Planning Strategies for a Resilient Urban Fringe in Three Medium-Sized Spanish Cities

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The fringes between urban areas and their surrounding territory usually concentrate strains of transformation and urban growth. Equally, planning strategies that promote the adaptation of urban development to the identity of territory contribute to the resilience of these urban fringes. This paper aims to illustrate this idea through the analysis of three of Spain's inland medium-sized cities during the period of intense urban growth that started in the eighties and concluded in 2008. The cases of Vitoria, Zaragoza, and Valladolid clearly show the negative consequences of an expansive urban model in their urban fringes, but also the alternatives that slowly emerged over this period. While the main urban planning tools enabled an unsustainable urban expansion, other planning proposals introduced an alternative approach that mitigated the effects of the real estate boom and have paved the way towards a better future: Vitoria with its green infrastructure, Zaragoza with its integrated development effort that took advantage of an International Exhibition and Valladolid with its coordinated planning. These different tools have a key feature in common: a deep comprehension of their territories as the strongest foundation for conducting urban development in more sustainable ways.

Keywords: resilience; urban fringe; medium-sized cities; landscape; contemporary urban history; Spain.

Introduction

Resilience in Urban Planning

The concept of urban resilience has usually been associated with the ability to cope with exceptional disasters, as 'the capacity of a system to absorb disturbance and still retain its basic function and structure'[1]. However, a broader perspective is emerging that stresses that cities are socio-ecological systems whose resilience depends on their capacity to continually change and adapt[2], 'rather than thinking of urban systems as being static, fixed, monumental, and isolated from nature'[3]. In this context, urban resilience becomes 'the ability of a system to maintain its identity in the face of and following disturbances'[4].

These conceptions of change, adaptation and preservation of local identity are linked to perceptions of nature and to territory, and they have enabled the emergence of an approach to urban resilience that focuses on the management of urban systems and their growth through planning strategies. These strategies aim at a smart adaptation of cities to the specific conditions of their territories while also satisfying the needs of their changing built environment. Within the institutional planning system that manages daily urban transformation and growth, these strategies have made cities more 'safe-to-fail'[5], since they have mitigated the failures or excesses of the system itself and its main tools during extraordinary periods of disturbance.

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[1] Walker, Salt and Raid, *Resilience Thinking*, 13.

[2] Folke, Carpenter, Walker, Scheffer, Chapin and Rockström, "Resilience Thinking."

[3] Pickett, McGrath and Cadenasso. "The Ecology of the Metacity", 486.

[4] Forman, *Urban Ecology. Science of Cities*, 75.

[5] Ahern, "From *fail-safe* to *safe-to-fail*."

The Urban Fringe and Medium-Sized Cities

This approach to resilience is very useful regarding those spaces where growth pressures are greater, such as urban fringes. This article illustrates this by presenting a study of three medium-sized Spanish cities where different planning strategies resulted in greater levels of resilience.[6] While large metropolitan areas are composed of a complex hierarchy of urban centralities that are spread over a largely urbanised territory, medium-sized cities have a clearly predominant urban core that grows towards a periphery made-up of diverse fragments and a few specialized centralities that are spread over a largely non-urbanised territory. A clear fringe around medium-sized cities can be perceived, where urban areas meet the countryside and its natural and productive spaces - that is, places where the sustainability of urban growth is likely to be at risk if it is not properly managed during periods of rapid transformation.

Beyond the morphological perspective first seen in the work of M. R. G. Conzen[7], the urban fringe concept has broadened to include further aspects such as building cycles[8] and land development processes, which have been addressed in pioneering Spanish studies of the post-Civil War period.[9] This article assesses the next decades, from the 1960s to the 2000s, when dynamic population growth in these three cities drove to urban expansion.[10] This process progressively accelerated as it was fostered by both national and local governments, and it resulted in each case in stronger growth pressure in the urban peripheries.

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[6] A previous version of this study was presented in the 17th IPHS Conference (Delft, 2016).
[7] Whitehand, "British Urban Morphology."

[8] Whitehand, "Urban fringe belts."

[9] Vilagrasa, "The fringe-belt concept."

[10] Batty, "Cities as Fractals", 48-9.

Urban Growth as a Risk: Three Ways to Achieve a More Sustainable Urban Fringe

A Context of Territorial Polarization and Growth Pressure in Urban Fringes

The contrast between major urban areas and medium-sized and small ones can be seen at a territorial level in Spain.[11] Following urban and economic policies that have guided development in recent decades, coastal areas have emerged as the most dynamic ones. As with Madrid, Spain's capital city, they have experienced a huge population growth in recent decades. Meanwhile, the population of Spanish inland regions has increased only slightly, and its relative weight compared to the whole has fallen drastically (Table 1).

	1960	1981	2011
Spain (50 provinces + Ceuta and Melilla)	30,582,936	37,679,686	46,815,994
Coastal Provinces + Madrid (23/50) + Ceuta and Melilla	18,949,440	26,545,238	34,270,182
Inland Provinces (27/50)	11,633,496	11,134,448	12,545,812

Table 1. Evolution of population (inhabitants) in coastal and inland Spanish provinces (1960-2011). Source: INE (Spain).

These inland regions have also experienced a clear phenomenon of territorial polarization. Due to the lack of economic competitiveness of rural areas[12], the population has steadily concentrated in a few medium and small cities. We can observe this phenomenon through three of these cities, Vitoria, Zaragoza, and Valladolid, and their respective regions or *Comunidades Autónomas*, namely País Vasco, Aragón, and Castilla y León. Between 1960 and 2011, the population of these three urban areas more than doubled, as did its relative weight compared to the population of their regions (Table 2).

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[11] Troitiño, "Las áreas urbanas", 28.

[12] González, "Spain", 485.

	1960		1981		2011	
País Vasco	1,371,654	-	2,134,763	-	2,185,393	-
Vitoria	69,849	5.09%	189,533	8.88%	240,754	11.02%
Aragón	1,105,498	-	1,213,099	-	1,344,509	-
Zaragoza	328,164	29.68%	599,289	49.40%	750,728	55.84%
Castilla y León	2,848,352	-	2,575,064	-	2,540,188	-
Valladolid	174,390	6.12%	345,238	13.41%	409,010	16.10%

Table 2. Evolution of population (inhabitants) in regions and urban areas and relative weight (percentage) of urban areas population compared to the population of their respective regions (1960-2011). Source: INE (Spain).

Throughout this period we can distinguish two main building cycles related to Spain's economic development: the first one occurred between 1960 and the end of the seventies and corresponded to the industrialisation of Spain; and the second one between the eighties and 2008. During the first one urban growth corresponded to population growth, but during the second cycle urbanisation occurred at a much faster rate, as was the case with Vitoria, Zaragoza, and Valladolid (Table 3).

	1987	2000	2006
Vitoria	2,446.54	2,966.37	3,695.17
Zaragoza	9,458.29	12,197.99	16,156.41
Valladolid	3,996.49	6,641.53	8,507.27

Table 3. Evolution of surface of urbanised areas in hectares (1987-2006). Source: CORINE Land Cover.

This phenomenon of expansive urban growth, which accelerated between 2000 and 2006 during the main period of Spain's real estate bubble, was planned rather than random. Following national policies that aimed to foster real estate market, and therefore economic growth, local governments encouraged the occupation of a large amount of peri-urban land. This strong growth pressure in urban fringes revealed how unsustainable it was in terms of territorial, economic, ecological, and social consequences when the real estate bubble burst in

2008.[13] After being transformed, many recently urbanised areas remain unused since then (Figure 1).

Figure 1. Salburua, on the outskirts of Vitoria (left), and Arcosur, on the outskirts of Zaragoza (right). Source: PNOA (Spain).

These new circumstances made all Spanish cities seek an alternative model. However, at the time when local governments used the urban planning system as a necessary tool to classify more land as fit to be urbanised and, thereby, enable this expansive model[14], other planning perspectives concerned with urban sustainability were already working inside this system in an alternative way.

The article focuses on Vitoria, Zaragoza, and Valladolid because they have clearly experienced the phenomena of territorial polarization and expansive growth that we have just described, but also because they offer three different planning strategies for managing urban fringes and reinforcing their resilience. These strategies, which we will explain below, were developed while the urban growth model prevailed, so they overcame an adverse context. In

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[13] Naredo, "El modelo inmobiliario español y sus consecuencias."

[14] Romero, Jiménez and Villoria, "(Un)sustainable territories", 471.

addition, although they were conceived outside of the main urban areas these strategies achieved international relevance. They therefore constitute valuable models for similar cities with similar challenges.

Vitoria and Green Infrastructure

Vitoria is a municipality composed of the central city, which accounts for 95% of its 240,000 inhabitants, and 58 rural settlements located in the peri-urban area. In the late eighties, this sparsely populated urban fringe was in a vulnerable situation. After the intense urban growth in the sixties and seventies, the remaining areas of ecological value were at risk from erosion, fire, landfills, gravel pits.

At that time, a number of environmental planners working for the municipality decided to rethink this peripheral crown from a pioneering and environmental point of view. First, they founded the Environmental Studies Centre of Vitoria as a separate department within the municipal structure. Secondly, they promoted a comprehensive project for the entire urban fringe of the city. The main proposal was the creation of a network of peri-urban green spaces as a way to restore and preserve natural spaces from urbanization and integrate them within the urban layout.

Nowadays, twenty-five years later, Vitoria's so-called 'Green Belt' has achieved many of its environmental goals. It comprises more than 700 hectares and connects six major parks: Armentia, Salburua, Zabalgana, Olarizu, Zadorra, and Errekaleor (Figure 2)[15], thereby becoming a real example of green infrastructure. Furthermore, Salburua was declared as a Wetland of International Importance by the Ramsar Agreement in 2000, and in 2004 this space along with River Zadorra was designated as an Area of Community Interest within the Natura 2000 Network.

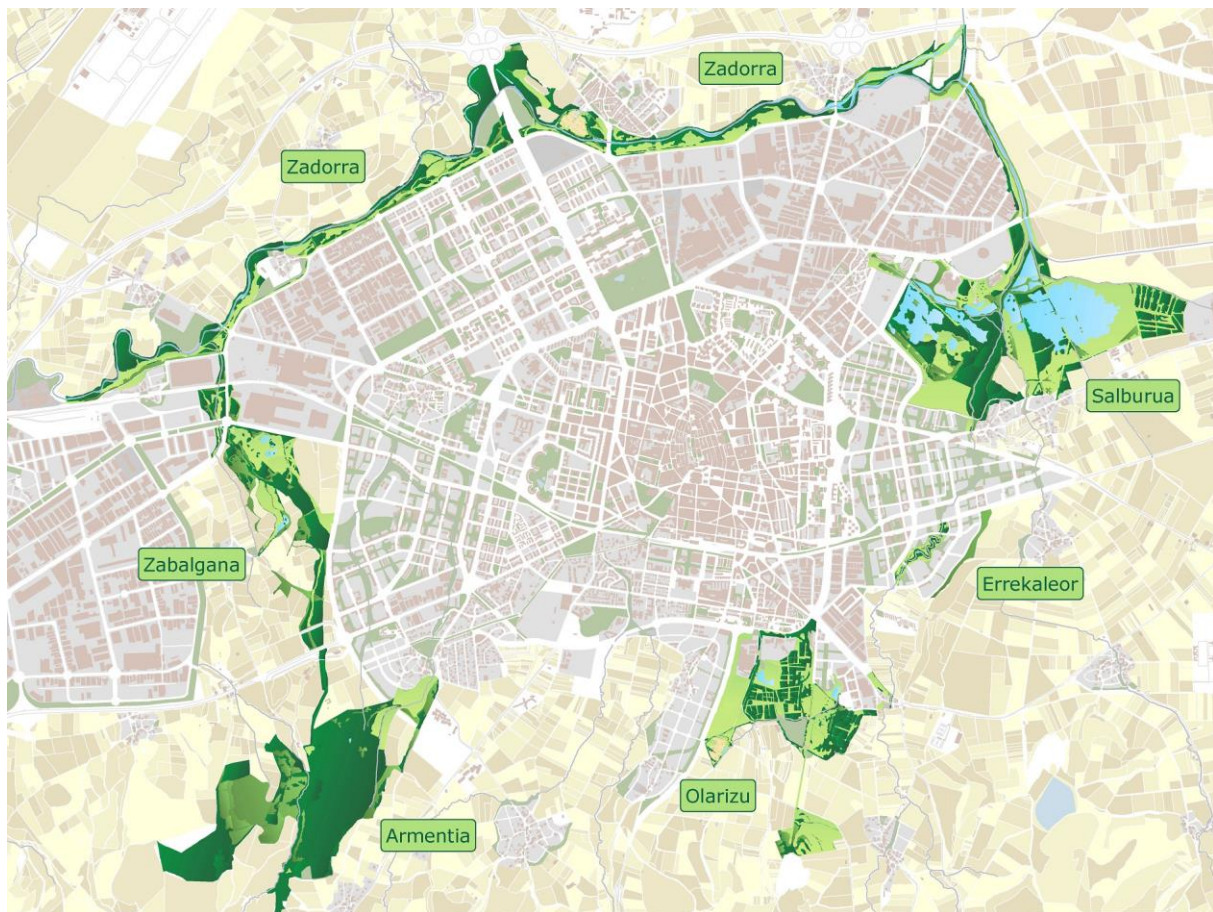[15] Vitoria City Council, "Green Belt of Vitoria."

Figure 2. Plan of the Vitoria Green Belt, with the names of its main spaces. Source: Vitoria City Council.

This Green Belt was officially included in the General Plan of the municipality in the year 2000. However, at the same time, this plan proposed six new residential sectors for the western expansion of the city, towards Zabalgana, and another nine sectors for the eastern expansion, in the area near Salburua. This expansive growth would require a large consumption of land: more than 600 hectares to build 20,000 dwellings. Additionally, it represented a kind of urban development that 'endangered in practice the concept of the belt, in terms of its continuity along its perimeter and of the possibility of completing it with natural corridors that penetrate into the inner city'.[16]

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[16] Grupo de Estudios y Alternativas GEA 21, *GEO Vitoria-Gasteiz*, 85 (Quotation translated by authors).

Eventually, almost 350 hectares of land with capacity for more than 15,000 dwellings were urbanised, but when the housing bubble burst in 2008, only a few dwellings had been completed. Degraded spaces of the kind that the Green Belt project intended to restore appeared once again in the urban fringe twenty-five years later, as shown in Figure 1. Trying to amend this mistake, in 2009 the city council approved a modification in the development conditions for these residential sectors. Alternative solutions were studied, and the decision was finally made to increase the number of dwellings so as to avoid transforming more land in the future.

Although Vitoria did not escape from the housing boom, the existence of the Green Belt project did mitigate some of its negative effects and pave the way for the future. Vitoria's Green Belt helped establish 'physical constraints for managing urban growth', even though they were partially overcome by the expansive strains, and 'in this sense Vitoria has a clear advantage over other cities'.[17] In fact, it was declared as European Green Capital in 2012 thanks to its efforts to build a sustainable urban model that promotes the adaptation of urban growth to the conditions of territory and specifically preserves its more valuable spaces.

Zaragoza and the Integrated Development Effort

With the exception of Madrid, Zaragoza, with its 750,000 inhabitants, is currently the most populated urban area in the inland regions of Spain. The River Ebro crosses the city, as do other waterways such as the Gállego and Huerga rivers and the Imperial Canal of Aragón. In the sixties and seventies, the city turned its back on these waterways, and their re-integration into the city has entailed a complex process, whose decisive milestone was the International Exhibition which took place in Zaragoza in 2008. In keeping with the motto 'Water and

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[17] De las Rivas Sanz, "Urban regeneration", 75.

sustainable development', the exhibition fostered a new vision of the city's future in which waterways would play a key role.

This process started with the General Plan that was approved in 1986. It reduced previous large-scale infrastructure and urban growth projects and for the first time, set out a strategy for green spaces on a metropolitan level, 'a fact that would be decisive for later operations'.[18] In the following years there was much pressure to revise the General Plan to retrieve those expansive projects, while different studies stressed strategic spaces within the city: riverfronts, railways, brownfield lands, and so forth. 'However, the revision of the Plan kept these principles of qualitative urban development practically unchanged'.[19] It was approved in 2002 and eventually promoted a new expansive cycle.

The revised Plan envisaged the development of almost 4,000 hectares of new residential sectors, corresponding to more than 100,000 dwellings. After that, several plans developing these estimates were approved. The largest one, located to the southwest of the city, 8 km away from the city centre, was Arcosur, with 20,000 dwellings. After the outbreak of the economic crisis in 2008, it remains a huge urbanised area with just a few buildings, as shown in Figure 1.

The urban planning system was again used to promote a senseless urban expansion, but at the same time some initiatives conceived of a different model for the future of Zaragoza. In 1996, a symposium had proposed different criteria for rehabilitating Zaragoza's watercourses.[20] Three years later, the planning and infrastructure services of the city council launched a design competition to re-integrate the river into the life of the city, and 'a process of discussion, negotiation and adjustments began, with stages that were not free from

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[18] Monclús, *International Exhibitions and Urbanism*, 119.

[19] Monclús, *International Exhibitions and Urbanism*, 119-120.

[20] De la Cal and Pellicer, *Ríos y ciudades*.

difficulties and contradictions'. In this context, the International Exhibition, which was to be held in Zaragoza in 2008 emerged as the catalyst that would allow this strategy to 'become a reality in a reasonable timescale'.[21]

First, it involved the transformation of the Ranillas meander, a frequently flooded area located in the urban fringe of the city. The site for the Exhibition was located there, along with a new 'Water Park', which aimed at strengthening the relationship between the city and the surrounding territory. Furthermore, this new park alongside River Ebro also had to integrate into a new network of metropolitan parks associated with rivers and forest areas. These proposals were part of the International Exhibition's Accompanying Plan (Figure 3), the main goal of which was to take advantage of this large event to promote a renovated urban structure supported by watercourses that would cohere the city, its periphery and its surrounding territory. This innovative urban planning tool became a real integrated strategy for urban development, and it led the reflections that had been carried out for more than 20 years to success.

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[21] Monclús, *International Exhibitions and Urbanism*, 129-130.

Figure 3. Accompanying Plan of the Zaragoza International Exhibition, with the location and photographs of its main spaces and projects. Source: Marco Fraile, Ricardo and Carlos Buil Guallar, eds. Zaragoza 1908-2008: Arquitectura y urbanismo. Zaragoza: IFC-Ayuntamiento de Zaragoza-Cajalón, 2009.

Valladolid and its Coordinated Planning

Valladolid is an urban area of over 400,000 inhabitants comprising the city and more than 20 municipalities surrounding it. These represent 25% of the total population and are administratively independent, including with regard to planning issues. However, this is a comparatively recent state of affairs. In the early eighties, these surrounding municipalities

only represented 5% of the population and they had been governed, along with the city, by a single General Plan. Approved in 1970, in a period of strong economic development, the plan fostered expansive urban development.

At that time, this shared plan was replaced with different planning tools for each municipality. For instance, the General Plan of the city of Valladolid was approved in 1984, and it sought a more restricted form of urban growth. In the following years, the distribution of the population within the urban area started to change, until it reached the current level, with the surrounding municipalities gathering 100,000 inhabitants. This process was clearly encouraged from the late nineties when the surrounding municipalities embraced a rationale of competition with the city to attract inhabitants.

They took advantage of their own urban planning tools to classify as much land for residential uses as possible, and some of them experienced a dramatic demographic growth in only a few years. The city eventually adopted this tactic, and it modified its General Plan in 2003 to add more than 3,000 hectares of land for urban development, breaking the constraints on urban growth that had been established in 1984. This process, which clearly compromised the sustainability of the urban fringe and even threatened some land of high ecological value, stopped due to the economic crisis. However, an innovative urban planning tool had already emerged during that period of expansive growth as an alternative for a more sustainable urban development.

The 'Land Planning Guidelines for Valladolid and Its Surrounding Area' were promoted by the regional government of Castilla y León in 1996 to return to the previous shared framework and manage urban growth in the whole urban area in a coordinated, balanced, and efficient way. These Guidelines were approved in 2001, just as the urbanization process was entering its most intense phase, and, in 2002, they won one of the 4th European Urban and Regional Planning Awards.

First, the Guidelines carried out a thorough diagnosis of the territory of Valladolid. In the attempt to 'give the greatest possible emphasis to the specific identity of the territory of Valladolid', they determined the conservation and protection of its more valuable, natural and productive spaces.[22] Furthermore, they also aspired to actively coordinate urban development through a structure to be built upon the main components of the traditional landscape: forests, watercourses, and so forth. However, these contents were not mandatory, and many municipalities were reluctant to give up their expansive ambitions. Consequently, 'the Guidelines have largely met only a protective function, because their potential on strategic coordination was not deployed'.[23]

However, since the bubble burst in 2008, these ideas are being addressed. For instance, the current revision of the General Plan of Valladolid has proposed a green infrastructure that is composed of two green belts that are connected to one another and to the surrounding natural spaces through three major watercourses (Figure 4). This will ensure that the city and the surrounding municipalities find the basis to coordinate future urban growth in a more sustainable way within this shared structure.

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[22] De las Rivas Sanz, "La ordenación de los procesos metropolitanos", 303 (Quotation translated by authors).

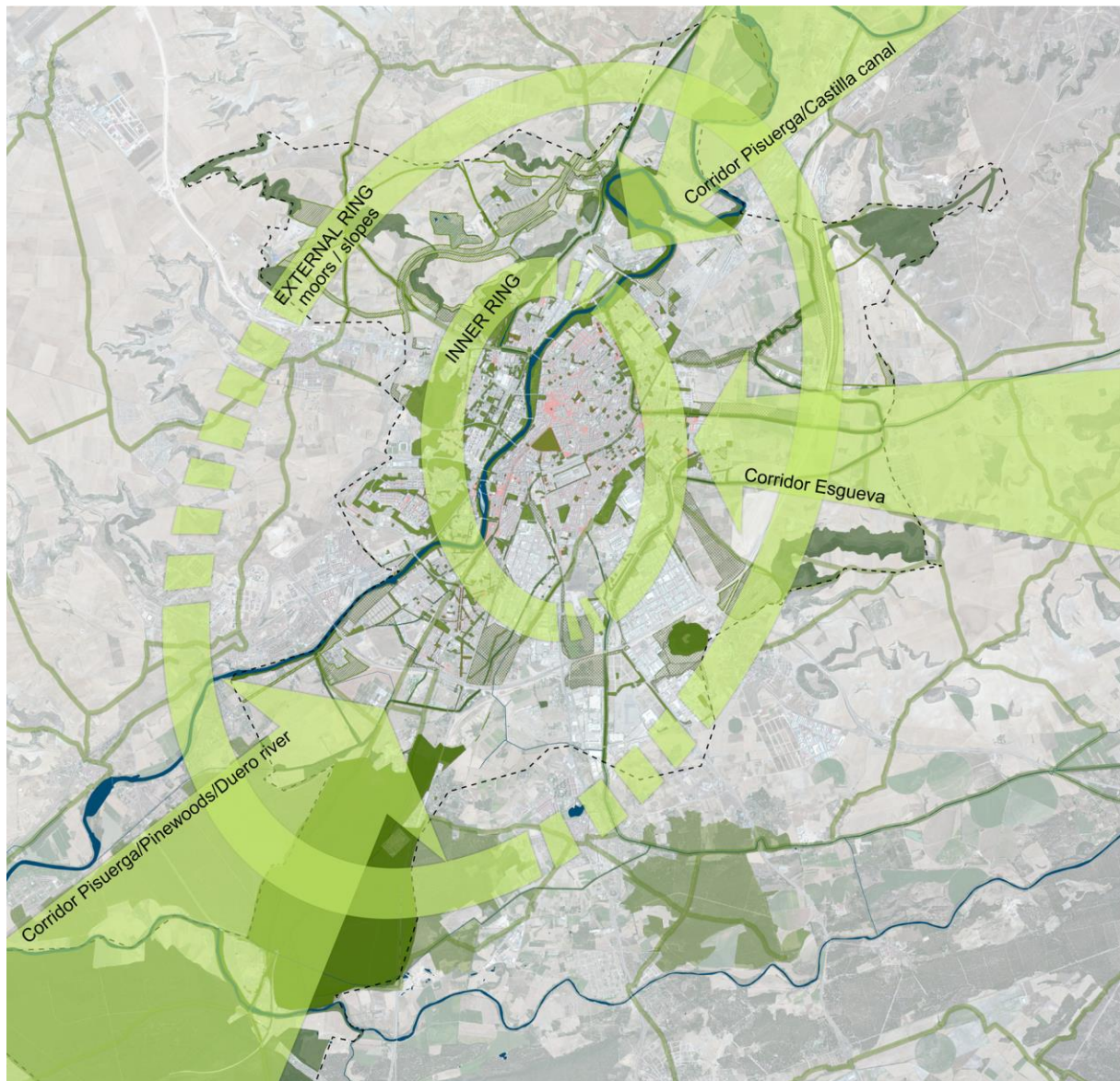[23] De las Rivas Sanz, "La ordenación de los procesos metropolitanos", 314 (Quotation translated by authors).

Figure 4. Scheme of the Inner and Outer Green Belts of Valladolid. Source: General Plan of Valladolid.

Conclusions: Sharing the landscape approach

From the late eighties, Vitoria, Zaragoza, and Valladolid experienced an expansive urban growth that came to an abrupt end in 2008. The urban fringe in these medium-sized cities clearly reveals the excesses of urban planning whose only concern was to foster real estate market growth. This is illustrated by the powerful visual contrast between the land that was urbanised and is now half-empty and the adjacent rural areas. These outcomes were the same

in many Spanish cities during this time, and they will be the same in any other cities around the world, especially in developing countries, if they adopt a growth model that promotes unsustainable land transformation.

The general plans, which are the main tools in Spanish urban planning framework, were used by local governments in these three cities to enable this model of expansion. However, some departments within their municipal structures or other planning actors at a regional level contended with this dominant model through other planning tools, whose proposals promoted a co-existence between urban development and the existing natural and productive spaces. These alternative approaches increased the resilience of urban fringes, as they helped to mitigate the effects of the real estate boom in these three cities. Some valuable spaces were preserved from urban development, and some natural corridors were protected and recovered bit by bit, so they can now play a key role. After the bubble burst there is a more widespread understanding among politicians and planners that urban development becomes more sustainable if there is a structure beneath it that is rooted in the identity of the territory, which represents 'an unprecedented opportunity to redirect and (re)conceive the process of urbanization from one that is inherently destructive to one that is sustainable and resilient in specific terms.'[24]

The tools that these three cities employed are different. They range from environmental planning to urban projects, but all of them tried to comprehend the identity of the territory, its particular natural processes and elements, in order to provide an underlying structure where urban development can integrate, instead of becoming an undifferentiated urban expansion. We can identify their approach with the concept of landscape as a comprehensive planning tool.[25] Furthermore, strategies that rely on what already exists and

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[24] Ahern, "From *fail-safe* to *safe-to-fail*", 343.

[25] Marcucci, "Landscape history as a planning tool."

reduce investments in new infrastructures help adaptation to changing conditions and periods of uncertainty,[26] and they are also complementary to other kinds of approaches.[27] These models constitute planning strategies for a resilient urban fringe.

Disclosure statement

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[26] Portas, "El planeamiento urbano", 104-5.

[27] Méndez Gutiérrez del Valle, "Estrategias de innovación."

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