the operational programmes and invest in the necessary cross-sector capacity building, co-financing and networking to ensure their successful implementation;

40. endorses the need for a specific financing facility for GI projects and wholeheartedly welcomes the announcement in the communication that the Commission, together with the EIB, will endeavour to establish by 2014 a special EU financing facility for promoters of green infrastructure projects. The CoR would like to see local and regional authorities involved in its design;

8 CdR 112/2010 fin.

41. advocates allocating a certain percentage of all EU support for the deployment of grey infrastructure to a biodiversity fund, in addition to this financing facility; this fund would be used to deploy GI in the Member States concerned by this grey infrastructure, applying the rationale of recapitalisation;

42. calls on the Commission, Member States and local authorities to take effective action at all levels of financial support to stop subsidies and tax relief that harm biodiversity;

43. asks the Commission to maintain and extend the eco-conditionality[9] and biodiversity proofing[10] of EU funding to ensure that the impact on GI and biodiversity is taken into account in all projects supported by EU funding and that the level of EU funding support is adjusted accordingly;

44. calls on the Commission in its mid-term review of the Structural Funds 2014-2020 and the Connecting Europe Facility to identify and highlight further actions to be taken in the area of GI;

The TEN-G initiative

45. greatly welcomes the TEN-G initiative and calls for all preliminary studies to include the local and regional dimensions of pan-European GI, in order to ensure consistency, effective outcomes in terms of restoring ecosystem functionalities and hence conserving biodiversity and its resilience to climate change, and the highest levels of citizen and stakeholder uptake;

46. calls for TEN-G to be recognised as having the same pan-European relevance as transport, energy or ICT networks, and asks the Commission to explore the scope for EU legislation in this area;

Cross-border and pan-European challenges

47. encourages regions and local authorities to work together in areas of cross-border ecological connectivity in order to ensure consistent GI, and asks the Commission to incorporate this cross-border cooperation into a comprehensive EU-level system;

48. calls for the EU's GI initiative to be extended beyond European borders by stepping up EU neighbourhood instruments for investments in GI in rural and urban areas. Existing initiatives such as the Emerald Network, the Man and Biosphere (MAB) Programme and the Pan-European Ecological Network could contribute in this respect;

9 CdR 22/2009 fin, CdR 218/2009 fin.

10 IEEP, December 2012: Background Study towards biodiversity proofing of the EU budget

Subsidiarity

49. considers the Commission's proposals for incorporating GI into other EU policies and the support it intends to provide for the other levels of governance to develop their own policies in this area to be in line with the subsidiarity and proportionality principles.

Brussels, 8 October 2013

The President
of the Committee of the Regions

Ramón Luis Valcárcel Siso

The Secretary-General
of the Committee of the Regions

Gerhard Stahl

European Economic and Social Committee

NAT/607
Green Infrastructure

Brussels, 16 October 2013

OPINION

of the
European Economic and Social Committee
on the
Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions
Green Infrastructure (GI) — Enhancing Europe's Natural Capital
COM(2013) 249 final

Rapporteur: **Adalbert Kienle**

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On 3 July 2013, the European Commission decided to consult the European Economic and Social Committee, under Article 304 of the Treaty on the Functioning of the European Union, on the

> *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Green Infrastructure (GI) — Enhancing Europe's Natural Capital*
> COM(2013) 249 final.

The Section for Agriculture, Rural Development and the Environment, which was responsible for preparing the Committee's work on the subject, adopted its opinion on 1 October 2013.

At its 493rd plenary session of 16 and 17 October (meeting of 16 October), the European Economic and Social Committee adopted the following opinion by 134 votes in favour with 4 abstentions:

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* *

1 Conclusion and recommendations

1.1 The Committee welcomes the Commission's communication on Green Infrastructure (GI) and its intention of promoting GI projects by means of a package of measures.

1.2 The Committee recommends that use be made of experience with the implementation of the package of measures in order to develop it into the GI strategy announced in the Biodiversity Strategy 2020.

1.3 The EESC supports the aim of linking environmental benefits with economic and social benefits through GI projects. The aim is to create infrastructure with natural, semi-natural, used or urban landscape structures, thus contributing to the maintenance of biodiversity and other environmental factors, while providing cheap, sustainable services to society. In contrast to Natura 2000, the promotion of GI is not a legal instrument; it is not the purpose of the GI initiative to create an additional nature protection network alongside Natura 2000.

1.4 The EESC notes that the main responsibility for Green Infrastructure projects lies with the Member States, especially the bodies responsible for regional and local planning. The EU has a mainly supporting role to play in the promotion of GI. The GI concept should, in particular, be rapidly and effectively integrated into policy areas such as agriculture, forestry, nature conservation, water, marine and fisheries, regional and cohesion policy, urban planning,

climate policy, transport, energy, disaster prevention and land use policies as well as into the corresponding EU financing instruments.

1.5 In the case of GI projects of European importance the EU must take on direct responsibility. The EESC supports the proposal to introduce, by analogy with the TEN-T, TEN-E and eTEN networks, a TEN-G for the financing of Green Infrastructure, with a list of cartographically presented GI projects of European importance.

1.6 The main actors in GI projects at regional and local level are the bodies responsible for regional and local planning, cities and local authorities, bodies responsible for infrastructure projects in areas like road building, railways, hydraulic engineering and flood protection, agriculture and forestry, companies and developers, civil society environmental organisations and trade unions. These actors should be strengthened. The progress of GI projects will depend to a great extent on their being initiated, accepted and supported by these actors.

1.7 The EESC considers that much more attention should be paid to the early participation of civil society in GI projects than is the case in the Commission's communication. Participatory planning processes, with early involvement of citizens and civil society organisations, are of decisive importance.

1.8 It should also be borne in mind that GI projects can also give rise to conflicts between the legitimate interests of various stakeholders and mechanisms must therefore be provided for conflict settlement, balancing of interests and project optimisation. If properly used, GI could help to mitigate or overcome traditional tensions in nature conservation between protection and use. The EESC stresses that sufficient incentives must be created for the mobilisation of the necessary private investment.

2. Introduction

2.1 The value of biodiversity *per se* and the services it provides as a form of natural capital mean that its maintenance and restoration are of vital importance for human well-being, economic prosperity and decent living conditions. In its Biodiversity Strategy for 2020[1] the European Commission therefore set itself the target of stopping the loss of biodiversity and the deterioration of ecosystem services in the EU by 2020 and of reversing these processes as far as possible. In particular, Green Infrastructure is to be promoted by means of a European GI Strategy.

[1] COM(2011) 244 final.

2.2 The communication entitled *Green Infrastructure (GI) — Enhancing Europe's Natural Capital* adopted by the Commission on 6 May 2013 focuses on:

- Promoting GI in the main policy areas such as agriculture, forestry, nature, water, marine and fisheries, regional and cohesion policy, climate change mitigation and adaptation, transport, energy, disaster prevention and land use policies, by the publication of guidance for the integration of the GI concept into the implementation of these policies from 2014 to 2020;
- Improving GI research and data, strengthening the knowledge base and promoting innovative technologies;
- Improving access to finance for Green Infrastructure projects – establishment by 2014 of a special EU financing facility together with the European Investment Bank to support Green Infrastructure projects;
- Supporting EU-level Green Infrastructure projects – by the end of 2015 assessment by the Commission of the development of a network of Green Infrastructure projects of European importance as part of a TEN-G initiative.

2.3 In its opinion on the Biodiversity Strategy of 26 October 2011[2] the EESC welcomed the strategy in principle but was critical of the failure to analyse the reasons why the targets had not been met. In particular the lack of political will in the Member States was preventing their effective implementation.

3. General comments

3.1 A clear definition of GI is used by David Rose in *Green Infrastructure. A landscape approach*: "Green infrastructure refers to features that connect the natural and built environments und make cities and towns more liveable, such as parks, trails, green roofs, green streets, und the urban tree canopy. At the scale of a region, green infrastructure comprises the network of natural areas, green spaces, greenways, working (forest and agricultural) lands, and other features that provide multiple benefits for the health and well-being of people and ecosystems (…)".

3.2 Examples of GI are:

- The creation or maintenance of natural flood plains: whereas a dike merely prevents floods, flood plains also filter the water, stabilise the water table, provide leisure opportunities, store CO_2, provide timber and help to link up natural habitats.
- Forests with a good species, age and structural mix absorb large quantities of water and protect the soil, prevent flooding and landslips as well as mitigating their effects.
- GI as an integral part of the development of residential areas: well-designed parks, avenues, footpaths and green roofs and walls are a cost-effective way of improving the

[2] EESC opinion on *An EU Biodiversity Strategy to 2020*, OJ C 24, 28.1.2012, pp. 111-116.

urban climate and generally improving the quality of urban life. This also contributes to biodiversity and combating climate change.

3.3 82% of land in the EU is outside the Natura 2000 network. The maintenance and restoration of biodiversity by promoting Green Infrastructure, also outside Natura 2000, are therefore clearly essential both for the viability of the network of protected areas and for the provision of ecosystem services in general. In contrast to Natura 2000, the promotion of GI is not a legal instrument. It cannot therefore replace implementation of Natura 2000 but it adds a further component to it. On the other hand, it is not the objective of the GI initiative to create an additional nature protection network alongside Natura 2000. The EESC argues that the GI initiative should be used in particular to promote cooperative protection of nature and the environment in all Member States.

3.4 The EESC stresses the urgency of early and active participation of civil society in GI projects, as provided for in the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. Numerous examples show the extent to which the success of projects depends on approval or rejection by civil society. There should therefore be much greater emphasis on the bottom-up approach and on the building of partnerships, involving local authorities, bodies responsible for infrastructure projects, industry and trade unions, agriculture and forestry, water resources management and coastal protection and environmental NGOs in the European Commission's strategy.

3.5 The EESC notes with regret that the Commission communication on GI is not yet the European GI strategy announced in the Biodiversity Strategy 2020. The EESC welcomes the actions announced in the communication as steps in the right direction. Experience with the implementation of these measures should be used to develop this into a GI strategy.

3.6 The EESC considers it necessary to go further than the communication in setting priorities for the implementation of GI. Like the Biodiversity Strategy, the communication lacks a clear analysis of the reasons why Green Infrastructure has not been adopted on a sufficient scale. The planned technical guidelines and improvements in the state of information and knowledge will not be sufficient to compensate for a lack of political will in individual Member States to implement these concepts. The EESC believes that an effective GI strategy will require stringent monitoring and a critical analysis of the measures in the Member States as well as, where necessary, targeted follow-up measures to support Member States or regions with significant deficits.

4. Specific comments

4.1 Role of the EU in promoting GI

4.1.1 The main responsibility for Green Infrastructure projects lies with the Member States, especially the bodies responsible for regional and local planning. The EU has a mainly

supporting role to play by publicising the concept of GI and, as provided for in the Commission communication, providing suitable and accessible sources of information and knowledge. Moreover, the EU financing instruments have a major influence on regional and local planning, and the integration of the GI concept into these financing instruments must therefore be given high priority.

4.1.2 In the case of certain GI projects of European importance the EU must take on direct responsibility. Such projects are typically based on cross-border landscape features such as mountain ranges, rivers or forests. The communication cites the European Green Belt initiative as a successful example of this. Particular attention should also be paid to cross-border river valleys as the basis for a European GI. Particularly in the case of rivers like the Danube or the Elbe, which this year once again experienced serious flooding, the GI concept can combine improved flood defences with the maintenance of sensitive waters of importance for pan-European biodiversity, as well as economic and tourism development.

4.1.3 The EESC supports the promotion of a strategically planned European network of GI projects of European importance with a list of cartographically presented projects. This project should, in the framework of a TEN-G initiative, be assigned similar status to European infrastructure initiatives in the areas of transport, energy and telecommunications.

4.2 Dissemination of the concept of GI

One major obstacle to the dissemination and promotion of GI is, the EESC believes, to be found in the lack of knowledge of the concept of GI and of the practical advantages, including possible cost advantages. The Commission therefore rightly set itself the goals of raising important stakeholders' awareness of GI, promoting established practices by the exchange of information and improving the state of GI knowledge. Social media offer a particularly useful platform in this connection. The EESC considers the use of a clear and easily understandable definition of GI to be an essential precondition for this publicity work. The definition used by the Commission does not fulfil this condition[3].

4.3 Taking account of the specific situation in the individual Member States

4.3.1 The situation with regard to the availability of natural, semi-natural and urban land in the individual Member States and regions is highly diverse. Whilst in some densely populated regions and cities a great deal of land is used for "grey infrastructure", other regions have large areas of land which are left to nature. European GI promotion measures must make a distinction between regions attempting to create new GI and those where the emphasis is, rather, on the maintenance and care of landscapes.

3 COM(2013) 249 final, p. 3.

4.4 **Integration of GI into key policy areas and their financing instruments**

4.4.1 The communication rightly assigns the highest priority to the effective integration of GI considerations into a broad range of policy areas.

4.4.2 The EESC welcomes the drawing-up of technical guidelines, with principles and conditions for the integration of GI aspects into regional and cohesion policy, climate and environmental policy, health and consumer policy and the Common Agricultural Policy, including the related financing mechanisms. These should be rapidly published so that the Member States, which are already working on the operational plans, can use the guidelines for the 2014-2020 programming period.

4.4.3 GI depends not only on public but also private investment. The EESC emphasises that sufficient incentives are needed for private investment in GI. The EESC welcomes the proposed establishment of a special EU financing facility jointly with the EIB.

4.5 **Effective participation of civil society in regional and local planning**

4.5.1 The Communication does recognise the need for integration of GI into regional spatial planning and local planning, but the EESC points to the lack of any specific measures in the action plan. Local spatial, landscape and building planning in particular have a significant impact on the implementation of GI but, under the subsidiarity principle, can only be influenced by the European level to a limited extent.

4.5.2 The EESC calls for the early participation of regional and local civil society actors in GI projects, without which the projects will be impossible to implement or will fail for lack of social acceptance. Participatory planning processes are therefore needed, assigning an active, shaping role to these actors. It should be borne in mind that, when decisions on GI are taken, there are not only "win-win" scenarios, and individual stakeholders may in certain cases have to accept disadvantages (e.g. if the maintenance of GI on river banks or coasts results in construction bans). Conflicting objectives arising from competing land use claims (e.g. food, housing and infrastructure, biotope connectivity, biodiversity) must be addressed and solutions found.

4.6 **GI in urban areas**

4.6.1 The EESC sees enormous potential for GI measures in urban areas. Here they bring health advantages, improve the urban climate, create jobs and improve the attractiveness of cities. In cities in particular it is important to improve understanding of GI solutions - beginning in schools - and to strengthen the active participation of civil society. The EESC sees the current strong interest in urban gardening and farming as a strong signal of the willingness of many people to contribute to intact ecosystems and to try out new forms of community and community spirit.

4.7 **Integration into agriculture and rural development**

4.7.1 The nature and extent of the integration of GI will depend to a great extent on the outcome on the Common Agricultural Policy (CAP) and the EU's Multiannual Financial Framework (MFF) for 2014-2020. Political agreements have been reached in both areas. The EESC has repeatedly advocated a multifunctional agriculture and function-orientated direct payments. With a view to the forthcoming agricultural reform and a more environmental orientation for European agriculture, direct payments have, inter alia, been made dependent on the achievement of higher environmental standards and the identification of environmental priority areas. The EESC will study the decisions on the CAP reform in detail and compare them with its own positions.

4.7.2 The EESC expects to see further environmental connectivity services provided in the framework of the European Agricultural Fund for Rural Development and in particular the agricultural environment measures. The EESC has repeatedly pointed to the interest in nature and biotope conservation among a large proportion of farmers and foresters. Many pilot projects have convincingly demonstrated that a partnership-based approach can achieve positive effects. The EESC calls for both extensively and intensively farmed land which is farmed in a resource-efficient way to be included in GI projects. Preference should be given here to voluntary, integrated production measures. Here too it is important to unlock the potential of GI for rural development in social and demographic terms.

4.8 **Linking GI to other policy areas**

4.8.1 **Integrated management of waters and coasts** should make the most effective possible use of the potential of Green Infrastructure[4].

4.8.2 The deterioration of ecosystems in the EU is above all a consequence of increasing land-take, land fragmentation and more intensive use of land. GI can counter this trend. It should be supported by more intensive European **soil protection policy** measures, including legislative steps, to reduce land-take[5].

4 EESC opinion on *Maritime spatial planning and integrated coastal management*, (not published yet in O.J.)

5 EESC opinion on the *7th Environment Action Programme* (point 4.2.2), OJ C 161, 6.6.2013, pp. 77-81.

4.8.3 GI acts as a carbon sink, especially by protecting natural soils. The general **climate policy** objective of developing the European economy into a low-carbon, bio-based economy makes healthy ecosystems even more important. The many uses of GI should be given special attention in the Member States' strategies for adaptation to climate change.

Brussels, 16 October 2013

The president
of the
European Economic and Social Committee

Henri Malosse

REFERENCES

PUBLICATIONS, DOCUMENTS AND LINKS

AGENCIA EUROPEA DEL MEDIO AMBIENTE

http://www.eea.europa.eu/es

2011, ***Green infrastructure and territorial cohesion. The concept of green infrastructure and its integration into policies using monitoring systems***, EEA Technical Report, No 18, Oficina de publicaciones de la Unión Europea, Luxemburgo.

AGMA - ASSOCIATION OF GREATER MANCHESTER AUTHORITIES

http://www.agma.gov.uk/commissions1/planning_housing_commision/our-work/integrated-infrastructure-strategy-for-gm/green-infrastructure/index.html

2008, ***Towards a Green Infrastructure Framework for Greater Manchester: Full Report***.

AHERN, JACK

2007, **"Green Infrastructure for Cities: The Spatial Dimension"**, en NOVOTNY, V. & BROWN, P., *Cities of the Future: Towards integrated sustainable water and landscape management*, IWA Publishing, Londres, pp. 267-283.

AYUNTAMIENTO DE VITORIA-GASTEIZ

http://www.vitoria-gasteiz.org

http://www.vitoria-gasteiz.org/cea

http://www.vitoria-gasteiz.org/anilloverde

2010, ***Plan de Lucha contra el Cambio Climático de Vitoria-Gasteiz 2010-2020***. . Agència d'Ecologia Urbana de Barcelona para el Ayuntamiento de Vitoria-Gasteiz.

2010, ***Plan de Indicadores de Sostenibilidad Urbana de Vitoria-Gasteiz***. Agència d'Ecologia Urbana de Barcelona para el Ayuntamiento de Vitoria-Gasteiz.

2012, ***El Anillo Verde Interior. Hacia una Infraestructura Verde Urbana en Vitoria-Gasteiz***. Documento de Trabajo. Centro de Estudios Ambientales. Ayuntamiento de Vitoria-Gasteiz.

2012, ***250.000 árboles y arbustos para el Anillo Verde. Tejiendo la Infraestructura Verde de Vitoria-Gasteiz.*** Documento de Trabajo. Centro de Estudios Ambientales. Ayuntamiento de Vitoria-Gasteiz.

2013, ***Estrategia para la Conservación de la Biodiversidad en el municipio de Vitoria-Gasteiz.*** Borrador. Centro de Estudios Ambientales. Ayuntamiento de Vitoria-Gasteiz.

BENEDICT, MARK A. & MCMAHON, EDWARD T.

2006, ***Green Infrastructure: linking landscapes and communities***, Island Press, Washington.

2002, ***Green Infrastructure: Smart Conservation for the 21st Century***, The Conservation Fund, Washington.

BUREL, FRANCOISE & BAUDRY, JACQUES

2002, ***Ecología del Paisaje: Conceptos, métodos y aplicaciones***. Ediciones Mundi-Prensa, Madrid/ Barcelona.

CITY OF PORTLAND - BUREAU OF ENVIRONMENTAL SERVICES

http://www.portlandonline.com/bes/

2010, ***Portland's Green Infrastructure: Quantifying the Health, Energy, and Community Livability Benefits***, Portland.

CIWEM - THE CHARTERED INSTITUTION OF WATER AND ENVIRONMENTAL MANAGEMENT

http://www.ciwem.org

2010, ***Multi-functional Urban Green Infrastructure***, CIWEM Briefing Report, Londres.

COMISIÓN EUROPEA

http://ec.europa.eu/environment/nature/ecosystems/index_en.htm

http://www.green-infrastructure-europe.org/

AGENCIA EUROPEA DEL MEDIO AMBIENTE

http://www.eea.europa.eu/es

2011, ***Green infrastructure and territorial cohesion. The concept of green infrastructure and its integration into policies using monitoring systems***, EEA Technical Report, No 18, Oficina de publicaciones de la Unión Europea, Luxemburgo.

AGMA - ASSOCIATION OF GREATER MANCHESTER AUTHORITIES

http://www.agma.gov.uk/commissions1/planning_housing_commision/our-work/integrated-infrastructure-strategy-for-gm/green-infrastructure/index.html

2008, ***Towards a Green Infrastructure Framework for Greater Manchester: Full Report***.

AHERN, JACK

2007, ***"Green Infrastructure for Cities: The Spatial Dimension"***, en NOVOTNY, V. & BROWN, P., *Cities of the Future: Towards integrated sustainable water and landscape management*, IWA Publishing, Londres, pp. 267-283.

AYUNTAMIENTO DE VITORIA-GASTEIZ

http://www.vitoria-gasteiz.org

http://www.vitoria-gasteiz.org/cea

http://www.vitoria-gasteiz.org/anilloverde

2010, ***Plan de Lucha contra el Cambio Climático de Vitoria-Gasteiz 2010-2020***. . Agència d'Ecologia Urbana de Barcelona para el Ayuntamiento de Vitoria-Gasteiz.

2010, ***Plan de Indicadores de Sostenibilidad Urbana de Vitoria-Gasteiz***. Agència d'Ecologia Urbana de Barcelona para el Ayuntamiento de Vitoria-Gasteiz.

2012, ***El Anillo Verde Interior. Hacia una Infraestructura Verde Urbana en Vitoria-Gasteiz***. Documento de Trabajo. Centro de Estudios Ambientales. Ayuntamiento de Vitoria-Gasteiz.

2012, ***250.000 árboles y arbustos para el Anillo Verde. Tejiendo la Infraestructura Verde de Vitoria-Gasteiz.*** Documento de Trabajo. Centro de Estudios Ambientales. Ayuntamiento de Vitoria-Gasteiz.

2013, ***Estrategia para la Conservación de la Biodiversidad en el municipio de Vitoria-Gasteiz.*** Borrador. Centro de Estudios Ambientales. Ayuntamiento de Vitoria-Gasteiz.

BENEDICT, MARK A. & MCMAHON, EDWARD T.

2006, ***Green Infrastructure: linking landscapes and communities***, Island Press, Washington.

2002, ***Green Infrastructure: Smart Conservation for the 21st Century***, The Conservation Fund, Washington.

BUREL, FRANCOISE & BAUDRY, JACQUES

2002, ***Ecología del Paisaje: Conceptos, métodos y aplicaciones***. Ediciones Mundi-Prensa, Madrid/ Barcelona.

CITY OF PORTLAND - BUREAU OF ENVIRONMENTAL SERVICES

http://www.portlandonline.com/bes/

2010, ***Portland's Green Infrastructure: Quantifying the Health, Energy, and Community Livability Benefits***, Portland.

CIWEM - THE CHARTERED INSTITUTION OF WATER AND ENVIRONMENTAL MANAGEMENT

http://www.ciwem.org

2010, ***Multi-functional Urban Green Infrastructure***, CIWEM Briefing Report, Londres.

COMISIÓN EUROPEA

http://ec.europa.eu/environment/nature/ecosystems/index_en.htm

http://www.green-infrastructure-europe.org/

2007, ***Towards a Green Infrastructure for Europe: Developing new concepts for integration of Natura 2000 network into a broader countryside***, EC study ENV.B.2/SER/2007/0076.

2009, "**Hacia una infraestructura verde para Europa**", en *Natura 2000*, Nº27, pp. 3-7.

2009, ***Towards a green infrastructure for Europe: Integrating Natura 2000 sites into the wider countryside***, Proceedings of the European Commision workshop, Bélgica.

2010, ***LIFE building up Europe's green infrastructure: Addressing connectivity and enhancing ecosystem functions***, Oficina de publicaciones de la Unión Europea, Luxemburgo.

2010, ***Una infraestructura verde***, Oficina de publicaciones de la Unión Europea, Luxemburgo.

2013. ***The Benefits of Green Infrastructure***. Janez Potocnik. EESC-CoR Conference on Green Infrastructure. Bruselas, Bélgica.

COM(2009), 147 final, ***Libro Blanco. Adaptación al cambio climático: Hacia un marco europeo de actuación***, Comunicación de la Comisión al Parlamento Europeo, al Consejo, al Comité Económico y Social Europeo y al Comité de las Regiones, Bruselas.

COM(2011), 17 final, ***Contribución de la política regional al crecimiento sostenible en el marco de Europa 2020***, Comunicación de la Comisión al Parlamento Europeo, al Consejo, al Comité Económico y Social Europeo y al Comité de las Regiones, Bruselas.

COM(2011), 244 final, ***Estrategia de la UE sobre la biodiversidad hasta 2020: nuestro seguro de vida y capital natural***, Comunicación de la Comisión al Parlamento Europeo, al Consejo, al Comité Económico y Social Europeo y al Comité de las Regiones, Bruselas.

COM(2013) 249 final, ***Green Infrastructure (GI) – Enhacing Europe´s Natural Capital***, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions, Bruselas.

COM (2013) 155 final, "**Technical Information on Green Infrastructure (GI)",** Commission Staff Working Document accompanying the document *Green Infrastructure (GI) – Enhacing Europe´s Natural Capit*al, Bruselas.

CONSERVATION FUND - GREEN INFRASTRUCTURE

http://www.conservationfund.org/green_infrastructure

COST-EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

http://www.cost.eu/domains_actions/tud/Actions/C11

2005, ***Green structure and urban planning. Final Report***, Oficina de Publicaciones de la Unión Europea, Luxemburgo.

EVALUACIÓN DE LOS ECOSISTEMAS DEL MILENIO DE ESPAÑA

http://www.ecomilenio.es/sobre-eme

2012, ***Evaluación de los Ecosistemas del Milenio de España. Conservación de los servicios de los ecosistemas y la biodiversidad para el bienestar humano***. Informe Final. Fundación Biodiversidad. Ministerio de Agricultura, Alimentación y Medio Ambiente del Gobierno de España.

FARIÑA, JOSÉ

2013, "**Zonas Verdes para el siglo XXI"**. Informe Especial incluido en el documento *Vitoria-Gasteiz European Green Capital 2012. Propuestas para la Reflexión*. Centro de Estudios Ambientales. Ayuntamiento de Vitoria-Gasteiz.

LANDSCAPE INSTITUTE

http://www.landscapeinstitute.org/policy/GreenInfrastructure.php

2009, ***Green Infrastructure: connected and multifunctional landscapes,*** Londres.

2011, ***Local Green Infrastructure: Helping communities make the most of their landscape***, Londres.

LIVERPOOL CITY COUNCIL - PLANNING SERVICE

http://www.greeninfrastructurenw.co.uk/liverpool

2010, ***Liverpool Green Infrastructure Strategy, Technical Report.***

2010, ***Liverpool Green Infrastructure. Action Plan.***

MILLENIUM ECOSYSTEM ASSESSMENT

http://www.unep.orgmaweb/es/index.aspx

2005, ***Ecosystems and Human Well-Being: Synthesis***. General Synthesis. The United Nations Environment Programme.

NATIONAL CAPITAL COMMISION - GREEN BELT - OTTAWA

http://www.canadascapital.gc.ca/planning/master-plans/Green Belt-master-plan

NATURAL ECONOMY NORTH WEST

http://www.naturaleconomynorthwest.co.uk/

2009, ***Putting the green in the grey. Creating Sustainable Green Infrastructure: A Guide for Developers, Planners and Project Managers.***

NATURAL ENGLAND

http://www.naturalengland.org.uk

2009, ***Green Infrastructure and the Urban Fringe: Learning lessons from the Countryside In and Around Towns programme.***

NEW YORK CITY - ENVIRONMENTAL PROTECTION

http://www.nyc.gov/html/stormwater/nyc_green_infrastructure_plan.shtml

http://www.nyc.gov/html/planyc2030/html/home/home.shtml

2010, ***NYC Green Infrastructure Plan: A Sustainable Strategy for Clean Waterways***, Nueva York.

NORTH WEST GREEN INFRASTRUCTURE

http://www.greeninfrastructurew.co.uk

2008, ***North West Green Infrastructure Guide.***

ONTARIO

- MINISTRY OF MUNICIPAL AFFAIRS AND HOUSING

http://www.mah.gov.on.ca/Page187.aspx

PHILADELPHIA WATER DEPARTMENT

http://www.phillywatersheds.org/

2009, ***Green City, Clean Waters. The City of Philadelphia's Program for Combined Sewer Overflow Control. A Long Term Control Plan Update***, Filadelfia.

REFERENCES

PICTURE SOURCES

American Society of Landscape Architects
Ayuntamiento de Vitoria-Gasteiz, Departamento de Urbanismo
Ayuntamiento de Vitoria-Gasteiz, Departamento de Medio Ambiente y Espacio Público
Ayuntamiento de Vitoria-Gasteiz. Centro de Estudios Ambientales
Ayuntamiento de Vitoria-Gasteiz. Jardín Botánico de Olarizu
Diputación Foral de Álava
El Correo Español, Edición Álava. (20.10.2012)
Euve. Tecnalia
Flickr/Alejandro Espinosa, CC license
Flickr/cliff1066™, CC license
Flickr/Joachim S. Müller, CC license
Flickr/Lynne Hand, CC license
Flickr/M. Martín Vicente, CC license
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Gobierno Vasco. URA Agencia Vasca del Agua
Google Maps
Google Maps 45º
Google Maps Street View
Patrick Blanc
Philadelphia Water Department
Portland Bureau of Environmental Services
Quintas Fotógrafos
Rooftop Farms.org
The High Line.org
Washington State University

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