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GRETA - “GReen infrastructure: Enhancing biodiversity and ecosysTem services for territoriAl development”

Applied Research

Euroregion Nouvelle Aquitania- Euskadi-Navarre

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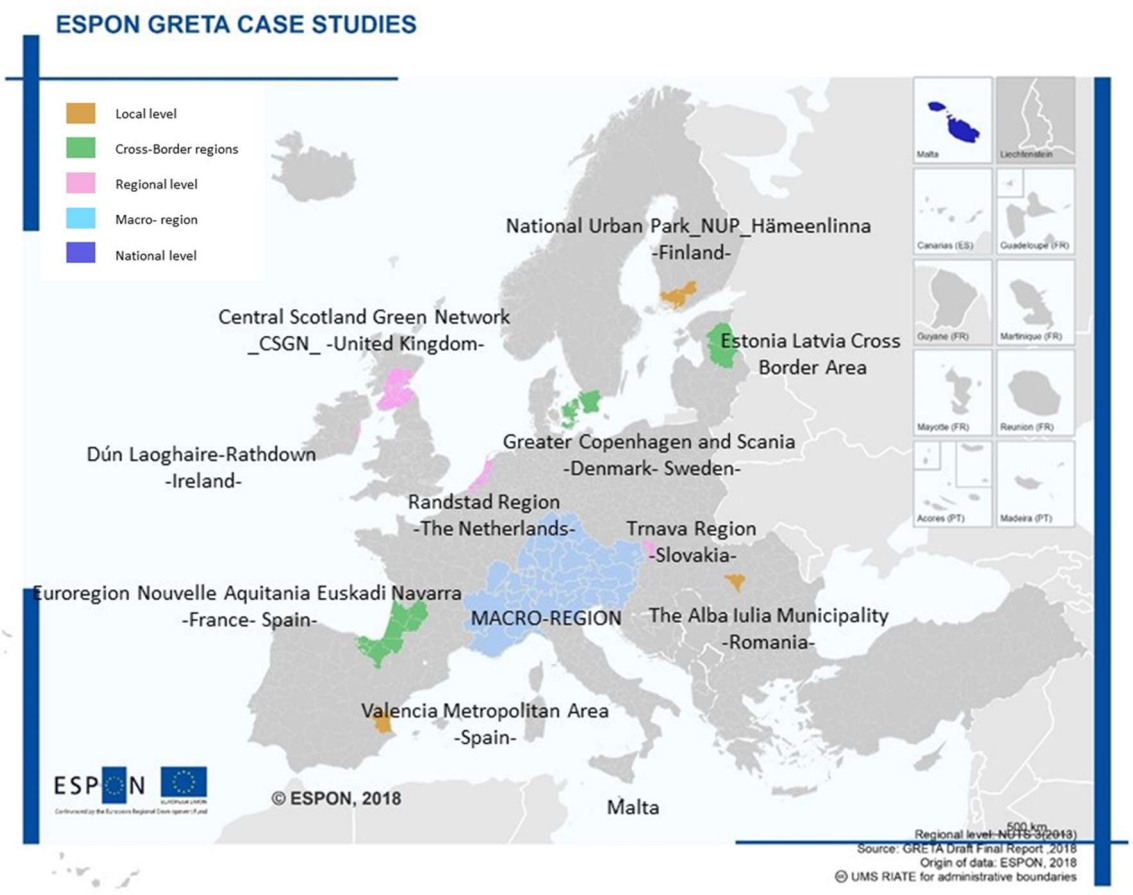
Abbreviations

EC	European Commission
ES	Ecosystem Services
ESPON	European Territorial Observatory Network
EU	European Union
GI	Green Infrastructure
NUTS	Nomenclature of Territorial Units for Statistics
EGTC	European Grouping for Territorial Cooperation

1 Introduction

GRETA investigated 12 case studies that represented different spatial, institutional and governance settings and that ranged from urban centres to rural countryside. The case studies served to:

i. gain knowledge on implementation factors, drivers and constraints in different planning systems and territorial realities;
ii. gain insights on the use and applicability of economic methods in decision making; and
iii. gather knowledge for policy and practice as input and inspiration for the policy recommendations.



Map 1. ESPON GRETA selected case studies

Method

The activities undertaken at the case study level incorporated a combination of desk-based analysis alongside online questionnaires and pre-structured interviews to key actors in each of the case study areas, including: (i) decision and policy making representatives; and (ii) those involved in designing, planning, implementing and managing green infrastructure (GI).

A series of three consultations were developed to gather relevant information from case studies on different aspects of GI spatial analysis, policies, planning and implementation. The consultation process was seen as a combined approach of an online survey and or a telephone interview (which used the survey questions as the basis) with stakeholders to facilitate getting good engagement and to address any clarifications needed.

Consultation A – Economic Valuation

The questionnaire included 20 questions structured in 2 main parts. The first part aimed at understanding the current use and awareness of valuation methods by respondents while the second part aimed at identifying their perceived barriers and interest of using such methods. We used a mix of open-ended and closed-ended questions to combine comparable results as well as qualitative material; respondents also had the possibility to comment on their responses. Analysis of Consultation A is described in Annex III-C.

Access to Consultation A

https://survey.tecnalia.com/limesurvey/index.php/214247?lang=en

Consultation B – Characterising green infrastructure and ecosystem services characterisation

The objective of this consultation was to identify good practice guidelines, opportunities and challenges that could be useful for a variety of regions and cities. Responses to Consultation B were used to assess the usefulness of the GRETA methodology, a methodology specifically developed to delineate and map the main green infrastructure (GI) elements and their multifunctionality, as well as identifying their capacity to support three main policy domains: Biodiversity, Climate Change and Disaster Risk Reduction, and Water Management. Questions in Consultation B were designed to help us gain further insight into the enabling factors that exist in different regions and cities. We also sought to gather information on the challenges and barriers that may compromise the implementation of GI. The final set of questions focused on identifying the general benefits and potential synergies and trade-offs associated with GI projects.

The maps produced for Consultation B in the GRETA project were intended to provide a starting point for discussion about the applicability of the GRETA methodology from European to local application. As such they did not aim to be a substitute for the maps or other planning material that already exist at local case study level nor were they aiming to characterize the GI on regional or local level. They were not developed to be used as an output from case study levels.

The landscape elements in the maps are produced based on standardized European data sets with a minimum mapping unit of 25ha (i.e. CORINE Land Cover 2012) – smaller geographical features are not depicted. The Consultation B aimed at finding the gaps between datasets produced at the European level and any other data sets produced at regional and local scales.

Access to Consultation B

https://survey.tecnalia.com/limesurvey/index.php/614564?lang=en

Consultation C - Analysis of governance, policy and financial frameworks

The successful implementation of green infrastructure (GI) projects requires a combination of governance structures, integrated policies and financial support. This consultation therefore aimed to investigate the governance systems in place in each case study area in order to determine how policies and policy makers enable the implementation of GI projects in the case study areas.

Responses to Consultation C aimed to help us identify: (i) how much funding (money and personnel) is currently used for GI in the case study regions; (ii) if this funding is sufficient for implementing and maintaining GI; and (iii) the main sources of funding (public tax-based funds, private investments, NGOs or others). Consultation C also examined whether policies compliment or conflict with GI and assesses policy makers' knowledge needs for making full use of GI development potential.

Access to Consultation C

https://survey.tecnalia.com/limesurvey/index.php/129674?lang=en

The content in this report is based on a mixed-method approach. The results presented are interpretations of semi-structured interviews, responses to a questionnaire on national policy and planning, responses to three consultations (Consultation A, B and C) via email, document analysis of plans and strategies (via desk-based analysis), and statistics.and spatial analysis using GIS resulting from the GRETA project. For all case studies, telephone conversations (and for some cases face-to-face meetings i.e. Copenhagen and Scania, Alpine region, Euroregion Aquitania- Euskadi-Navarra) allowed the completion of the consultations B and C.

The respondents who have contributed to this case study are people working in different institutional levels in public administration and researchers..

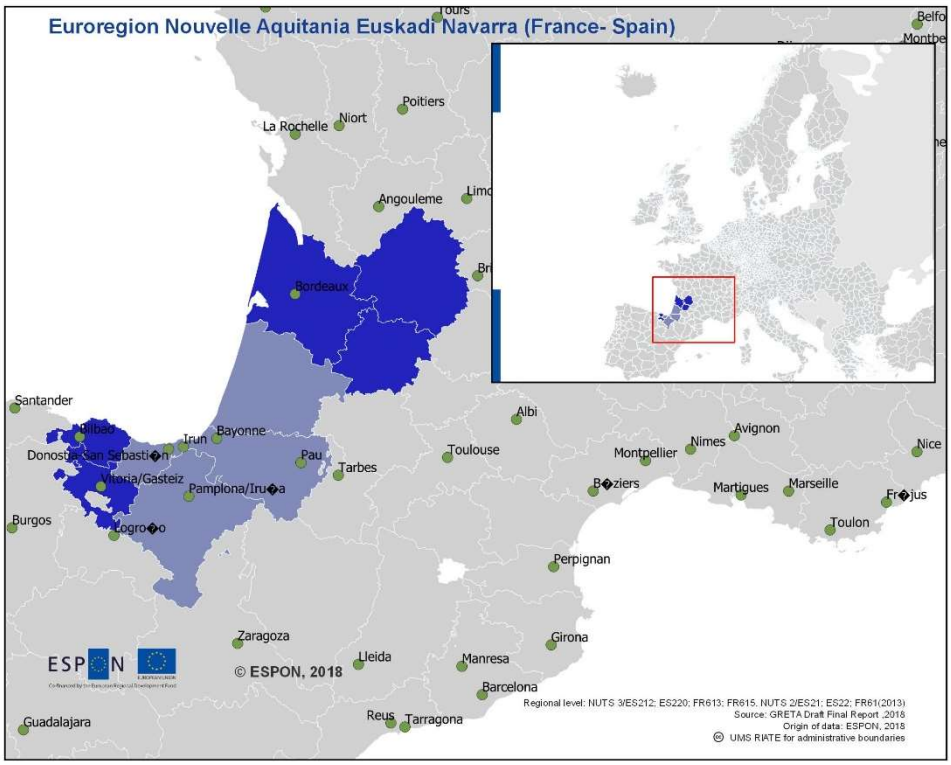
2 (Geographic) description of the Euroregion Nouvelle Aquitania- Euskadi-Navarre

2.1 The Euroregion in figures

The **Euroregion Nouvelle Aquitaina-Euskadi[1]-Navarre** is a cross-border and transnational area that represents an equally challenging and interesting case study, where, not only different biogeographic areas are present, but also different governance and planning systems and policy frameworks. It encompasses the following NUTS2 areas: ES21 País Vasco (Basque Country) and ES22 Comunidad Foral de Navarra and FR61 Aquitaine.

The Euroregion originally Aquitaine-Euskadi was created in 2011 under the terms of European Regulation (CE) nº 1082/2006, being enlarged in March 2016 with the incorporation of Navarre.Nowadays the official name of the European Grouping for Territorial Cooperation (EGTC) is Euroregion Nouvelle Aquitaine- Euskadi- Navarre. The Euroregion is the fourth of its kind to be registered as an EGCT, along side: Pyrénées-Méditerranée, Tirolo-Alto Adige-Trentino and Galicia-Norte du Portugal.

For the purposes of GRETA project, the focus is particularly placed to a smaller area within the Euroregion: ES212 Gipuzkoa; ES220 Navarra; FR613 Landes; and FR615 Pyrénées-Atlantiques (see Map 2).



Map 2. Euroregion Nouvelle Aquitaine- Euskadi-Navarre

[1] Euskadi is the name of the Basque Country Regipn in basque language- In this document we will use Basque Country Region and Euskadi to refer to the NUTS2 ES21 indistinctly.

This a cross-border and transnational area, has 98.686 km² and a population of 8,5 million inhabitants.

Regarding unemployment, there is a greater incidence in the Euroregion, due to the higher rate of unemployment registered in Euskadi (14.9%), since the unemployment rate in Aquitaine (10%) is slightly lower than the European average (10.4%). The Europe 2020 Strategy establishes as an objective that, by the year 2020, at least 40% of the population between 30 and 34 years of age be qualified with a higher education diploma or equivalent. It is noteworthy that the Euroregion far exceeds this objective, reaching 50.3% already in 2012.

The analysis of living conditions in terms of poverty risk and life expectancy shows more favorable conditions in the Euroregion than the European average. Specifically, the life expectancy of men in the Euroregion amounts to 79.4 years, compared to a European average of 77.4 years, while that of women is 86.3 years compared to a European average of 83.2 years. The are has poverty risk rate significantly lower than the European average.The active population is about 2.5 million people, which means an activity rate of 72%, similar to the European average (71.7%).

2.2 Territorial challenges in the Euroregion

Two very different territorial models could be then observed (the Atlantique territorial model of Navarre behaves quite similar than Aquitania) with very often opposite trajectories, which complement each other to offer very favourable territorial (and socio-economic) figures and trends above the European average.

The main territorial challenges identified in the Euregion[2] could be summarized bellow:

- A very present border.
- Absence of an adequate infrastructures that ensures connectivity (in time and cost) constitutes a very important obstacle for cooperation; inefficiencies due to lack of coordination of transport and mobility infrastructures; massive resource of road freight transport; high opportunity costs linked to the delay in the high-speed rail connection; littoral-beaches-natural spaces-forests are a powerful driving element of cooperation; opportunities in emerging activities linked to natural resources; well-preserved natural heritage; tourism sector growing in both regions, etc.
- The territory is, after all, the base on which all human activities are based. In the Euroregional geographical area, there are obvious needs for cooperation to ensure that it is preserved and exploited under criteria of sustainability.

[2] *Results of the SWOT analysis carried out in the context of the Strategic Development Plan for the Euroregion 2014-2020. Source: http://www.aquitaine-euskadi.eu/en*

- Demographic dynamics that press:
    - Natural growth of the population very reduced (relatively low birth rate and high mortality). Little growth potential future and the need to attract immigrants
    - Less number of young people and more people than the European average. Demographic aging, higher dependency rate and social needs
    - Low growth rate of the active population (although in Euskadi the activity rate is higher than the European average) and aging of it in the three regions.

3 The GI network and its potentialities for territorial development in the Euroregion Nouvelle Aquitania-Euskadi-Navarre

3.1 What is the approach to GI and Ecosystem Services

3.1.1 Approaches to GI and ES in the national level: France and Spain perspectives

In France, a strategy for green infrastructure (GI) was adopted in 2010. In compliance with the European Union's Green Infrastructure Strategy (EC, 2013), this green and blue frame (trame verte et bleue, TVB) is composed of cores and corridors of green and blue areas. The national strategy, is a biodiversity conservation tool which aims to maintain and strengthen the functionality of natural environments into planning and development projects. Further, the national strategy (TVB, 2018a) acknowledges that the French green and blue infrastructure does not exclude or replace but rather interacts with other environmental policies, such as policies for protected areas, Natura 2000, and national action plan for endangered species. In addition to environmental objectives such as biodiversity conservation, the green and blue frame also aim to achieve social and economic objectives by maintaining the services provided by biodiversity and maintained habitats. Such as, wood energy production, benefits for agriculture, improvement of water quality, flood regulation, improving the living environment and hosting recreational activities.

In addition to the European GI strategy (2013), the French green and blue frame is also a response to other European policy processes. For instance, the Pan-European Ecological Network, and the EU 2011-2020 Biodiversity Strategy, which the Mapping and Assessing Ecosystem and their services are a vital part of (MAES 2017). The first phase of the MAES in France, called EFESE for “Evaluation française des écosystèmes et des services écosystémiques”, was finished in 2016. The ongoing work, which will be synthesized in a report during 2018, includes reviews of the six ecosystem types in France (forest, wetlands, urban, agro-ecosystems, mountains and marine ecosystems) and studies on ecosystem services in relation to these ecosystems. (MAES, 2017). BISE (2018) acknowledge that a national biodiversity law was established in 2016.

In Spain there is not a specific strategy for GI at the national level and the European Union's Green Infrastructure Strategy (EC, 2013) has not really been adopted yet. However GI is

incorporated in existing national legislation. The law on Natural Heritage and Biodiversity (33/2015) aims to guarantee ecological connectivity and the restoration of Spanish territory. It is stated to impose a general obligation for the autonomous regions to take measures aimed at ensuring environmental connectivity, while various regional laws focus on connectivity of natural areas (European Commission, 2015). Under this Law the elaboration of a national strategy on Green Infrastructure, Connectivity and Ecological Restoration is an on-going process in Spain.

The concept of GI as in the case of France is also very inclusive. The objective (of the Strategy) to mark the guidelines for the identification and conservation of the elements of the territory that make up the green infrastructure of the Spanish, terrestrial and marine territory, and that the territorial and sectoral planning carried out by the Public administrations allow and ensure ecological connectivity and the functionality of ecosystems, mitigation and adaptation to effects of climate change, the defragmentation of areas Strategies for connectivity and ecosystem restoration gradients.

The in-place policy regime for GI in Spain is in compliance with the Bird and Habitat Directive (within which the Natura-2000 network is an important tool for implementation). Other GI-related policy processes relevant for Spain is for instance the EU-wide initiative on Mapping and Assessment of Ecosystems and their Services (MAES), to be done 2014-2020.

3.1.2 Green infrastructure approach in the Strategic Development Plan 2014-2020 in the Euroregion

GI is not recognized *per se*/ as such as an specific prioirity of the Strategic Development Plan 2014-2020 for the Euroregion, although it is implicitly addressed in the thematic objectives towards a sustainable territory. The following objectives and priorities for investment could be highlighted that contribute to the enhancement of GI.

Territorial Objective 5 - Promote adaptation to climate change and prevention and risk management

5a. Support for investment for adaptation to climate change, including ecosystem-based approaches.

5b. The promotion of investment to face specific risks, guaranteeing a resilience in the face of catastrophes and developing disaster management systems.

Territorial Objective 6 - Conserve and protect the environment and promote resource efficiency

6c. The conservation, protection, promotion and development of the natural and cultural heritage.

6d. The protection and restoration of biodiversity and soil, and the promotion of ecosystem services, including through Natura 2000 and ecological infrastructures.

6f. The promotion of innovative technologies for the improvement of environmental protection and the efficiency of resources in the sector of waste and the water sector, and with respect to soil or to the reduction of air pollution.

6g. Support for the industrial transition towards an efficient economy in the use of resources, the promotion of ecological growth, ecological innovation and environmental impact management in the public and private sectors.

3.1.3 The vision and pproach of each individual region

Nouvelle Aquitaine

The term "Trame Vert et Blue" (TVB) is used following the obligations introduced by the Grenelle 2 law of 2010, in France[3]. The Trame Vert et Blue results from the identification of "biodiversity reservoirs" and "ecological corridors" ensuring connections between these reservoirs. The TVB is integrated into the Regional Territorial Plans (the so-called SCoT) with an strong conservation and protection approach.

The definition criteria of the TVB is ecological, the object is to preserve the biodiversity of the territories.The TVB is defined in the SCoT in a schematic way (or in a fine way, because the regulation authorizes the SCoT to be precise on the geographical delimitation of the TVB, if the risks justify it). Once defined the TVB is integrated as mandatory in the urban planning instruments (Local Plan of Urbanism, PLU). Here, they are zoned on the plot and classified as "natural" according to the PLU nomenclature. Within these natural areas urbanization and constructions is extremely constrained, even prohibited in some areas.

Theoretically, to the extent that the ecological balances are not questioned, recreational activities could be developed, as well as agricultural and livestock activities: what is actually the case in the South of the Basque Country Region . But the urban planning instrument, the PLU does not allow framing the management practices. The management objectives or guidelines may be included in the SCoT's Document of Orientations and Objectives (DOO), but they will not be binding. Similarly, the projects of urban planning documents (PADD) can highlight multifunctional issues related to their green and blue areas (recreational, climate regulator, flood protection, living environment, ...).

The "blue frame" dimension related to aquatic environments is also present in water management t documents (SAGE). Finally, the public institutions of intercommunal cooperation (EPCI) of more than 20,000 inhabitants must elaborate a Climate Air Territorial Energy Plan that deals, among other things, with a climate change adaptation strategy based partly on the

[3] http:// www.trameverteetbleue.fr/presentation-tvb/qu-est-ce-que-trame-verte-bleue/definitions-trame-verte-bleue?language%3Den=fr

ecological dimension. They should theoretically take over the TVB defined on the territories and identify or clarify their role in adapting to climate change.

Euskadi- Basque Country Region

Euskadi follows the EC concept of GI and it constitutes an important element of the territorial model of the Basque Country Spatial Planning Guidelines - currently under revision November 2017[4]. The Spatial Planning Guidelines are a regulation that defines the Territorial Strategy of the Basque Country.The Basque Government has exclusive competence on spatial planning. This regulatory instrument, provides the main guidelines and derived operational plans that manage the Basque territory, giving coherence to the different sectoral and local decisions that are made about it. Chapter 4.2 of the Guidelines is particularly devoted to Green Infrastructure and Ecosystem Services.

The Spatial Planning Guidelines with regards to GI states that:*"The extension of urbanized areas in a small territory and with location and morphology constraints such as the Basque Country region, has led to an evident territorial fragmentation. That is why it is proposed to introduce the concept of "green infrastructure" in planning, as a way to avoid and recompose fragmentation at different scales, and at the same time as an opportunity to preserve and strengthen the valuable services offered by ecosystems".*

In the Spatial Guidelinies it is stated that the GI allows the adoption of a more integrated approach to land use, improving global connectivity and mitigating the effects of fragmentation created by "grey" infrastructures, increasing the permeability of the territory, and identifying multifunctional areas where they favor compatible land uses that support healthy and diverse ecosystems. This integrated approach to land use increases the benefits that independent isolated actions could offer, even if they share the same objectives, and allows us to move towards a more resilient territory, capable of dealing with unexpected natural events.

This introduces the natural systemic vision through territorial planning and thus becomes visible in planning, scope and territorial management of areas of natural interest and their interrelation, all aimed at assessing the services provided by ecosystems.

The GI at the level of the Basque Country consists of the following elements:

1.- The spaces protected by their environmental values and that have their own protection figures.

2.- The ecological corridors that link these spaces and also spaces of adjoining territories provided that the corridors are located within the Basque Country.

[4]http://www.euskadi.eus/contenidos/informacion/revision_dot/es_def/adjuntos/Aprobacion%20incial/Diligencia_aprob_inic_%20revi_DOT.pdf

3.- Other spaces of multifunctional natural interest that have notable environmental values at the level of the Basque Country, do not have an approved protection figure.

4.- The rivers and their zones categorized as protection of surface waters, the RAMSAR wetlands and all the water masses inventoried in the region.

5.- The territorial and urban planning will extend the network incorporating relevant spaces in their respective scales, in any case, they must take into account other protected spaces that are not in the green infrastructure at the level of the Basque Country.

The Ecosystem Services Evaluation and Mapping for the Basque Country has been developed by the Unesco Catedra of the University fo the Basque Country[5]. The results of this study have consitute a remarkable input to inform the delineation of the GI and its relevance in the Spatial Planning Guidelines.

Despite the conceptual definition of the GI and its delineation at the regional level, incorporated in the Spatial Planning Guidelines, there are no clear criteria or operational recommendations for the adequate management and regulation of land uses in the GI.

Some respondents pointed out that the lack of clear regulations generates situations of conflict and contradiction between coincident sector policies and sector planning instruments (i.e. coastal, rivers, agroforestry) and the regulation of undeveloped land in urban planning instruments.

Besides, also highligthed the fact that there are protected spaces that have more than one protection figure generating conflicts and restrictions for the use and management of those spaces. It is suggested that they only have one figure to avoid these contradictions.

It is also suggested that the Spatial Planning Guidelines in the Basque Country, take up the proposal on the presceptiveness of incorporating into the comprehensive spatial planning instruments, not only measures to mitigate the impact on the GI network but more important to incorporate those measures of positive action to improve rural and natural spaces, ie. Reforestation programs, maintenance of landscapes and agricultural activities, landscape restoration.

Following other examples such as the neighbour region Navarra, it was highlighted also that in order to reach a proper management and regulation of the land uses in the GI, there is a need for a normative instrument on GI (Regional sectoral planning instrument for coordination of natural resources) with operative character, whose regulations would i) establish and regulate the uses, activities and ecosystem and natural resources that are to be protected and enhanced, and ii) would foresee and resolve possible contradiction with other sectoral planning instruments.

[5] https://www.miteco.gob.es/es/ceneam/recursos/quien-es-quien/unescoupv.aspx

Navarre

The concept of GI in Navarre goes beyond the concept of protected area or ecological corridor; and takes a qualitative step in that it affects all the scales and takes into account multiple services that the territory offers. It integrates various issues such as the environment, risk prevention, health, the economy or leisure, among others. In this context, the landscape concept (as in the European Landscape Convention) constitutes a very relevant component of the GI concept and approach in Navarre.

Navarre is currently in the process of elaborating a Regional Plan for Green Infrastructure very much aligned with the EC concept and approach and with an strong emphasis on connectivity and also multifunctionality and the role of such a network for the valuation of services offered by ecosystems.

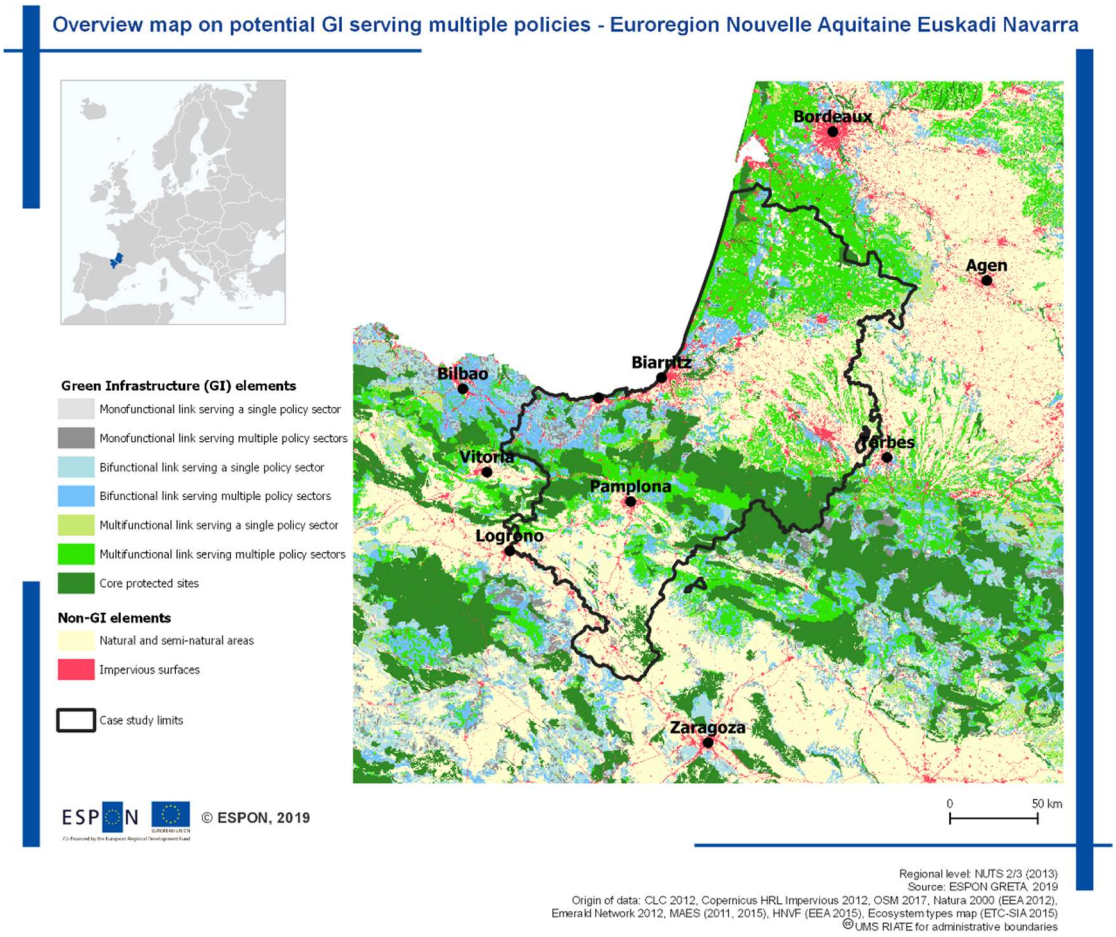
The aim of the Regional Plan for GI is plan a coherent network within Navarre as well as with the bordering territories, defined at scale of 1: 25,000 based on the following elements:

- Nature 2000
- Territorial Connectivity- corridors
- River Zones and Wetlands
- Road Network
- Natural and Singular Landscapes
- Vegetation of Special Interest
- other seminatural spaces

This plan will also define specific objectives and develope guidelines for its integration in regional, urban and sectorial planning instrument, for regulate management and land use restriction in the GI.

3.2 Benefits of GI and ecosystem services for smart, sustainable and inclusive territorial development

This section describes the potential GI network as delineated by the GRETA project in the Euroregion, analyses the identied synergies and trade-offs between the ES provided by the GI network and its potential for serving several policy objectives, and provides a relative analysis of the region with the general EU patterns.



Map 3. Euroregion Nouvelle Aquitaine Euskadi Navarra GRETA case study. Overview map on potential GI serving multiple policies.

The Potential GI covers more than half of the area of all the NUTS3 included in the Euroregion, except Lot-et-Garone where GI is relatively low (16% of the total area).

- Most of the Euroregion is well covered by GI, serving large part of the territory and probably giving balanced access to most of the population.
- The exception is Lot-et-Garone where the main constraint is the low percentage of protected areas. There is potential to increase the GI area.

In terms of the integration of protected areas, the Euroregion shows a high level of connection of hubs (protected areas). Protected areas represent medium to low share of the total GI.

- Potential GI is well structured in the sense that it ensures connectivity of protected areas. Therefore, GI could be a valuable instrument to ensure connectivity in the whole region.
- On the other hand, the share of protected areas inside GI is mid to low. This suggests that on average 60% of the potential network at the regional level is composed of unprotected landscape elements that deserve special attention by stakeholders in order to not be lost into urban or intensively managed agricultural areas.

The Euroregion provides a balanced provision of services in relation to the three policies.

- In terms of multifunctionality all the area is capable to support the three policy objectives, although not attaining its maximum. The current potential is good, but there is room for improvement.

In relation of the synergies and trade-offs between the ES, most of the ES have a synergistic relationship or neutral. However, there is a strong trade-off between gross nutrient balance and soil erosion control, and gross nutrient balance with net ecosystem productivity in Gipuzkoa (ES212) and Pyrénées-Atlantiques (FR615).

- There is potential for improvement of multifunctionality with a (limited) multiplier effect, i.e. improving one ES can enhance other ES at the same time.
- There is an exception in Gipuzkoa and Pyrénées-Atlantiques were the trade-offs may be related to regional/local patterns of nitrogen deposition which are not counterbalanced with the capability to provide this ES. (see Annex II-B for more details). Additional information will be required to evaluate the exact impact of nitrogen deposition and implications for another ES.

At the city level, the cover of urban green areas is lower than 60%, which positions these cities within the lowest range in Europe. This is compensated by larger coverage of GI in peri-urban areas, where Natura 2000 contributes up to 20% of the area of GI.

- All the cities have experienced a slight decrease of urban green areas between 2006 and 2012, with the most extreme case in Pamplona.
- There is a need to ensure a good connection between the core city and the peri-urban areas since the available GI inside the city is on the lower range in the European context, and has been decreasing between 2006 and 2012.
- On the other hand, the GI on the peri-urban areas already provide a good connection with GI at landscape level due to the contribution of Natura 2000 sites present in the region. Therefore, the links between protected areas need to be ensured in order to have a functional GI.

It could be concluded that the region has good conditions for the implementation of a multifunctional GI network at landscape level; there is a large cluster of hubs (protected areas) well connected with the potential to provide several ES. However, some trade-offs related to nutrients balance need to be analysed to better understand the potential negative impact of nitrogen deposition. GI at landscape level is well connected with peri-urban areas. However, green urban areas at the core city have been decreasing and there is a need to ensure a good connectivity between the city and peri-urban area.

4 Capacity of GI network to meet the demand of ES in the Euroregion Nouvelle Aquitania- Euskadi-Navarre

4.1 Economic valuation methods in decision making

According to the stakeholders consultated, economic valuation methods has not been used to evaluate the benefits of the GI and ES, neither used in GI decision making.

The Strategic Environmental Impact Assessment procedure that goes with every plan, cost benefit analysis may have in some cases incorporated cost benefit analysis, but generally speaking economic valuation methods has not been used to evaluate the benefits of the GI and the ES.

4.2 What do GRETA analysis on ES supply and demand reveal?

GRETA have explored the capacity of GI network to meet the demand of ES where:

ES supply is defined as the capacity of ecosystems to provide ES, irrespective of them being used.

ES demand can be defined as the amount of a service required or desired by society in a given location and time. This demand depends on several factors such as socio-economic conditions, cultural/behavioural norms, technological innovations, availability of alternatives, among others.

	ES Supply – benefits provided	ES Demand -specific definitions	Approaches to quantify Demand
Regulating services	Benefits are provided by maintaining desirable environmental conditions	Amount of regulation needed to meet target conditions	Reduction of risk
Cultural services	Benefits are provided by experiencing the natural environment	Desired total use (if rival service) or individual use (if nonrival service)	Preference and values // direct use
Provisioning services	Benefits are derived from consumption of final goods	Amount of goods obtained per unit of space and time or per capita	Direct use // Consumption

Table 1 Relation between benefits provided by ES supply and the corresponding ES demand definitions and operationalisation approaches. Adapted from: Villamagna et al., 2013 and Wolff et al., 2015.

Demand for **regulating services** can be defined as the amount of those environmental conditions that ensure the provision of a desired regulation level. A reduction of risk approach has been usually applied to quantify demands for these services. Vulnerability to potential changes in regulating services may provide valuable insight into society's needs capturing main linkages from the socio-ecological system.

Demand for **cultural services** has been mostly assessed by preferences and values for attributes of certain landscapes, ecosystems or heritage sites. Preferences may be either quantified through stated preferences that relate to the desired level of services, or through

revealed preferences (a proxy for the actual use of the service). Demand for cultural services has also been assessed by the direct use of a specific ecosystem, e.g. for recreation. This can be quantified by total visitor days per year or the number of fishing/hunting licenses, the presence of tourists or accounting the accessibility or proximity to recreational areas.

Demand for **provisioning services** has been quantified based on direct use and consumption of final. It is worthy to note that there is normally a spatial mismatch between the area where the service is provided and the area where the service is consumed, especially true for provisioning services. For this reason, interregional linkages have to be considered in order to properly identify faraway dependencies and assess magnitude of potential impacts

Following the proposed conceptual framework, we have combined demand and supply for each of the selected ES. The focus of this approach was to highlight those areas where there is a high demand and a low supply, i.e. those areas where GI is unable to cover the ES demand. It should be noted that these results are of a more exploratory nature in the whole GRETA project considering the following limitations:

- This is a research area still under development;
- There is need for a higher resolution of the data sources given the nature of the phenomena analysed;
- Balance between supply and demand is semiquantitative; and
- In some cases, a more sophisticated modelling would be required to have an appropriate quantitative balance.

Therefore, these results should be seen as illustration on how this demand and balance could be approached.

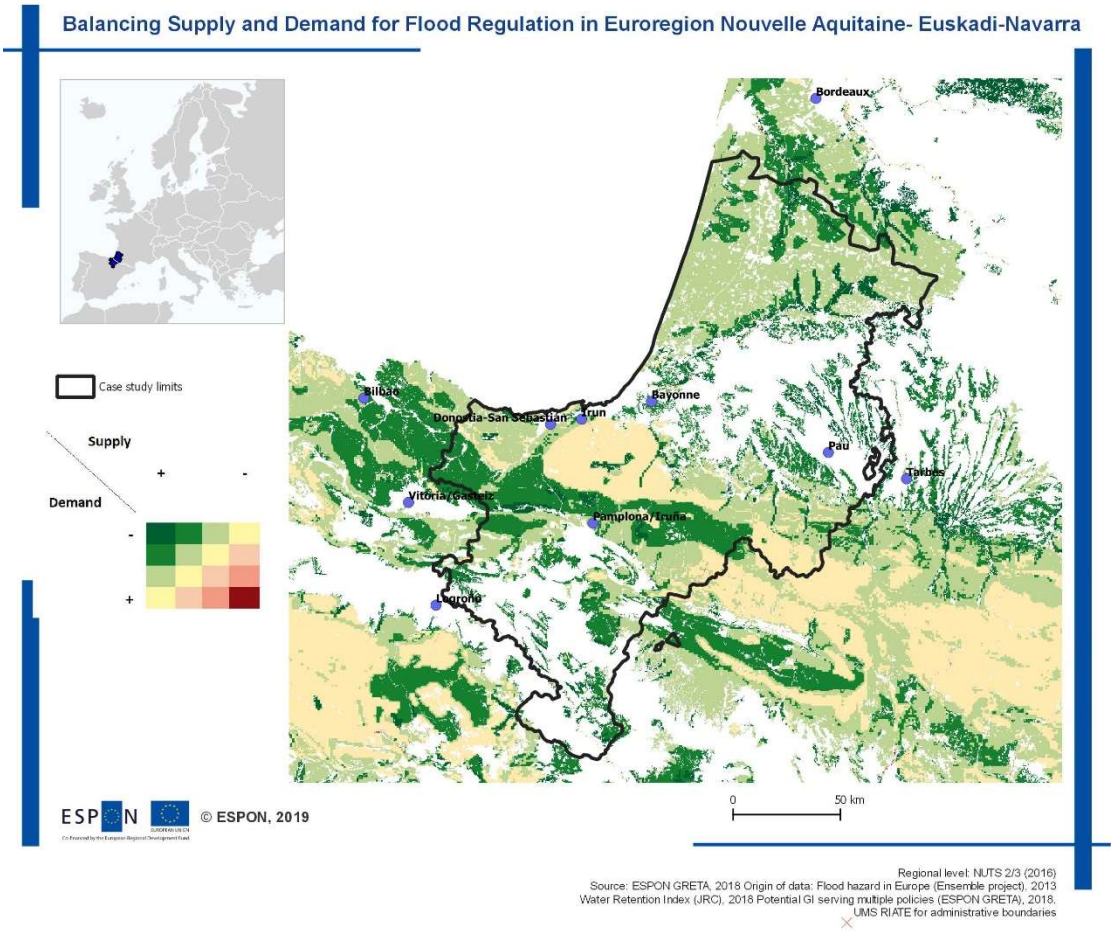
4.2.1 Analysis of supply and demand for Flood Regulation in the Euroregion Nouvelle Aquitania- Euskadi-Navarre

We have quantified demand for flood regulation based on the potential flood hazard. Exposure is described by the projected potential flooding risk[6]. On the other hand, benefits are provided by the water storage capacity of land to regulate floods. The supply for flood regulation is quantified by the Water Retention Index, which assesses the capacity of landscape to retain and regulate water passing through. This index is dimensionless and considers the role of interception by vegetation, the water-holding capacity of the soil, and the relative capacity of both the soil and the bedrock to allow percolation of water. The influence of soil sealing and slope gradient are additionally considered.

Map 4 presents a semi-quantitative analysis of the balance between supply and demand for flood regulation in the Euroregion. Dark green areas are those with maximum capacity of supply and where the demand is very low. These conditions are met in few areas, mainly in the north of Navarre, and some parts of France. The rest of the study area is mainly covered by green

[6] for the period 2011-2044 that results after applying the LISFLOOD model from the ENSEMBLES project

cells that could be considered areas where the balance tend to be positive, in the sense that the supply is slightly higher than the demand. In practical terms it would mean that improving or reinforcing GI with the objective of water retention will have a substantial benefit. The areas in yellow shows areas in a situation of stability- where supply meets the demand. i.e. Peñas de Aya, North Navarre towards Roncesvalles. This pattern could be partly explained due to the montanious topography of the area.



Map 4 Balancing Supply and Demand for Flood Regulation iin the Euroregion Nouvelle Aquitania-Euskadi-Navarre.

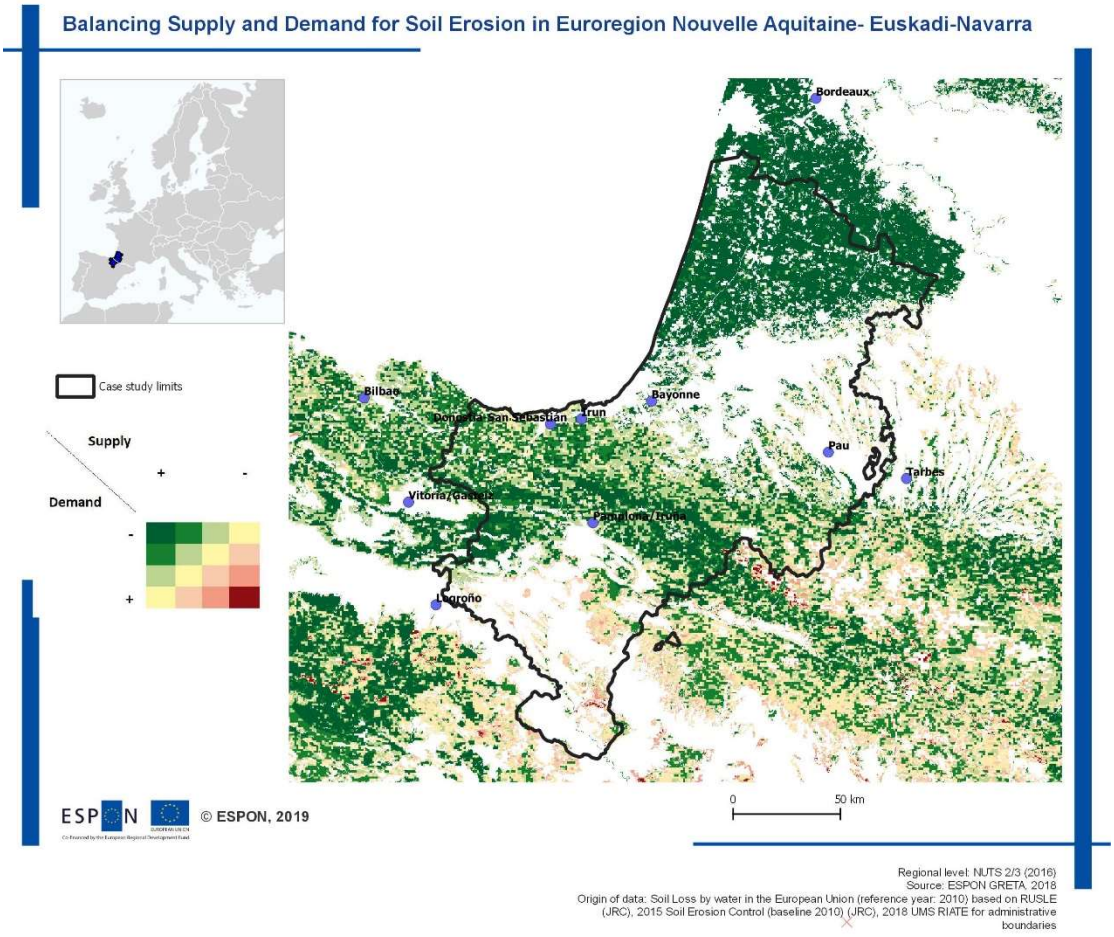
4.2.2 Analysis of supply and demand for Reducing Soil Erosion in the Euroregion Nouvelle Aquitania- Euskadi-Navarre

We have assessed the demand for the reduction of soil erosion by water producing a negative impact on several ES; in particular to the ones related to crop production, drinking water and carbon stocks. Soil erosion by water is mainly affected by precipitation, soil type, topography, land use and land management. Exposure is described by the soil loss rate[7] (t ha^{-1} yr^{-1}). Benefits are provided by the capacity of vegetation to control or reduce erosion rates. The

[7] as estimated by the modified version of the Revised Universal Soil Loss Equation (RUSLE) model

supply is quantified by the Soil Erosion Control dataset (JRC) that describes the capacity of ecosystems to avoid soil erosion.

From the resulting Map 5, we can observe a clear geographic north -south pattern, with the southern part of Navarre being the one where efforts for soil erosion control could be more effective.



Map 5. Balancing Supply and Demand for Soil Erosion in the Euroregion Nouvelle Aquitania- Euskadi-Navarre

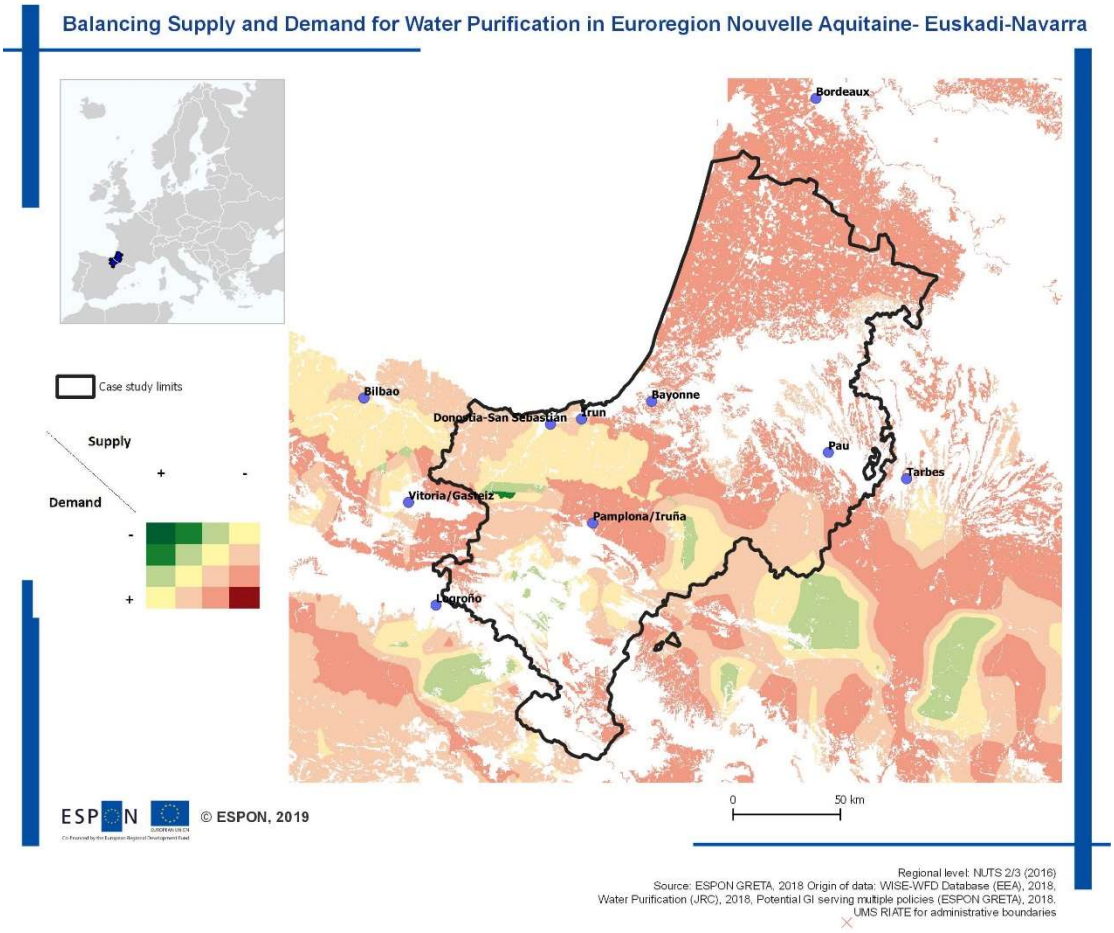
4.2.3 Analysis of supply and demand for Water Purification in the Euroregion Nouvelle Aquitania- Euskadi-Navarre

We have quantified demand for water purification based on the level of pollutants emitted to freshwater ecosystems by polluting sectors, primarily agriculture and waste water treatment discharges from industry and households. Exposure is described by mean annual concentration of nitrates in water [8](. The supply is quantified by the Water Purification dataset

[8] tonne per year) captured in monitoring stations and aggregated by rivers (the WISE-WFD database)

(JRC) that assesses the in-stream retention efficiency of ecosystems to dilute or degrade nutrients.

Resulting Map 6 shows that water pollution is still a big challenge and substantial increase on the provision of water purification is still required under current status in most of the study area, particularly in the nothestern part of Pamplona and most of the Pyrénées-Atlantiques

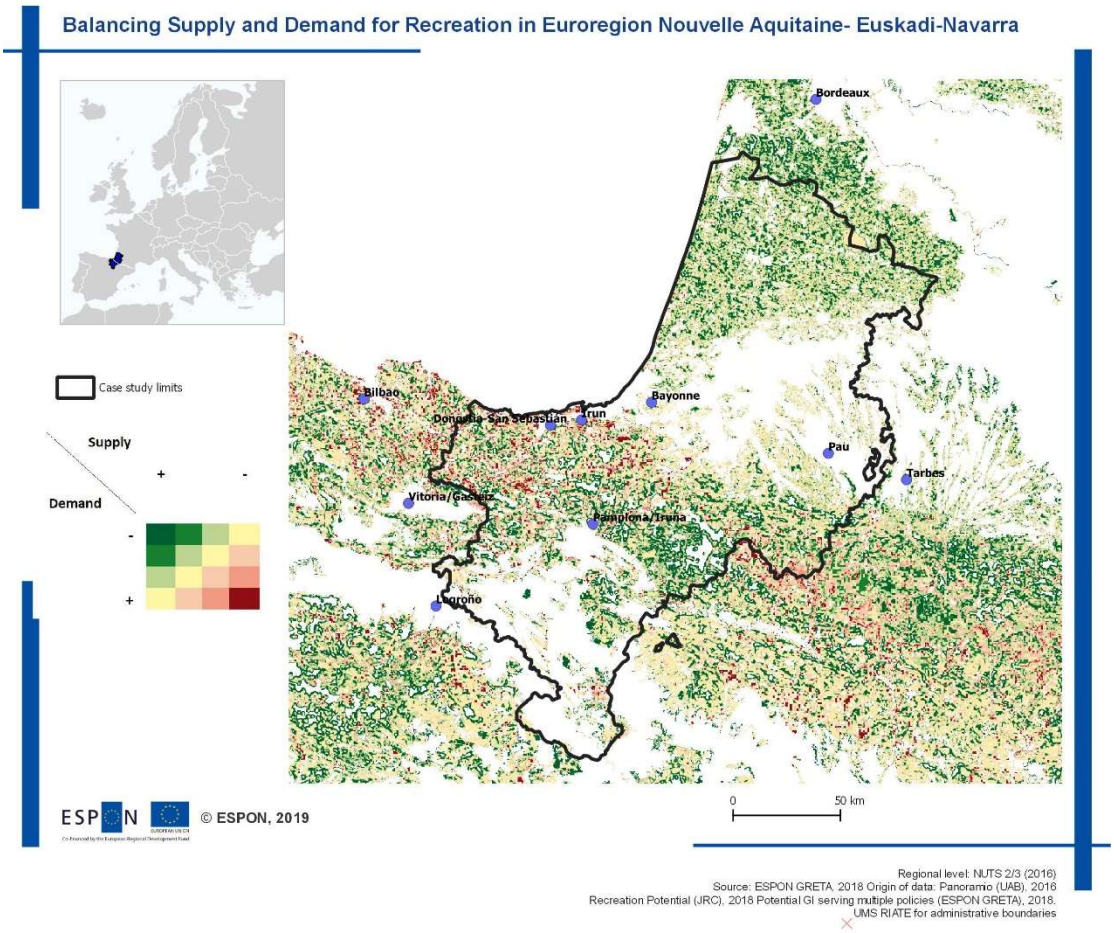


Map 6. Balancing Supply and Demand for Water Purification in the Euroregion Nouvelle Aquitania-Euskadi-Navarre

4.2.4 Analysis of supply and demand for Recreation in the Euroregion Nouvelle Aquitania- Euskadi-Navarre

We have described demand for recreation by means of a proxy for visitation. Recreation and tourism are important elements for national and local economies, that also contribute to other intangible benefits. Recreation directly depends on environmental attributes like species richness, diversity of habitats, and climate. The usability of crowd-sourced information by means of location photographs has already been shown to be as a reliable proxy for visitation rates to recreational sites. We have used the location of photographs in Panoramio as a proxy for landscape attractiveness for visitors. Demand is quantified by the number of pictures per square km. On the other hand, supply is described by the Recreation Potential dataset (JRC) that quantifies the potential for citizens for outdoor recreation.

The resulting Map 7 does show a clear pattern. The Pyrénées-Atlantiques show a more balanced pattern whereas a diversed mixed of areas where supply meet the demand together with areas in need for reinforcing supply are present in Guipuzkoa and North Navarre, that could be partly explained as direct link with population density. This deficit of recreational service (red cells showing low supply together with high demand) is also particularly relevant in some dispersed spots associated with heavy industrialized valleys.



Map 7. Balancing Supply and Demand for Recreation in the Euroregion Nouvelle Aquitania- Euskadi-Navarre

5 Governance practices, policy and planning instruments to implement GI and enhance ecosystem services in the Euroregion Nouvelle Aquitania- Euskadi-Navarre

5.1 Governance model and practices in the Euroregion

Institutions particularly from Aquitaine and Euskadi have been engaged in cooperative partnerships for more than 20 years.

The primary objectives of the EGCTs are:

- To foster a comprehensive,multi-faceted approach to cooperation
- To develop territorial cooperation in a European context
- To enhance the visibility of the 3 regions at a European level

Concretely, the EGCT can attract and manage European funding and, where appropriate, act as project commissioner on development programmes launched as part of this initiative. The EGCT will work constantly to attract further European funding for projects created by institutions and organisations from the Euroregion.

An Strategic Plan was approved for the period 2014-2020 which contains the Axes and Lines of Action where the activity of the Euroregion is framed. http://www.aquitaine-euskadi.eu/es/strategie/plan-strategique-2014-2020. Currently, the Strategic Plan is in the process of being updated, in order to adapt to the new configuration of the Euroregion.

The Euroregion tries to achieve the objectives set in the Strategic Plan 2014-2020 through different types of activities:

- Calls for cross-border cooperation projects. Two are made per year, worth 700,000 euros. The first session focuses on thematic axis 1 of the Strategic Plan "Euroregional Citizenship" and the second session on the thematic axis 2 "Economy of knowledge, innovation and business competitiveness".
- Strategic Partnerships: These are instruments to develop very specific cooperation activities with structural agents that develop the priorities of the Strategic Plan of the Euroregion.

The Euroregion itself develops projects to obtain funding from various European funding programs. In addition to the Aquitaine-Euskadi Common Fund, European Territorial Cooperation -as a tool of the Regional Policy of the European Union- has also served as a framework for joint actions and strategic exchanges between the agents of the Euroregion. The programs INTERREG V-A Spain-France-Andorra Program, better known as POCTEFA., SUDOE, Atlantic Area, INTERREG EUROPE or the respective Regional Operational Programs

have allowed the development of cooperation projects between Aquitaine, Euskadi and now also Navarre.[9]

The Euroergion is an example of shared governance and a democratic process which aims to foster citizenship and local involvement. The EGCT will work to get local elected officials on board, calling upon the expertise of key socio-professional players represented by means of consultation groups established in both regions.

5.2 Policy and Planning framework in Nouvelle Aquitaine

The Territorial Coherence Scheme, or "SCoT", is a global and strategic planning document. This reference document sets the vision of elected officials for the development of their territory, for the next 15 years.

The reference instrument for the GI is the Regional Scheme of Ecological Coherence (SRCE) of Aquitaine was adopted by order of the prefect of the region on December 24, 2015.

Since the law of 7 August 2015 on the New Organization territorial of the Republic (NOTRe) the French regions have the responsibility to elaborate, by summer 2019, a "regional scheme of planning, sustainable development and equality of territories" (Sraddet). It does not constitute an urban planning document, however, it will generate a real prescriptive scope for sub-regional communities and groups since its provisions will now be opposable to urban planning documents. Its added value lies above all in its transversal nature, and in its contribution to the territorial coherence of large regional groups. By bringing together various existing regional schemes, the Sraddet must make it possible to take more into account the interdependence of the thematic fields of intervention such as mobility, ecological coherence, climate and energy issues and waste prevention.

SRCE will be replaced by SRADDET once it is approved. While waiting, regional SRCE remain opposable but that of the Aquitaine region was canceled by decision of the Administrative Court in June 2017.Note that in this new format, the mapping of ecological continuities will not be opposable.

SCoT's TVB project deals only with biodiversity while integrating ecosystem services. On the other hand, associated with the project for the agriculture, it constitutes the agro-environmental frame which carries a more assertive economic dimensión.

In Nouvelle Aquitaine there are two ScoT:

SCOT Bayonne South Landes was approved on February 6, 2014.

SCOT did not integrate the elements of the SRCE. But this simultaneity of the output of these documents had been informally anticipated in the working groups. Theoretically, the SCOT had three years to comply, the SRCE, later canceled by judgment, did not survive that

[9] http://www.aquitaine-euskadi.eu/en

time.Similarly, the approval of SCOT coincided with the release of the RED GREEN study of Eurocity, delivered in mid-2015: this study benefited greatly from the knowledge elements developed within the SCOT BSL framework.

The SCoT BSL Green and Blue Trame Project was conducted on the basis of a specialist biodiversity study. Indeed, the elected officials wanted to have a specific study on the reality of natural environments. This made it possible to collect and compile existing naturalistic data, and to verify their relevance in the field. Biodiversity reservoirs linked to the dominant natural habitats have been defined. Ecological corridors were identified via a cartographic modeling method, before being validated and characterized by surveys. Two types of corridors have been identified: the main aquatic and terrestrial axes connecting the largest number of reservoirs, and the axes linking 1 or 2 reservoirs to corridors of local importance. A fine cartography represents them and specifies the sub-frame with which they are associated (heaths, forests, ...). Based on this study, the elected representatives chose a TVB integrating the agricultural dimension. They have thus defined a SCoT framework for agro-environmental basement

In terms of the governance, a technical committee was set up by the Union of the SCoT to monitor the implementation of the biodiversity study. It included state services (DDTM), departments, water agency, EPCI, a group of naturalist experts was also asked to provide its opinion on the study.The elected representatives had a presentation of the results once the study was finalized (in the Office of the SCoT as the study went on and in the Trade Union Council for the final results).The thematic commissions of elected representatives (including the environment committee) worked on the expression of the political project (setting the ambition).

SCOT Sud Pays Basque

It uses the elements of the SRCE de Aquitain, approved on October 19, 2015, and elements of the local diagnosis provided by the study Red Vert n of the Eurocity. This study, launched in 2011, has allowed

- to bring the necessary complements to the knowledge of the TVB of the local level, as required by the law (3 scale approach, national, regional (with the SRCE) and local are necessary),
- to use of a methodology separate from the SRCE because of the scale of study. However, the Red Vert results were compatible with those of the SRCE: they joined in many points those of the SRCE, but added to the identification of the "reservoirs", and especially of the "corridors" (on the latter aspect, the SRCE being too little developed to meet the local knowledge requirements of TVB)
- generally, to have results with more precise geographical contours.
- to have results consistent with the contiguous territories since the study territory was that of Eurocity.

On January 1st, 2017, the authority of Master of the South SCOT Basque Country, namely the Community of South Basque Country, disappeared with the creation of the Community of Agglomeration of the Basque Country (effects of the law NOTRe of the August 7, 2015). Following this, the revision of the SCOT had to stop.

This work did not produce any results. As part of the work carried out, the TVB could be presented to the SCOT Technical Committee composed of elected representatives, and described in a diagnostic document in a schematic form with regard to geographic take-up, and in a summary form as to the stakes involved. protection.

5.3 Policy and Planning framework in the Basque Country

Decreto Legislativo 1/2014, of April 15, Law of Conservation of Nature of the Basque Country,

https://www.boe.es/buscar/pdf/2014/BOE-A-2014-5595-consolidado.pdf

Spatial Planning Guidelines of the Basque Country- Currently under revision November 2017- Chapter 4.2 Green Infrastructure and Ecosystem Services- 12.1 Annex http://www.euskadi.eus/contenidos/informacion/revision_dot/es_def/adjuntos/Aprobacion%20incial/Diligencia_aprob_inic_%20revi_DOT.pdf

Integrated Territorial Plan for Donostia-San Sebastian (Donostialdea-Bajo Bidasoa) http://www.euskadi.eus/web01a2lurral/es/contenidos/informacion/ptp_donostialdea_aprob_2010/es_ptp/indice.html

Sector Territorial Plan for Wetlands

http://www.euskadi.eus/web01a2inguru/es/contenidos/informacion/humedales_capv/es_961/pts_humedales_c.html

Sector Territorial Plan for Agriculture and Forestry
http://www.euskadi.eus/informacion/plan-territorial-sectorial-agroforestal-de-la-comunidad-autonoma-del-pais-vasco/web01-a3lurral/es/

Sector Territorial Plan for the Protection and planning of coastal áreas
http://www.euskadi.eus/web01a3lurral/es/contenidos/informacion/pts_litoral/es_7559/indice_c.html

Sector Territorial Plan for the Protection and planning of rivers http://www.euskadi.eus/web01-a3lurral/es/contenidos/informacion/pts_rios_modif1/es_pts/indice.html

The Cimate Change Strategy 2050 -Gipuzkoa Klima 2050-, elaborated and approved in June 2018 by the Department of Environment and Hydraulic Works, includes in its goal number 3 for increasing the efficiency and resilience of the territory, an specific line of action 3.2: to promote a network of green infrastructure in Gipuzkoa and defragmenting the territory. This Action Line

promotes 4 specific actions that deal specifically with ecological corridors, degraded areas, etc.)[10]

As already highlighted in previous section, despite the existence of the guidelines and recommendations in relation to the consideration of GI in the different instruments of spatial planning and urban planning, also sector planning (agriculture and forestry, rivers, coast management, etc) - the implications for spatial planning (i.e. land use restrictions) is still perceived difficult and challenging. The need for a Sector Plan for Green Infrastructure in the region (or alternatively and enhancement of the current Sector Plan for Agriculture and Forestry) is under discussion.

5.4 Policy and GI planning framework in Navarre

Navarre Strategy for Conservation and Use Sustainable Biological Diversity (1999)

- Conservation based on the functional maintenance of the ecosystems
- Need for the establishment of a network of green ecological corridors that interconnect fragmented natural spaces.

Study for the delineation of a network of biological corridors in Navarra (1998)

- Proposal for a network of biological corridors that connects the Regional System of Protected Areas. Work scale 1: 25,000

Territorial Strategy of Navarre (2005)

- Points out the importance of ecological corridors for conservation of biodiversity in Navarra.

Integrated Spatial Plans (2011)

From a regional vision they define and protect as Special Areas Protection corridors and relevant spaces for connectivity. They constitute a tool for territorial analysis, based on the environmental functions and services of the environmental units, which allows to identify and integrate soils with value for connectivity to the different scales. It is the starting point from which lines of improvement are opened, of implementation of other management measures for the connectivity.

- Identify soils that are part of the GI at scale and protects them by establishing criteria of use for them and, in some cases, a specific regulation.
- Define environmental units that cover the entire territory, analyze the connection function of each one of them as well as other services that they offer, establish criteria to preserve these soils and its functions
- Establish Criteria and Measures for the Environmental Integration of the Plans, Programs and Projects, including maintenance and promotion of territorial connectivity.

Plans and Sectoral Projects of Supra-Municipal Incidence

[10]http://www.gipuzkoaingurumena.eus/documents/609968/3245320/20180611_EGLCC_2050_ES/4259eeb6-4a03-598e-0d75-96cd3de1e35e

- They define, specify and regulate relevant elements regarding territorial connectivity in the supramunicipal scale (Greenways, Fluvial Parks, Metropolitan Parks, ...).

Municipal urban planning

- Specify and regulate at the municipal level the soils that are part of the GI on a regional scale.
- They define, specify and regulate the relevant soils in terms of territorial connectivity at the municipal level.

Environmental Assessment procedures

- They specify measures in the Plans and Projects aimed at suppressing the points blacks and population sinks in relation to the improvement of ecological connectivity.
- The objective of the measures is to balance and harmonize the effects of grEy infrastructure with the consolidation of the GI of linear corridors on a territorial and district scale.
- To this end, measures such as ecoducts and wildlife passages of highway and water distribution channels, replacement of roads and their edges, groves, banks, separations of crop areas, etc.

6 Lessons learned and good practice examples from the Euroregion Nouvelle Aquitania- Euskadi-Navarre

6.1 Challenges for future GI development

The Euroregion shows a complex institutional framework that does not allow an easy and fluent cooperation: In the political perspective, the short term prevails and cooperation requires long periods of maturity. Asymmetric competencies and fiscal and different administrative cultures; insufficient culture of cooperation; absence of brand that hinders its identification and positioning;The figure of the EGTC remains relatively unknown; reduced number of shared projects; complex map of intervening agents; limited human, financial and technical resources in the EGTC

Despite some relevant examples for successful cooperation in the area (see Section 6.3), the lack of cooperation culture is still perceived and materialized in the following terms:

- difficulties in finding partners from the private sector in cooperation projects
- insufficient orientation towards the "counterpart": the collaboration with the "neighboring" region has not been a priority in the respective agendas
- diffuse typology of subsidized projects from the Euroregion Funds

The complex institutional framework and the lack of cooperative culture lead to an increase threat in territorial inequality.

The inadequate infrastructures and poor transportation services remains a challenge. There are still inefficiencies due to lack of coordination of transport and mobility infrastructures.

Besides, there are high opportunity costs of non-cooperation. For example the delay in the high-speed rail connection is a major obstacle when making the Euroregion a reality i.e.insufficient impulse of the train for the transport of goods in Euskadi.

6.2 Opportunities for GI through cooperation

The most powerful element for cooperation is the well-preserved and remarkable natural heritage which translate in such an attractive territory.

The Euroregion is a very interesting region as a space for the implementation of supranational cooperation initiatives.The RIS3, Smart Specialization Strategy, can be an opportunity for ooperation.

- The coastline, the beaches and the natural forests constitute a clear element of attraction and a potential tractor element of the cooperation.
- Opportunities arise in emerging activities linked to natural resources; well-preserved natural heritage; tourism sector growing in both regions, etc. with relevance of business clusters in the three regions.
- Existence of clear potential for cooperation in terms of risk management: (marine environments, risks, alerts and crisis management, research, etc.)
- Attention to environmental issues and collaboration around them are a key element in a context of preservation of the natural space in which there is a large shared coastline, many common problems, as well as possibilities for learning from experience and the know-how of both regions.
- The use of natural resources and, specifically, the use of existing potential in productive areas such as livestock, agriculture and the forestry sector -in production and marketing-, offers ample spaces for cooperation between Aquitaine and Euskadi On the other hand, the promotion of renewable energies is another of the shared challenges where the two regions have already shown complementarity.
- Tourism sector growing: Cooperation in tourism should contribute to valuing and making the common territory more attractive, always under parameters of high environmental quality.

6.3 Achievements in GI implementation

There is a political willing and great opportunity for a cross border collaboration between the 3 regions. If fact there are several actions with regards to sector policies: mobility, climate change and also lately in relation to GI. There is a previous successful example of such cross-border

collaboration: Red Vert project (2015) although it was focus on a smaller area- Eurocity Baionne- San Sebastian[11].

Financed by the European cross-border cooperation program POCTEFA and by the Aquitaine-Euskadi Eurogregion EGTC, the project of the Green and Blue Network of the Basque Eurocity aims to equip the territory with the Basque Eurocity of a true green and blue weave, that allows to the territorial collectivities to take into account the challenges of conservation of the biodiversity in their planning projects.

7 Policy messages and recomendations in the Euroregion Nouvelle Aquitania- Euskadi-Navarre

7.1 Policy messages

- In general terms there is an agreement on the ES analyzed in the case study areas, except for the category of "intensive agricultural land use" in areas of polyculture breeding in the south of France. So more detailed seems to be needed particularly for the agricultural sector.
- The spaces dedicated to agriculture are perceived to have much to contribute to water management, pollination, erosion control, soil protection, biodiversity, risk management, and even adaptation measures. to climate change. On the other hand, some of the delimited areas (basically mountain areas) have a greater impact than the three generalized management areas used in the analysis.
- Strenghen the role of the EGTC for boosting cooperation around environmental issues, mobility, preservation of natural areas, use and maintenance of natural resources and specifically the use of exising potential in productive areas such as livestock, agriculture and the forestry sector and promotion of renewal energies.
- The EGTC as an effective cooperation tool. The main aspects and potentialities of the EGTC[12]
    - Laboratory for multilevel governance, which makes the principle a reality of subsidiarity and contributes to the European construction of "bottom up". It can act as a facilitator to solve different border issues.
    - Territorial cohesion: Help achieve the objectives of the European Union, according to the Europe 2020 Strategy.
    - Tool for the effective implementation of the Europe 2020 Strategy, promoting competitiveness and sustainability in the regions of Europe.

[11] Proyecto RED VERT https://www.eurociudad.org/index.php?id=264

[12] http://www.aquitaine-euskadi.eu/en

- It allows for better cooperation between members and partners, since the EGTC, thanks to its solid structure, brings together all relevant partners in a single forum.
- It improves the visibility of territorial cohesion, since the EGTC allows greater visibility of territorial cooperation, including more legal power, political and economic thanks to this form of cooperation.
- Instrument for practical cross-border cooperation at the moment of provide local and public services;

The 3 regions have a detailed and well-developed delineation and mapping of GI and ES, accessible for informing decision making-

Very broad and inclusive approach to GI in the 3 regions- going beyond protected areas.

In Nouvelle Aquitaine: The term "green infrastructure" is not used. But instead the "Trame Vert et Blue" (TVB) following the obligations introduced by the Grenelle 2 law of 2010, in France. See http:// www.trameverteetbleue.fr/presentation-tvb/qu-est-ce-que-trame-verte-bleue/definitions-trame-verte-bleue?language%3Den=fr. The Trame Vert et Blue or Green and Blue Grid results from the identification of "biodiversity reservoirs" and "ecological corridors" ensuring connections between these reservoirs. GI is integrated into the Regional Territorial Plans (the so-called SCoT)

In the Basque Country (Euskadi) the GI is understood as an important element of the territorial model of the Basque Country Spatial Planning Guidelines.http://www.euskadi.eus/contenidos/informacion/revision_dot/es_def/adjuntos/Aprobacion%20incial/Diligencia_aprob_inic_%20revi_DOT.pdf. They include an specific chapter devoted to GI and Ecosystem Services as it is conceived as a network of connected areas (protected and non- protected, multifunctional, ecological corridors) to avoid and recompose fragmentation at different scales (regional, supramunicipal and local), and at the same time as an opportunity to preserve and strengthen the valuable services offered by ecosystems. Despite the existence of the guidelines and recommendations in relation to the consideration of GI in the different instruments of spatial planning and urban planning, also sector planning (agriculture and forestry, rivers, coast management, etc) - the implications for spatial planning (i.e. land use restrictions) is still perceived difficult and challenging. The need for a Sector Plan for Green Infrastructure in the region (or alternatively and enhancement of the current Sector Plan for Agriculture and Forestry) is under discussion.

In Navarre, the approach to GI is very much linked to the approach to landscape. The current Territorial Plans (POT) already incorporate guidelines for GI planning. The region is currently developing its Green Infrastructure Strategy that will be built on the already developed evidence based and existing plans for: core areas (Nature2000, natural parks

recognized by national law); spaces of singular or special interest, spaces for territorial connectivity (i.e. fluvial network,) environmental units based on the analysis of ES.

Cost-Benefit Analyses have not been used in the decision-making process.

7.2 Policy recommendations

The Euro-regional Development Strategy Aquitaine-Euskadi 2014-2020 should allow the connectivity of the citizens and the economic sector of the Euroregion, and also contribute to position this space in the European development axes, through the appropriate infrastructures and transport services.

However conflicts on land uses may arise and infrastrcutre development is seen in principle as a potential contraint for GI implmentation. Therefore awareness, evidence and good understanding on the benefits of the ES and the importance of implementing and maintaining a GI netowrk, is seen crucial towards a reponsible knowledge base decision making.

The GI concept and delineation in each regions should be as coherent as possible in the three regions to ensure operative management. The different criteria for land use regulations in the GI coming from diffent planning instruments may generate a constraints for the continuity and well funcionting of the network and ES provided.

The adequate governance of Euroregional cooperation is key to enable the success of the process. In this sense, the Eurorregion should encourage multilevel cooperation based on concrete projects, always respecting the principle of subsidiarity. Cross-border cooperation in the Aquitaine-Euskadi area responds to a scheme of "concentric circles" in which the EGTC, respecting the autonomy and competencies of the different actors, must enable the actions are coordinated and have a common logic.

TERRITORY AND SUSTAINABILITY: a shared, preserved, sustainable and attractive territory
The territory is finally the base on which all human activities are based and in the Euroregion there are obvious needs for cooperation to ensure that it is preserved and exploited under criteria of sustainability. In the first place, the strategy to be developed must allow the Euroregional space to be positioned in the European development axes, through the appropriate transport infrastructures. On the other hand, the promotion of renewable energies and cooperation initiatives in this area seem fundamental and have a great potential for development. Likewise, the attention to environmental issues and the collaboration around them are key in a context of preservation of the natural space in which there is a large shared coastline, many common problems and possibilities of learning from experience and the way of make of the two communities. Finally, cooperation in tourism should contribute to enhance

and make more attractive the common territory, always under parameters of high environmental quality.[13]

The action lines already defined within the Development strategy of the euroregion: 2014-2020 with reference to management of natural resources and ecosystem services could be translated into policy recommendations for GI implementation, in particular the ones reflected bellow:

A.L 3.2 To make the Eurorregion a reference space from the environmental perspective and developing an integrated transnational policy of spatial planning

Since the start of the Aquitaine-Euskadi- Navarre cooperation the initiatives have been numerous, both within the framework of the interregional fund and the European programs, but the operations are punctual, discontinuous in time and geographically limited, especially to the Pyrenean area.

The European regions of Aquitaine, Euskadi and Navarre present an exceptional natural heritage, on which a large part of their economic activity falls. However, they have to face strong real estate, tourism and traffic pressures, which requires special vigilance. The objective is to develop a shared environmental strategy on a Euroregional scale. On the other hand, and with regard to the field of spatial planning, a genuine spatial planning with a transnational approach has never been planned in the Euroregion (and not as a mere result of the juxtaposition, often artificial, of docu- ments). pre-made from one side and another). However, technical needs have imposed on operators, with greater or lesser difficulty, the need to guarantee the continuity of the main networks: communications (terrestrial, railway, etc.) or energy (electricity, gas, etc.).

A.L 3.2.1 To maintain and extend the initiatives already undertaken in the interior mountain space:

The internal environment is particularly sensitive from the ecological point of view as shown by the antiquity of the cross-border cooperation carried out. They stand out as priority in reltation to GI and ES

- Strengthen the water management policy, both in terms of sharing resources and fighting floods that are currently experiencing an upsurge in the face of climate change.
- Ensure the cross-border continuity of the Natura 2000 network and ecological corridors

A.L 3.2.4 To mitigate and adapt to climate change

The transversal nature of climate change requires action in all sectors, implying policies at the highest level of planning. But it is also of the utmost importance that international and national action be translated through concrete actions at the local and regional scales. The regional

[13] Development strategy of the euroregion: 2014-2020

public administrations have a great responsibility and opportunity to promote climate action in the area of their competences.

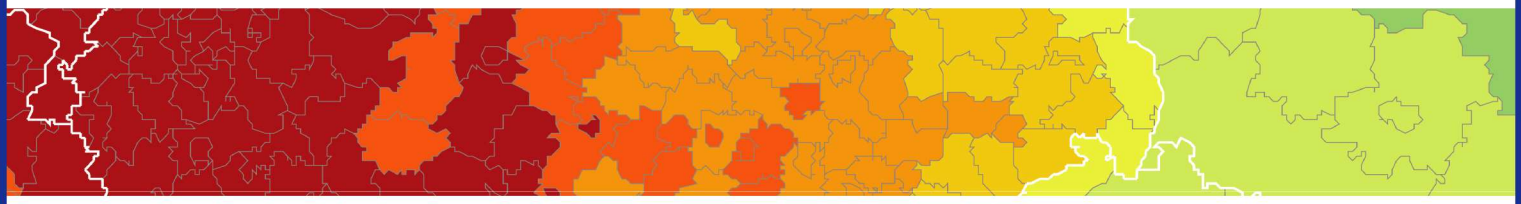
A.L 3.3 To value natural resources in a cooperative way

the enhancement of natural resources can be compatible with environmental concerns both in agriculture (livestock and agriculture), forestry or renewable energy, and adapting production models to the specificities and image of the Euroregion. The "greening" of the common agricultural policy reaffirms the will of sustainable development already announced in the European regional development programs. This should facilitate "multi-fund" interventions that are always complex to implement

8 Apendix

The below table give an overview of the stakeholder engagement.

Type of stakeholder	Workplace	Type of interaction	Date
Technical expert	Public administration	Face to face meeting in Baiona Audap	14/03/18
Technical expert	Public administration	Online meeting Nasuvinsa	10/03/18
Technical expert	Researcher/academia	Responses to Consultation A	04/09/18
Technical expert	Pubic administration	Responses to Consultation A	13/09/18
Technical expert	Pubic administration	Responses to Consultation A	28/09/18
Technical expert	Pubic administration	Responses to Consultation A	01/10/18
Technical expert	Pubic administration	Responses to Consultation A	02/10/18
Technical expert	Researcher/academia	Responses to Consultation B	04/09/18
Technical expert	Pubic administration	Responses to Consultation B	13/09/18
Technical expert	Pubic administration	Responses to Consultation B	17/09/18
Technical expert	Pubic administration	Responses to Consultation B	28/09/18
Technical expert	Pubic administration	Responses to Consultation B	01/10/18
Technical expert	Pubic administration	Responses to Consultation B	02/10/18
Technical expert	Pubic administration	Responses to Consultation C	20/09/18



ESPON 2020 – More information

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