

PLANNING WITH INFRASTRUCTURES IN THE FACE OF AUSTERITY: NEW OPPORTUNITIES IN THE PORTUGUESE PLANNING SYSTEM

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ABSTRACT – About fifteen years after the Global Financial Crisis (GFC), land-use planning practices remain largely unchanged worldwide, even in regions affected by austerity and reduced public spending. Moreover, critical research on crisis, austerity, and urban dynamics often overlooks land-use planning, creating a disconnect from planners' everyday realities. This is particularly relevant in areas undergoing extended urbanisation, such as Portugal. The austerity measures triggered by the GFC in Portugal exposed significant shortcomings in its spatial planning system, including its rigidity and inability to adapt to socio-spatial contexts marked by dispersed urbanisation alongside demographic and economic decline. Using action-research methodologies, this study explored opportunities arising from the crisis and developed a procedural tool, *Infrastructures vs Building* (IvB), which leverages infrastructure as a reference point for land-use planning. IvB strengthens Portugal's planning system by challenging expansionist urban paradigms and providing quantified infrastructure data for land-use classification. Beyond diagnosis, IvB offers a practical framework for integrating infrastructure networks into land-use planning, with relevance for Portugal and other contexts.

Keywords: Infrastructures; land use planning; urban sprawl; austerity.

RESUMO – INFRAESTRUTURAS COMO REFERENCIAL PARA PLANEAR FACE À AUSTERIDADE: NOVAS OPORTUNIDADES NO SISTEMA DE PLANEAMENTO PORTUGUÊS. Quase quinze anos após a Crise Financeira Global (CFG), as práticas de planeamento do uso do solo mantêm-se praticamente inalteradas em todo o mundo, mesmo em regiões afectadas por austeridade e redução da despesa pública. Além disso, a investigação crítica sobre crise, austeridade e dinâmicas urbanas tende a ignorar o planeamento do uso do solo, criando um afastamento em relação à realidade quotidiana dos planeadores. Esta situação é particularmente relevante em áreas de urbanização extensiva, como Portugal. As medidas de austeridade resultantes da CFG em Portugal expuseram falhas significativas no sistema de planeamento espacial, incluindo a sua rigidez e incapacidade de se adaptar a contextos socioespaciais marcados por dispersão urbana, bem como por declínio demográfico e económico. Recorreu-se a metodologias de investigação-acção para explorar oportunidades emergentes da crise e desenvolver uma ferramenta processual – *Infrastructures vs Building* (IvB) – que utiliza as infraestruturas como referencial para o planeamento do uso do solo. A IvB reforça o sistema de planeamento português ao desafiar paradigmas urbanísticos expansionistas e fornecer dados quantificados sobre infraestruturas para a classificação do uso do solo. Mais do que um instrumento de diagnóstico, a IvB constitui uma plataforma prática para integrar redes de infraestruturas no planeamento, com aplicabilidade em Portugal e noutros contextos.

Palavras-chave: Infraestruturas; planeamento do uso do solo; dispersão territorial; austeridade.

HIGHLIGHTS

- Global land use planning remains largely unchanged post-GFC, despite austerity.
- Austerity revealed significant flaws in the Portuguese spatial planning system.
- IvB tool innovatively uses infrastructure as a reference for land use planning.
- IvB challenges urban expansion and provides data on infrastructure provision.
- IvB bridges the gap between infrastructure networks and land use planning.

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1. INTRODUCTION

Written fifteen years after the collapse of Lehman Brothers – at a time when new crises are looming all around us – this article offers a critical yet constructive reflection on the enduring aftermath of the Global Financial Crisis, with a focus on land use planning in Portugal. Specifically, it examines the current state of the Portuguese planning system and introduces a practical, infrastructure-oriented planning tool: a GIS-based metric that uses infrastructure networks as a key reference point to guide planning practices, particularly under conditions of austerity. Emphasizing principles of rationalization and efficiency, the tool is tailored to Portugal's specific context but holds broader relevance for other settings seeking to integrate infrastructure more strategically into planning processes.

The discussion begins with a brief overview on the lasting effects of austerity in contemporary Portugal, drawing from existing work that highlights potential opportunities for planners during this period. To further contextualize the proposal, key literature on the relationship between the 2008 Financial Crisis, austerity, and urban development is reviewed. This body of work has often overlooked land use planning, which is crucial to many urban policymakers and planners. The focus then shifts to the Portuguese planning system, identifying opportunities for transforming land use practices, and ultimately presenting the "Infrastructures vs Building" (IvB) tool.

IvB is a metric developed to assess the capacity of infrastructure networks, with the aim of improving the efficiency of land use policies and enhancing planning practices in a context of ongoing urbanization. Through IvB, this article hopes to provide a concrete and pragmatic contribution to better planning in the face of austerity.

2. PLANNING IN THE PORTUGUESE AGE OF AUSTERITY: SEEKING OPPORTUNITIES FOR LAND USE PLANNERS

The fiscal crisis of the 1970s posed significant challenges for planners across the United States. After decades of efforts focused on market growth, economic transformations such as high inflation, low growth, and growing public deficits reshaped the conditions for planning. With neoliberalism rising (see Harvey, 2005), austerity emerged as the primary political response to the downturn. In this context, a group of progressive planners organized a conference in April 1979, which resulted in the publication of *Urban and Regional Planning in an Age of Austerity* (Clavel *et al.*, 1980). The edited volume sought to explore "new opportunities for planners" (Kelman *et al.*, 1980) during a time when fiscal retrenchment was becoming the norm. The present article draws inspiration from this effort and applies it to a different, yet connected, economic, political, and socio-historical setting: contemporary Portugal.

A decade after the Great Recession, Portuguese analysts reflected on the severe consequences of the 2008 Financial Crisis. The sovereign debt crisis of 2009, coupled with the European Union/International Monetary Fund (EU/IMF) bailout in 2011, had devastating effects on the country. Unemployment soared, public pensions and wages were slashed, and social services were severely reduced. While banks were bailed out, income inequality rose, and poverty levels surged. Over five percent of the population emigrated in search of work, and, as economist Ricardo Paes Mamede noted, Portugal became poorer and less optimistic about its own future (Mamede, 2015). Austerity, initially implemented under a center-left government in 2008, was intensified by the right-wing coalition after 2011. Like other countries in Europe, Portugal's economy faltered under austerity, and the principles of the Welfare State eroded under sweeping budget cuts. José Reis (2014) called austerity a "regressive form of political economy", which led to harsh economic conditions.

However, the effects of austerity began to shift after the 2015 election. The right-wing coalition lost its majority, and a new political cycle began with the center-left gaining power through negotiations with anti-capitalist factions (Freire & Santana-Pereira, 2016). This political "contraption" reversed many of the EU/IMF-imposed austerity measures. Pension cuts and public sector salary reductions were reversed, the minimum wage was raised, and banks faced restrictions on evicting mortgage lenders. These measures helped reduce poverty and curbed mass impoverishment, while still adhering to the EU's fiscal guidelines, resulting in an economic recovery celebrated by many liberal

media outlets (e.g., Alderman, 2018). The Portuguese finance minister's position at the helm of the Eurogroup (2018-2020) further attests to Portugal's apparent success in managing the crisis.

Despite this narrative of recovery, some critics questioned the true nature of these achievements. As Nuno Teles (2018, par. 4) stated, there is "a different situation beneath the appearance of economic success". The central issue lies in public spending. To increase pensions and public sector salaries without breaching deficit reduction targets, the government slashed public investment by almost 30 percent in 2016, reducing it to the lowest level of public investment since 1995. This raised concerns about the sustainability of recovery, as critical infrastructure investments in roads, hospitals, and other services were severely cut (Giugliano, 2017). While some of the austerity measures were reversed, the "contraption" remained bound by austerity's logic, and much of the public infrastructure investment was still curtailed. Critics have called this recovery a "myth" (Príncipe, 2018) or "illusion" (Teles, 2018), noting the long-term damage caused by austerity's pervasive effects.

This backdrop is essential for understanding the current article. As planners committed to progressive social change in Portugal, we must acknowledge that austerity remains an intrinsic part of the current political-economic system. While it may be temporarily mitigated, full eradication requires systemic changes that are beyond immediate reach. We cannot ignore this fundamental condition as we continue our planning efforts. Like the American planners in 1979, who responded constructively to fiscal constraints, Portuguese planners must also adapt to the realities of austerity and find opportunities for planning under such conditions. This issue is not unique to Portugal. As planning scholars have acknowledged (e.g., Ponzini, 2016), planners across the North Atlantic face similar challenges. With fewer resources available for infrastructure development, planners must seek ways to create spatial systems that promote social and territorial justice despite the constraints.

It is in this context that this article aims to propose an applied tool for planning in the face of austerity in Portugal. By identifying specific "new opportunities" within the Portuguese planning system, this tool seeks to address the limitations imposed by austerity while promoting progressive planning practices. As austerity continues to affect planning endeavors globally, it is essential to explore innovative methods that can support more equitable and sustainable urban development, even within the confines of limited resources.

3. CRISIS, AUSTERITY, AND THE CITY: WHAT ABOUT LAND USE PLANNING?

The turmoil began in late 2006 with a sharp rise in home foreclosures, especially in low-income neighborhoods across the US. This trend quickly spread, and by mid-2007, both low- and middle-income housing markets had collapsed. The mortgage market had been inflated by subprime loans, which had expanded dramatically since the late 1990s (Immergluck, 2009). This triggered a chain reaction of economic instability that spread globally, culminating in the 2008 financial crash, marked by the bankruptcy of Lehman Brothers in September. By the end of 2008, the global economy had entered the worst economic downturn since the Great Depression – an era that became known as the Great Recession.

The causes of the crisis have been widely debated. Conventional economists have focused on diagnosing the malfunctions of the economic system, addressing issues such as the breakdown of financial intermediation (Geithner, 2014), the failure to regulate the shadow banking system (Krugman, 2009), or the challenges posed by rising household debt (Mian & Sufi, 2014). These analyses have shaped policy responses aimed at preventing future crises. Marxist economists, on the other hand, have offered a different perspective, arguing that the crisis was an inherent feature of capitalism's tendency toward instability. Some attribute the crisis to the financialization of personal income (Lapavistas, 2009), others to the rise in corporate profits (Wolff, 2010), and still others to the tendency of the rate of profit to decline (Kliman, 2012).

It is not, however, only within the various existing strains of economic analysis that the story of the Great Recession has been told. Different fields have focused on different aspects of it and multiple other interpretations have been produced. Among the many variations, a particularly important line of inquiry has come from urban studies and related fields. Following a Keynesian approach that puts emphasis on worldwide imbalances and the effects of varying policy responses to the crisis, some urbanists have presented cities as spatially condensed manifestations of the Global Financial Crisis (e.g., Fujita, 2013). But the most pointed urban analysis has come from critical perspectives akin to

those of the abovementioned Marxian economists. Drawing on similar views regarding capitalism's propensity to periodically generate crises, while at the same time reasserting the argument that what causes them is the overaccumulation of capital rather than underconsumption or the falling rate of profit (Holgersen, 2015), the work of David Harvey (especially 1982 and 1985) is key here. The idea that urbanization is a vital solution to capital's perpetual need to find profitable terrains for surplus absorption (and is therefore a recurrent component in processes of crisis formation), is at the core of what has been said. As Harvey (2010) himself has argued, there is nothing new, apart from its size and scope, about the Global Financial Crisis. Its root causes, as many other analysts have added (e.g. Aalbers, 2012; Christophers, 2011), lied in processes of capital switching that have been facilitated by urban development and the expansion of mortgage markets. Under these approaches, cities are conceptualized as more than spatial concentrations of crisis symptoms; urbanization itself is placed at the heart of the Great Recession.

Another important aspect of the Great Recession was the political response that followed. After the crash, governments, particularly in the Eurozone, enacted harsh budget cuts in an effort to stabilize the economy. This response marked the beginning of what became widely known as the Age of Austerity (Blyth, 2013; Schäfer & Streeck, 2013, among many others). Especially pronounced in the periphery of the Eurozone, where governments and international organizations alike showed great zeal for the restoring promises of voluntary deflation (Hadjimichalis, 2011), this came to dominate political and economic life on both sides of the North Atlantic. This too has been subject to significant scrutiny by students of urbanization, especially critical scholars.

A considerable number of studies have analyzed and discussed various dimensions of "austerity urbanism" in the US and Europe. Making sense of the ways in which the Great Recession translated into multiple forms of "austerity in the city" (Donald *et al.*, 2014), an array of analyses has been conducted across a multiplicity of contexts on both sides of the North Atlantic: from the variegated ways in which austerity policies are restructuring the US metropolis (e.g., Davidson & Ward, 2018) to the differentiated impacts of the Global Financial Crisis in cities throughout Europe (e.g., Schipper & Schöning, 2016). This fairly extensive literature addresses a variety of issues, including questions of both hardship and resistance (see Bayırbağ *et al.*, 2017), but a great deal of it delves primarily into the pressures put on local governments and the changing nature of urban politics.

One of the key concerns for students of 'austerity urbanism' has been how the Great Recession reshaped neoliberal urban governance. If in the early days of the crisis, critical analysts were cautious in postulating that neoliberalism could be falling into a predicament of its own making (Peck *et al.*, 2010), a few years into it few doubted that a renewed wave of neoliberalization and fiscal retrenchment was yet again working to dismantle systems of social protection, to restructure state forms, and to hold people responsible for their own condition. In the US, where the systematic offloading of financial risks and responsibilities onto the local scale unleashed what Peck (2012, p. 650) called a "fiscal crisis of the urban state" (see also Davidson & Ward, 2014; Kim & Warner, 2018), the round of austerity that followed the Global Financial Crisis was characterized as an exceptionally grueling and destructive transfiguration of neoliberal urbanism (see Peck, 2012; Peck *et al.*, 2013). In Europe, where fiscal austerity measures were often being implemented with even greater vigor, analysts saw not so much the replacement or even questioning of neoliberal logics, but rather the emergence of "super-austerity" (Lowndes & Gardner, 2016) or the rise of reassembled and intensified forms of urban neoliberalism at the local government level (see Bailey *et al.*, 2015; Fuller, 2017; Schipper, 2013).

Yet the effects of 'austerity urbanism' extend beyond the explicitly political operations of city governments. The administrative and technical spheres of urban development and planning – where political struggles often unfold in subtle and less visible ways – are also shaped by what Peck called "regressive redistribution" (2012, p. 650; see also Hastings *et al.*, 2017). Spatial and land use planning systems, for instance, were significantly affected by austerity policies. In many Southern European countries, including Portugal, planning systems that once operated on assumptions of development had to adapt to austerity's constraints. As a result, spatial planning shifted from facilitating new development toward maintaining existing infrastructure and managing economic decline.

Writing from the Portuguese context – which offers a distinct lens on the intersection of the financial crisis, austerity, and urban planning – we draw on recent studies on urban austerity and planning, particularly in Southern Europe (especially Knieling & Othengrafen, 2016; see also Eckardt & Sánchez, 2015) to examine how the crisis has reshaped land use planning practices. Our aim is to explore how planners can navigate austerity-driven constraints while still pursuing progressive urban

development. A key challenge, in our view, is how spatial planning systems – long reliant on zoning and land-use regulations – can adapt to reduced public investment and shrinking government budgets.

In Portugal, as in other part of the North Atlantic, planners are tasked with balancing fiscal retrenchment and the ongoing imperative for urban development. This tension has prompted general institutional and planning reforms (Ponzini, 2016), but also calls for specific strategies to maximize limited resources while addressing pressing social and environmental concerns. It is in supporting this “renewal of contemporary urban planning” (ibid.) that we propose an embedded tool designed to transform the Portuguese planning system – a tool that assesses existing planning practices, identifies areas for improvement, and provides a framework for creating more resilient, equitable, and sustainable urban environments under austerity. Before presenting the tool, however, a brief on the Portuguese planning system is necessary.

4. THE PORTUGUESE PLANNING SYSTEM AND ITS EXPOSURE TO THE CRISIS: AN OPPORTUNITY FOR TRANSFORMATION

In 2004, a couple of years before the collapse of the American subprime housing market, Portuguese architect and urbanist Bruno Soares articulated the uneasiness caused by a much more local urban predicament. “After all”, he wrote in a national planning journal (Soares, 2004, p. 97), “it seems like we’ve been planning for inefficiency”. Reproducing a common lament about urban development and land use planning in Portugal, a perception that often also prevails in media and popular discourse, this statement is virtually consensual among technicians, specialists, and academics (see Baptista, 2012 for a critique). The disenchantment reflects an array of frustrations regarding the planning system that has been put in place since the late 1980s (see, for example, Cardoso & Breda-Vázquez, 2007; Mourão & Marat-Mendes, 2016; Sá, 1989).

If sometimes the legal arrangements for land-use planning are accused of rigidity and inflexibility, in many others they are blamed for being too lenient. The complaints might even be contradictory, but the evidence is abundant. While it is patent that the complexity of the system’s regulatory framework often renders it both inoperable and incapable of adapting itself to a constantly changing socio-territorial order (Domingues, 2017), it is also true that the exercise of land use planning frequently reveals overly permissive characteristics (Carvalho, 2003). Either way, with the conversion of rural into urban land repeatedly occurring in informal (or even illegal) fashion, urban areas throughout most of the country grew detached from infrastructure networks and the needs of the majority (Mourão & Marat-Mendes, 2016). It may well be said that the discretionary power of successive public administrations conceals a system that is often the mere epiphany of what Alain Bourdin (2011, pp. 15-16) refers to as “liberal urbanism”, a planning mode informed and sustained by the “triumph of vague concepts”.

The question of what explains this state of things has occupied local analysts for quite some time. In 2003, after almost two decades of spatial transformations spearheaded by EU-led modernization and growing economic prosperity, land use planner Jorge Carvalho held that the biggest shortcoming of the Portuguese planning system resided in its generally unsatisfactory physical outcomes. He claims (Carvalho, 2013) that investments have been made on a case-by-case basis and urban growth has taken place haphazardly. The problem of land use planning, he concludes, results from an imprecise definition of objectives as well as inadequate forms of implementation (Carvalho, 2003). Similarly, in 2011, geographer João Ferrão characterized Portuguese land-use planning as a “doubly weak” (Ferrão, 2011) form of public policy. In the view of the former secretary of state for spatial planning, the problem lies in both the ends and the means of the spatial planning system. It is not only that the system’s mission is unreachable due to the existing discrepancy between its aims and the actual conditions for their attainment, the instruments of land use planning are also generally incapable of mitigating the undesired effects of non-spatial sectoral policies because of their vulnerability to external forces (see also Mourão & Marat-Mendes, 2016). There is, as he puts it in his indictment of the Portuguese planning system (Ferrão, 2011, p. 25), “a simultaneous problem of efficiency and resilience”.

Such criticisms of the Portuguese planning system underscore the importance of understanding its scope and (in)successes from the perspective of a state that, in the words of geographer Álvaro Domingues (2017, p. 12), has allowed itself to be captured “by the liberal capitalist system before seizing any opportunities it had in the European social-democratic model”. Indeed, what theories of

neoliberalism have described as state retrenchment does not quite capture the specificities of the Portuguese case. While a complete dismissal of their explanatory potential might be unwise (see Tulumello, 2016), there are enough distinctive traits to argue for a new theoretical lexicon (see Baptista, 2013), particularly in the realm of land use planning. Although the current spatial planning system (even in the most recent reviews of the general spatial planning policy, carried out, for example in 2014) was initially envisaged as a mechanism for formulating public policies and safeguarding collective rights, its instruments have more often than not prevailed as drivers of opacity, spatial irregularity and land speculation (Carvalho, 2003; Correia, 2002). In other words, perhaps even more than what has historically been at the core of the global capitalist system (c.f. Clavel *et al.*, 1980), planning in contemporary Portugal has been a market-serving activity that primarily works for the interests of the private sector rather than those of the general public. Grasping the specific traits of this condition is essential to understanding how the planning system was affected by the Global Financial Crisis, as its vulnerabilities have become particularly clear in the aftermath.

“Under conditions of recession”, Clavel, Forester and Goldsmith said in 1980 about planning in the age of austerity, “planners are called upon to an even greater degree to forge weapons to serve private interests” (ibid, p. vii). In Portugal, the onslaught of austerity measures that hit the country in 2011 had devastating consequences across many sectors (see Mamede, 2015; Reis, 2014; Rodrigues *et al.*, 2015, among others), but in the cross-sectoral activity that is land use planning it came particularly associated with a reckless pursuit for investment opportunities that suddenly left space, place, and territory extremely vulnerable to a series of threats to their social and environmental integrity (see Mourão & Marat-Mendes, 2016). If the crisis had direct, albeit territorially differentiated consequences on public services and state capacities as a whole (see Crespo *et al.*, 2016; Ferrão, 2013; Seixas & Mota, 2015), in what concerns its spatial effects some of the most daunting risks had to do with the local government’s loss of negotiating power, its declining levels of initiative, and the likelihood that the system would become more permissive. In fact, beyond laying bare the fragility of the Portuguese planning system, austerity contributed to reinforcing and perpetuating its institutional and programmatic drift; to use the critical lexicon of Carvalho (2003, 2013); Ferrão (2011, 2013), the crisis amplified its dual problem of efficiency and resilience.

Our objective with this article, however, is to think beyond such dooming fate and to identify transformative openings within the Portuguese planning system. Taking cue from a long progressive tradition of using critical situations to reflect and act upon societal structures, what we do here is to propose that crisis conditions might indeed provide opportunities to change, redefine, and improve land use planning practice. Indeed, the recent legal changes – introduced in 2014 and 2015 – are already aligned with this perspective and suggest converging paths. However, paradoxically, their implementation and assimilation into established practices have been slow. Moreover, at the beginning of 2025, they suffered a significant setback, reigniting the perception that expanding infrastructure and urban land is necessary.

This situation highlights the deep-rooted difficulty in shifting the paradigm that sustains the system’s functioning: replacing growth and expansion with the development and enhancement of existing resources remains a challenging task. For when we look at the particularities of the Portuguese case, we see more than the intensification of planning’s longstanding problems. We also recognize that the Global Financial Crisis and its aftermath brought to light the need to pay better attention to what is already in place. In other words, despite its inherently grinding impetus, the logic of austerity reminded us of the importance of cutting back in what might be expendable, nonessential, and nonstrategic. It might, indeed, provide conditions for improved levels of spatial justice. What we are then suggesting for the Portuguese case is that an “ethos of austerity realism” – what Jonathan Davies and Adrian Bua characterize as a mind-set led by tactics and strategies of “amelioration, rationalization, co-production and development” (2016, p. 6) – would indeed be beneficial for a practice of planning that ought to focus more on the efficacy of existing urban configurations. With that in mind, the following section presents a systematic approach for land use planning that seeks to strategically harness the potential of current infrastructure networks. Stemming from a broader research project (Carvalho *et al.*, 2013), this is presented as an instrument that makes the most of austerity’s desirable propositions to defy its fundamentally abrasive logics – a tool for planning in the face of austerity.

5. INFRASTRUCTURE VS BUILDING: A TOOL FOR PLANNING IN THE FACE OF AUSTERITY

The cities of tomorrow became the urban areas of today. This is now a well-established truism. In the age of extended urbanization (Schmid & Topalovic, 2023), the city is no longer. What exists instead, urbanists Nuno Portas, Álvaro Domingues and João Cabral have long been arguing in relation to the Portuguese case (2003, p. 17), is a comprehensive urban reality that we can hardly refer to as “the city” without engaging in some form of semantic abuse. Under this new mode of extended development, the urban then emerges as a widely dispersed, complex, and multifarious array of territorial formations (Soares, 2002). What we indeed have is a multitude of arrangements that results from the expansive and ever-increasing set of processes through which space is now produced, shaped, and formed.

The sweeping nature of these emerging new formations of extended urbanization has several effects, but few are more notable than those pertaining to the organizing functions of infrastructure networks. In fact, as those same Portuguese urbanists have also pointed out, infrastructures now play a central role in “structuring the emerging new urban model, acting at the same time as causes and effects of its organizational principles” (Portas *et al.*, 2003, p. 71). Building on this premise, this section examines the spatial ramifications of Portugal’s recent (and arguably ongoing) austerity moment to present a procedural tool for the Portuguese planning system that seeks to address this transformed urban reality.

While austerity and its enduring aftermath have posed serious challenges to land use planning in Portugal, there have also been some important opportunities for reforming and transforming its practices. In a country where the planning system has struggled to regulate dispersed urban territories, the past decade and a half has had a dual effect. On the one hand, austerity has exacerbated long-standing issues – such as the fragility of local infrastructures supporting scattered settlements. On the other, it has reinforced a growing consensus that Portugal’s expansionist urbanization model must lose its dominance – a principle already embedded, albeit superficially, in the legal reforms of 2014 and 2015. In this sense, even if recent legal framework updates (January 2025) appear to contradict this shift, we believe that austerity’s legacy can serve as catalyst for a new planning paradigm. For its focus on rationalization, efficiency, and cost-effectiveness bears aligns with the urgent need to shift from an expansion-driven model to one focused on optimizing existing urban structures. Rather than perpetuating a cycle of unchecked growth, this moment presents an opportunity to repurpose, rehabilitate, and enhance existing infrastructures. The tool we now briefly present builds on this rationale, offering a framework to maximize the potential of already-installed infrastructural capacities.

“Infrastructures versus Buildings” or IvB derives from recent efforts to understand and enhance the role of infrastructures as drivers of Portuguese urban development (see Carvalho *et al.*, 2013; Moura e Sá, 2016). Both analytical and propositional, this is a GIS based tool that uses quantifiable data to both decrypt the new territories of urbanization and strengthen Portugal’s current instruments of land use planning. The aim is to work within the current legal and institutional framework (which was revised and published in 2014 and 2015).

Particularly geared for dealing with spatial dispersion, the driving motivation behind IvB has been to harness the structuring potential of infrastructures to streamline the incongruent spatial patterns that currently characterize the Portuguese territory. By focusing on public space and street networks, which not only comprise the infrastructural subsystem that most determines territorial configurations but also typically represent about half of all urbanization costs (see Mascaró, 1994; Moura e Sá & Carvalho, 2012), this tool then puts forward a gauging mechanism for adopting integrated levels of infrastructure that vary according to installed or expected urban loads. The goal that underpins it is that any given territory must adopt a level of infrastructural service that matches the occupational pattern and its corresponding usage load. Beyond the boundaries of the system within which it was developed, the ultimate purpose of IvB is to foreground infrastructure networks as a fundamental reference for planning practice in the 21st century.

What IvB then does is to juxtapose and contrast infrastructural capacities and building patterns. As a measuring and comparing instrument, this technical tool is applied to pre-defined intervention areas where it proceeds to analyze the network of streets and public spaces in three basic moments. It begins with estimated calculations of both expected usage loads and service capacities for each network section¹, it follows with an assessment of whether and where the network is being underused or overloaded, and it finally confronts that result with the installed level of service and the presence of

other infrastructural subsystems (water, sewage and electricity) along each network section. In the end, the output produced are maps of infrastructural overload and underuse (see fig. 1) that allow for an easy and efficient articulation with the instruments of the Portuguese planning system, ensuring that the optimization of infrastructures takes center stage in their development and elaboration.

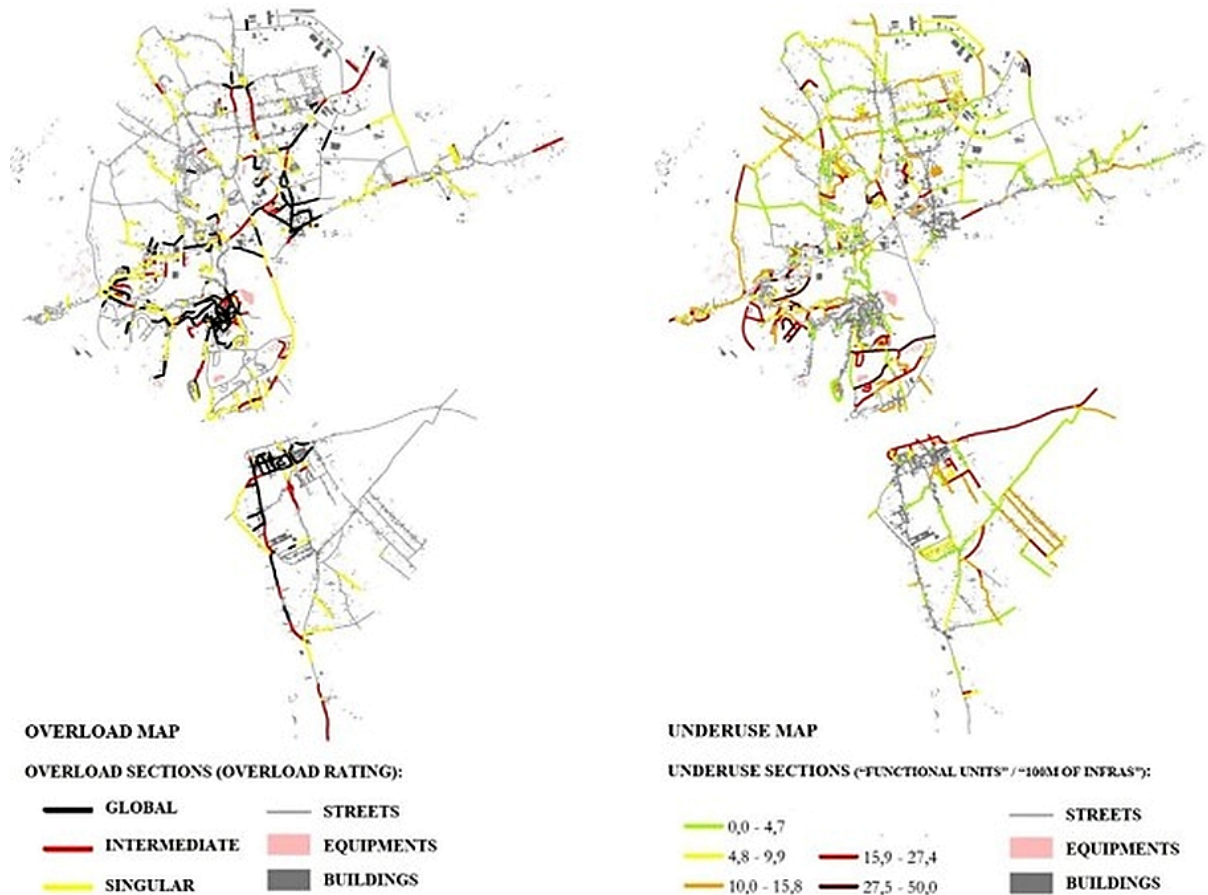


Fig. 1 – IvB outputs in the city of Abrantes: maps of infrastructural overload (left) and underuse (right). Colour figure available online.

Fig. 1 – Mapas de sobrecarga (esquerda) e subutilização/folga (direita) de infraestruturas em Abrantes. Figura a cores disponível online.

Source: Moura e Sá (2016)

In the various cases where IvB has been applied, with emphasis on Braga and Abrantes (see Carvalho *et al.*, 2015; Moura e Sá, 2016), the results show what in the literature is classified as an excessive, fragmented, and oversized infrastructure network (Gillham, 2002; Graham & Marvin, 2001). This not only confirms the abovementioned diagnosis made by Portas, Domingues and Cabral, (2011), it also provides a quantifiable and georeferenced measure with which to analyze the mode of extended urbanization that now is prevalent throughout much of the Portuguese territory and to closely scrutinize the associated underuse of its infrastructure networks across the entire country (see also Castro *et al.*, 2015; Gaspar, 1999). For example, the existing street system in Abrantes (see fig. 1), a "city" with about ten thousand buildings, could still hold the construction of another eight thousand units. Even if based on estimates and projections, IvB holds the potential of moving us closer to a more decisive appraisal of how disproportionate the current endowment of infrastructure actually is. Enhancing generalist and overly discursive indictments of our dominant urban condition, it helps us question the wastefulness of sectoral investments based on a logic of market expandability, while also allowing us planners to get a more precise picture of the territory and its infrastructures.

In view of what might be some of the constructive aspects of Portugal's recent austerity moment, namely the focus on urban rehabilitation or the optimization of already existing infrastructural networks, IvB might then contribute to a more efficient and resilient planning system in a few

complementary ways. First, from a policy and programming perspective, because it counters the expansionist paradigm upon which urbanization processes have long relied by placing greater emphasis on admissible construction for the networks that are currently in place. Second, because it provides a quantified account of infrastructural provision and building patterns, which can help streamline and enhance land use classification schemes that presently tend to be slow and ineffective, thereby supporting and improving day-do-day planning practices. And finally, and perhaps most importantly, because IvB can become a key reference to develop, reinforce, and rearticulate various instruments of the Portuguese planning system: it can help establishing and implementing land use plansⁱⁱ; it can facilitate processes of administrative licensingⁱⁱⁱ; it can be the foundation for new tax policy^{iv}; and it can serve to inform public initiatives^v. In sum, by giving us a quantifiable measure of both deficits and potentials installed in a particular network, IvB provide us with an infrastructure-based metric to systematically inform urban planning practice in Portugal.

In 2025, a legal change was introduced, which, despite being surgical, questions the basic assumptions that defend and promote the end of expansion as a necessary or dominant paradigm. However, it is important to highlight that: as previously mentioned, this change was violently opposed by Portuguese urban planners (which suggests that it will not have much impact); even in the face of the change introduced, which simply and without foundation allows construction on rural land, the IvB, by reinforcing the infrastructural dimension as the skeleton of occupation, can, even in this case, be an important aid to qualify and support land use planning policies at a local level.

6. CONCLUSION: BEYOND POLITICAL SKILLS

One of the key takeaways from *Urban and Regional Planning in an Age of Austerity* (Clavel *et al.*, 1980) was that planners needed political skills for facing the changing context of their profession in the US of the 1970s and 1980s. This is a both valid and valuable insight until today. Without a clear formulation of its political and organizational role in society, specifically one that put emphasis on democratic processes of decision making as well as the promotion of socially just urban forms, planning will always be incapable of dealing with the political-economic demands of our contemporary moment. The problem with this view of what planning is meant to do, however, is a tendency to neglect the mundane technical aspects of actual planning practice. This is especially pronounced in the realm of land use planning, and particularly in contexts where the geography of extended urbanization is combined with institutional apathy and strategic drift.

This article contributes to offsetting this tendency. Both critical and propositional, it presents an applied tool for retrieving the potential of land use planning in a general framework of shrinking budgets for public investments. Fashioned in the ongoing aftermath of the Global Financial Crisis and the subsequent onslaught of austerity that spread throughout much of Europe and North America, this tool provides an opportunity to take full advantage of the structural and transformative power of urban infrastructures.

ⁱ Expected usage loads are estimated by considering references associated with standard flows and behaviors, while service capacities are based on specific parameters per function and the adoption of standard profiles organized according to their building potential.

ⁱⁱ In what concerns land use plans, IvB can help to set zoning and building standards as well as to refine public investment decisions in accordance with actual infrastructural needs and conditions.

ⁱⁱⁱ Regarding administrative licensing, IvB can facilitate the evaluation of private intentions according to the availability/capacity of the infrastructure (although foreseen in the Portuguese legal framework, the lack of information and data on the allocation of infrastructures, causes this dimension to be neglected in the process of issuing permits and licenses).

^{iv} IvB can be the basis to define policies to stimulate action, or to promote the immobilization of the various economic agents, according to the need of monetization the existing infrastructure.

^v IvB allows to inform the public investments and actions in order to leverage strategies that can assure the use of the existing infrastructures and the profiting of the investments that were already made (mitigating waste), as well as the correction of the most evident and significant overloads.

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