
Socioeconomic and environmental impacts on the local population around a road intervention in Juiz de Fora/MG

Impactos socioeconômicos y ambientales en la población local en torno a una intervención vial en Juiz de Fora/MG

Impactos socioeconômicos e ambientais à população local no entorno de uma intervenção rodoviária em Juiz de Fora/MG

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Abstract

The implementation of a highway in a consolidated urban area promoted several socioeconomic and environmental impacts in the so-called Cidade Alta, in Juiz de Fora/MG. It critically analyzes and presents the inherent impacts of the construction of the BR-440 highway, as well as its course in the various municipal plans that it was included, from its conception in 1978 to the last urban plan, of 2018. It discusses how local urban planning is affected by changes in its propositions that translate into impacts on the population in their daily lives and quality of life. It is concluded that the lack of inclusion of society in decisions that directly affect it was the common practice of urban plans in Juiz de Fora even before the elaboration of the last urban plan.

Keywords: Socioeconomic impacts; urban planning; highway; BR-440.

Resumen

La implementación de una carretera en un área urbana consolidada promovió varios impactos socioeconómicos y ambientales en la llamada Ciudad Alta, en Juiz de Fora/MG. Analiza críticamente y presenta los impactos inherentes a la construcción de la carretera BR-440, así como su recorrido en los distintos planes municipales que la incluyeron, desde su concepción en 1978 hasta el último plan de desarrollo urbano, de 2018. Se analiza cómo la planificación urbana local se ve afectada por cambios en sus propuestas que se traducen en impactos en la población en su cotidianidad y calidad de vida. Se concluye que la falta de inclusión de la sociedad en las decisiones que la afectan directamente era la práctica común de los planes urbanos en Juiz de Fora incluso antes de la elaboración del último plan urbano.

Palabras clave: Impactos socioeconômicos; planificación urbana; carretera; BR-440.

Resumo

A implementação de uma rodovia em uma área urbana consolidada promoveu impactos socioeconômicos e ambientais diversos na chamada Cidade Alta, em Juiz de Fora/MG. Analisa-se criticamente e são apresentados os inerentes impactos à construção da rodovia BR-440, bem como seu percurso nos diversos planos municipais que foi incluída, desde sua concepção em 1978 ao último plano diretor, de 2018. Discute-se como o planejamento urbano local é afetado por alterações em suas proposições que se traduzem em impactos à população em seu cotidiano e qualidade de vida. Conclui-se que a falta de inclusão da sociedade nas decisões que a afetam diretamente foi a prática comum dos planos urbanos em Juiz de Fora até antes a elaboração do último plano diretor.

Palavras-chave: Impactos socioeconômicos; planejamento urbano; rodovia; BR-440.

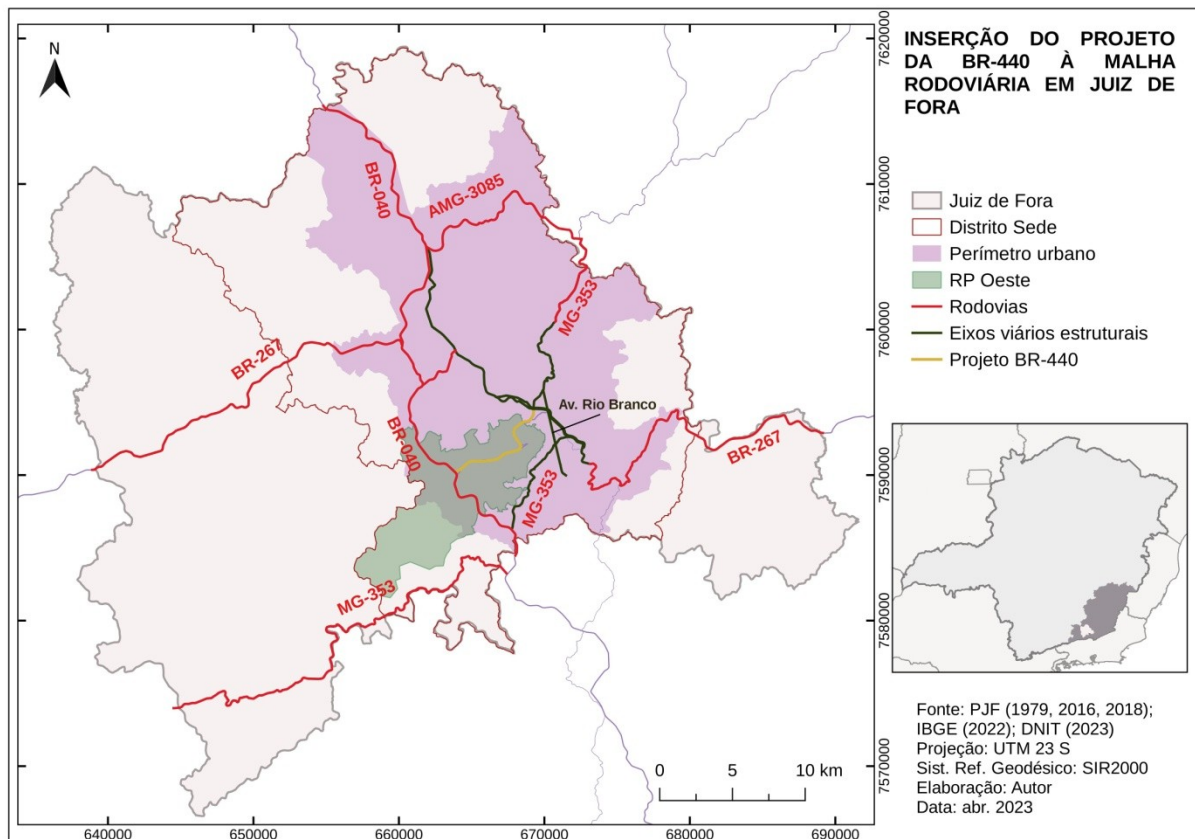
Introduction

The disturbances and adversities arising from a work are inevitable. However, public enterprises that are subject to environmental licensing must anticipate such complications and the most diverse social, economic and environmental impacts, whether negative or positive (DAMASCENO et al., 2021).

In Juiz de Fora/MG, the construction of a federal highway implemented in an already consolidated urban area is causing socioeconomic impacts on the population of one of the city's Planning Regions, known as Cidade Alta (RP Oeste) and, in its immediate surroundings of intervention (CRUZ, 2014; BARROS et al., 2021; ROCHA et al., 2022). Map 1 presents and locates the intervention area.

The road project was conceived during the preparation, by the city hall, of an urban plan for the region at the end of the 1970s. The so-called "Juiz de Fora Access to the new BR-040", published in 1979, intended to create a road connection between two highways, the then new route of BR-040 (Rio-Brasília), opened in 1982, and BR-267 (Zona da Mata and MS border with Paraguay), in addition to serving as a means of integration inter-regional area of the Zona Mata in Minas Gerais, through the current MG-353 (PJF, 1979; 1996; 2004).

Map 1- Location of BR-440 in Cidade Alta, Juiz de Fora/MG



Source: Prepared by Silveira (2023)

However, as other projects in the Cidade Alta Master Plan (PDCA), which the road would connect, were not executed, the road lost part of its purpose (PMJF, 1996). Even so, the project was recovered and began to be applied, after 20 years, however, without carrying out technical studies and identifying the necessary changes to adjust it to the reality of that moment, or even indicating its unfeasibility, due to the changes in urban morphology and the population density that the West Region of Juiz de Fora underwent during this course (BARROS et al., 2021).

In 1999 the construction of Via São Pedro³ began and after the completion of its first section it took place in 2005 (PJF, 2005; VALENTE, 2012). The work was resumed again in 2009 as a federalized route, included in the Growth Acceleration

³ The nomenclature of the road refers to the São Pedro neighborhood, where, deviating from a large geographical barrier, the steep slopes of Morro do Cristo, which cause a sharp difference in elevation between Cidade Alta and the Paraíba River Valley (forming nucleus from the city), it would pass via São Pedro towards the Center of Juiz de Fora. The São Pedro neighborhood arises from an old German colony that was created to receive immigrants in order to build another road, still in the 19th century, the first highway in Brazil, the Estrada União e Indústria, inaugurated in 1861 by Mariano Procópio Ferreira Lage and Emperor Dom Pedro II (REFERENCES).

Program (PAC II) to count on the huge public resources that the project required and now called BR-440 (PJF, 2009, MINAS GERAIS, 2018).

Therefore, the objective is to present the socioeconomic and environmental impacts resulting from the construction of BR-440 according to the stages of construction of the road through a critical analysis of the various local urban plans that the project encompasses. It discusses how public urban planning instruments are positioned and shaped to meet interests that are not always objectively directed at the population or do not prove to be effective in trying to respond effectively to the challenges of urban planning diagnosed and listed by themselves, which in this case of the Via São Pedro project lose their proposed objectives.

Socio-spatial phenomena in the construction stages of BR-440

Three construction stages of Via São Pedro can be considered: The first, which resulted in the construction of the first section between 1999 and 2005; the second between 2009 and 2013, when two more sections were built until it was embargoed by the Federal Audit Court (TCU), due to suspicion of IG-P (TCU, 2012⁴); and the third with the resumption of works in 2018 until its new stoppage in 2020. In the meantime, socio-spatial phenomena were recorded parallel to the construction of the road.

Urban processes of production and transformation of space were observed during the road construction stages. So, as the road was consolidated in the constructed sections, aggressive processes characterized, according to Cruz (2014), by speculative real estate vectors promoted intense verticalization and socio-spatial segregation in the region. Which also resulted in impacts on local mobility.

Object of study to facilitate the expansion of the Western Region from the 1980s onwards, Cidade Alta was destined to receive “higher income classes” and a strong urban-road restructuring with the installation, in addition to the basic urban infrastructure, of large equipment, some to serve the entire city.

⁴ Serious Irregularities with recommendation for Shutdown, in violation of Law No. 8,666/1993.

Among the proposals in the Cidade Alta Master Plan – PDCA were a civic-sports center with private offices and public offices in the middle of a complete leisure area, with a gym, courts, public swimming pools, library, theater, banking institutions, restaurants, nightclubs and other leisure and commercial activities. There is also a sports complex with a football stadium for 40,000 spectators, a tourist complex around the Mirante do Morro do Cristo, and another administrative complex that would bring together the headquarters of the municipal executive and legislative powers, in addition to the state justice system. The projects followed the public initiative to install, in the West Sector, the campus of the Federal University of Juiz de Fora, built between 1966 and 1970 (UFJF, 2022), and, in this way, the intention was to direct urban expansion to that region (GERALDO, 2014). Until the 1970s, its occupation was considered “quite rarefied” by PDCA technicians as it was occupied in addition to some already consolidated locations, such as the villages of São Pedro and São Vicente de Paulo (Borboleta), of origin German; and other agglomerations, including farms and farms for leisure and weekend activities (PJF, 1978; MARQUES, 2019), used as summer homes. However, the region's infrastructure was very precarious at that time (PJF, 1978).

Although the PDCA was not fully incorporated and was not transformed into law, many of its projects were gradually carried out and readjusted. The induction of urban occupation in the West Sector took place, but not as sharply as predicted by the plan's technicians. However, the West Region was the one that recorded the greatest population density in the 2000s, among the others in Juiz de Fora (PJF, 2010; RODRIGUES, 2013; GERALDO, 2014), according to Table 1.

Table 1- Urban population of Juiz de Fora by region and population density (2000/2010)

RA	Population		RA	Increase % 2000-2010
	2000	2010		
Center	94.001	101.538	West	39,06
North	91.950	106.355	No specification	28,83
East	85.292	89.785	North East	16,18
South	52.136	60.352	South	15,76
Southeast	49.015	52.042	North	15,67
North East	39.985	46.453	center	8,02
West	24.432	33.976	Southeast	6,17
No specification	19.985	25.746	East	5,27
TOTAL	456.796	516.247	TOTAL	13,01

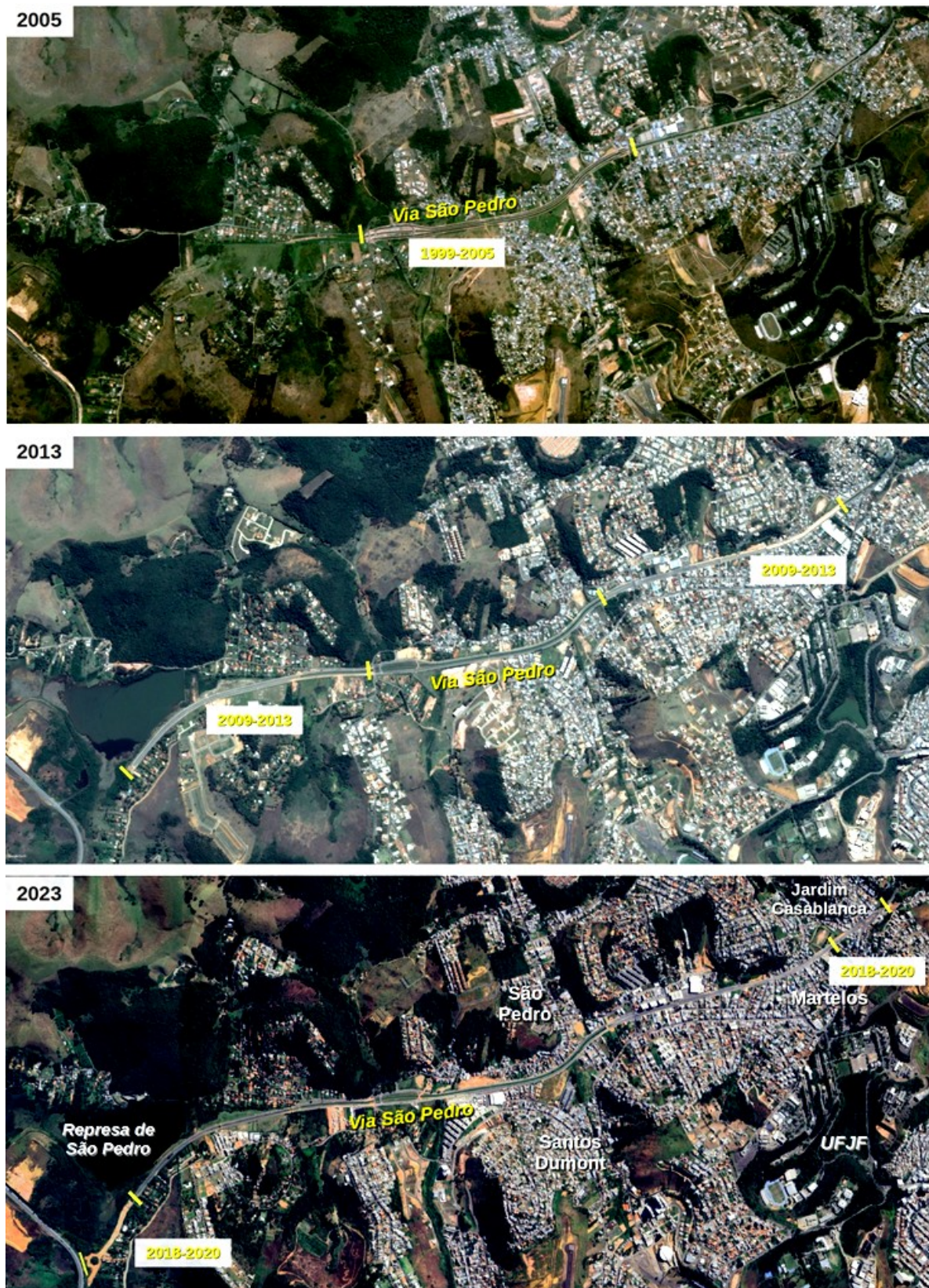
Source: PJF (2010); Rodrigues (2013). RA: Administrative Region.

Currently, the Western Region is characterized by a diverse occupation in which representatives of all income classes are found (Image chart 1).

However, it is noted that there is a prevalence of many closed condominiums, horizontal and vertical, installed more intensely since the 1990s (GERALDO, 2014; PJF, 2016). In Via São Pedro and its surroundings, many housing developments began to be concentrated, tall residential towers with numerous units, and commercial buildings to meet this growing demand of new residents in Cidade Alta.

The road with the status of “highway under construction” (DNIT, 2023-a) promoted a series of socioeconomic impacts in Cidade Alta, in Juiz de Fora. Traffic and the implications for urban mobility are just some of the repercussions that have impacted the daily lives of residents and those who access Cidade Alta. Economic activity was impacted by the construction of BR-440, which resulted in a reduction in local commerce clientele in some locations and even caused the change of address of establishments (BARROS et al., 2021), a sector very sensitive to these types of interventions.

Image Letter 1- Spatial changes around Via São Pedro between 2005 and 2023, Juiz de Fora Minas Gerais-Brazil



Source: Google Earth, 2005 (10/17/2005); 2013 (09/15/2013); 2023 (04/06/2023).

Socioeconomic and environmental impacts around Via São Pedro, Juiz de Fora

The perception of a state of abandonment of the road was greatly felt by the population. Sanglard (2013) observed that in addition to the lack of basic janitorial care on Via São Pedro, the occurrence of social discrimination due to income issues, “Curious is the social distinction between the asphalted section and the one that lacks infrastructure”.

While in front of the simpler houses there is land, in front of the access to the luxury condominiums, the paving was completed and signposts were installed and the road was painted.” The relationship of the work with society mentioned by Barros et al., (2021), could not be different than, the “construction of BR-440 in the São Pedro neighborhood, west zone of Juiz de Fora”, causing “resistance on the part of the local population” in the face of the various inconveniences and impacts arising from its installation.

One of these is related to the canalization of the São Pedro Stream, resulting in worsening cases of flooding and flooding along the road axis, as the rectification and construction of galleries that intubated the canal (closed) was carried out above the level of nearby roads. and the drainage and sewage systems installed there (ROCHA, 2010). The risks of flooding that should have been avoided (BARROS et al., 2021), in this way, were not eliminated, however, the cases became more intense as documented by Rocha (2010) and are included among the main socio-environmental problems in resulting from the construction of BR-440.

During the longest period of work stoppage, between February 2013 and June 2018 (SANGLARD, 2013; BERNADETE, 2018), the population that was left in the middle of the “dragged process to complete the work” soon tried to occupy the spaces in some way. empty spaces that were initially unused. Boot, runway for model airplanes (SANGLARD, 2013) and parking were some of the uses verified. A section stands out that generated a lot of discussion in local society for intervening in a Permanent Preservation Area (APP) on the banks of the São Pedro Dam. The

construction of a highway on the banks of the reservoir that is part of the city's public supply system, represents real risks to the quality of the water source (ROCHA, 2022; ROCHA et al., 2022). A segment of the stretch that was intended to connect BR-440 to BR-040, still unfinished, has since 2013 been used as a leisure area and for sports, walking, running and cycling are the most popular among the community in the region and by sportspeople, standing out in the city (BARROS et al., 2021).

The surroundings of the first constructed section, opened to use in 2006 (PJF, 2006), remained unoccupied until then and the road, even in a denser area at the time, as it had not yet received any buildings, was a deserted area. . Without maintenance, the “sense of insecurity in the area” was felt more intensely by the population. The practice of traffic violations and dangerous driving were prohibited by police authorities, but many serious cases of violence were recorded on the road. Without serving as a connecting highway, the constructed sections of BR-440 are dangerous. Traffic accidents and pedestrian collisions affected road users, resulting in fatalities (KAEHLER, 2017), even in a dead-end section and, therefore, without traffic flow, close to the São Pedro Reservoir, in the area used for leisure (VALENTE, 2016).

One of the proposals to mitigate these impacts and provide safety for road users was the installation of three footbridges along this stretch. However, civil society argued that in the process of implementing the highway, in addition to these negative impacts, the road would cause the so-called “barrier effect” (SILVA JÚNIOR; FERREIRA, 2008) by physically segregating the Cidade Alta region.

The project, even though revised, maintained the proposal for the construction of special works of art, in addition to pedestrian crossings and viaducts, until before its disembarkation. At least two pairs were planned in sensitive areas critical to road interventions, one next to a fragment of Atlantic Forest and the other close to listed properties of high historical value, the Railway Station (EF/MP) and the Mariano Procópio Museum Park (Image Letter 2).

Image Letter 2- Forest, Railway Station (EF/MP) and Mariano Procópio Museum Park



Source: Extracted from Rocha (2010). Adapted by Silveira (2023)

Properties were expropriated for the construction of BR-440, partially or completely, on built and unoccupied land. However, a large number of residents were threatened by the expropriation process (BRASIL, 2016), however, it was not carried out. The 107 properties targeted by DNIT Ordinance No. 1,410, among one of the reasons that prevented the process from continuing, was a court order that certain conditions that mitigated environmental impacts to the São Pedro Dam must first be met (VALENTE, 2016). In other words, because the Dam was involved in the scope of the project, due to its proximity to the reservoir, the population was spared from losing their properties.

Faced with so many complications, in 2016 the news about the project no longer considered continuing the route of the highway beyond Campo in the Nova União neighborhood (VALENTE, 2016). The unfeasibility of the rest of the route was finally recognized and the project began to consider its construction only up to the access junction to the Jardim Casablanca neighborhood, the end point of BR-440.

Still in 2014, requests for the municipalization of the highway began to enjoy greater political support. However, as at that time the road, still under legal jurisdiction, was recommended to be stopped by the TCU, it was unfeasible to fight for its municipalization, having to wait for the legal issues to unfold. The proposal was requested by the population in the construction of the Urban Mobility Plan in 2016, but was discussed again with more emphasis at the beginning of the 2020s. However, the municipal administration claimed that it would not be able to afford the finalization costs. of the road would therefore await the completion of its construction under the responsibility of DNIT itself.

Changes in master plans and repercussions on local urban planning

Some nuances can be noticed in local urban planning instruments when closely examined. These nuances are exposed to show the divergence of proposals and how they relate or, on the contrary, are not fixed to reality in relation to the case presented.

Juiz de Fora's master plans drawn up at the end of the 1990s are combined with the city's road plans.

The road layout remained practically the same, with only small changes at the ends of the road, at the points where interconnections with other highways would be made, since its first executive project in 1979. The project was rescued in the early 1990s by the municipal government , without considering the socio-spatial transformations that occurred in its area of interference, was discussed and included in the study of the first master plan of Juiz de Fora in 1996.

The preparation of the Urban Development Master Plan (PDDU/1996), although not enacted into law, included Via São Pedro in its projects and proposals (the moment when the designation appeared). Although the plan recommends not building the section of road close to the banks of the São Pedro Reservoir, the same recommendations were not made with the same tone of environmental concern and protection of the forest fragment between the Fábrica, Democrat and Vale do Ipê

neighborhoods. The proposal for the road, in 1996, appears on a map, preserving the 1979 route over the forest. Still at the end of the 1990s, the road had land available to connect with Rua Mariano Procópio and Av. Rui Barbosa (intense intra-regional traffic corridors in the city), towards the interior of Zona da Mata (PJF, 1996). However, the area would be greatly impacted due to the consolidated neighborhoods around the road, in which the original project provided for expropriations.

The recommendation not to build the section close to the São Pedro Dam to guarantee natural properties in compliance with the relevant legislation, was soon changed and is no longer demonstrated in the following master plan, which took advantage of the 1996 studies and was implemented in law (Law No. 9,811/2000). Opposite to the recommendation, other paths are proposed in PDDU/2000 and assert the possibility of environmental degradation to the water source, completely ignoring the arguments presented (JUIZ DE FORA, 2000; PJF, 2004).

In the review of the 2000 master plan, which takes place with the construction of Via São Pedro still at a standstill, the urban mobility sectoral plan runs in parallel to the studies and preparation of the master plan. Launched in 2016, the acronym PlanMob/JF presents the road as a component of part of the city's structural road system, but considering existing roads and no longer presents sections that are inadequate or unfeasible to be executed, such as the route over the forest fragment. And not even the connection of the road over the urbanized area and close to the Railway Station and the Mariano Procópio Museum. However, there is an intersection with BR-040 and on the banks of the São Pedro Dam, however, with a lower road hierarchy, as an articulating axis (PJF, 2016).

The road was also included in the Participatory Master Plan⁵ (PDP), shortly after the work resumed in 2018. In the implementation phase and sections constructed, the road could not be omitted from these latest plans. According to the PDP, Via São Pedro should promote the integration of the local road system and be

⁵ Established by Complementary Law No. 82, of July 3, 2018.

linked to the city's other structural axes, but “with a non-segregating character” (JUIZ DE FORA, 2018, Art. 52). Without making direct mention of BR-440 in the entire law, the PDP refers indirectly to the highway when it determines, as a result, that it does not promote the then barrier effect, so criticized throughout the construction process, as it should not segregate the region where it is being installed. And, according to Article 52 of the law, it means that the road must not have the function of a highway as its project envisaged. Therefore, proposals to install walkways become unnecessary considering them in the context of a highway with physical barriers and safety devices to prevent crossing the road at level.

Barros et al., (2021) perceive, however, an “impressive nature” on the part of the contractor and the public authorities, which exposes the insensitivity of public agents who plan the city and above all to the local context in which a project takes place. Furthermore, they state that decision-making did not consider the socioeconomic conditions of the region and the social layers that were in the direction of the Via São Pedro route and also disregarded “the wide range of socio-environmental aspects involved in the spatial transformations resulting from these works” (BARROS et al., 2021).

The authors indicate the fundamental need for public authorities to listen to the large population affected in the process of installing such an impactful project. In addition to the fact that decisions are taken “in an integrative way” with the population in order to guarantee the well-being of everyone, directly and indirectly affected by an intervention with great repercussion in the “mobility dynamics” of Juiz de Fora (BARROS et al., 2021).

The topic, presented several times in public hearings at the Juiz de Fora City Council, during the construction period of BR-440, was an environment in which the population could also put pressure on public authorities. Under the demands presented to the municipal legislature, it is observed that they may have contributed to preventing the work from proceeding through dense and environmentally sensitive urban areas.

Final considerations

It should be noted that master plans, when institutionalized as municipal legislation, have the force of law and all their corresponding prerogatives. Therefore, its determinations must be followed.

It is analyzed that the changes in the road layout actually reveal the position of the municipal management that prepares the projects and expresses them as propositions. However, the impact that changes in municipal legislation will actually have on citizens is not perceived. The road as a structural axis of the city's transport system, having its route modified, directly impacts the daily life and quality of life of the population, especially those directly affected by the intervention. And it still has repercussions on urban planning. The opening of roads can be considered a means of socio-spatial transformation, which may result in the production of space.

Through the opening of Via São Pedro, the region most changed was the central area of the Córrego São Pedro valley. The dizzying growth of condominiums on the banks of the road and in its surroundings as well as commercial activity and all the problems and impacts presented demonstrate how the installation of a road can result in the alteration and production of space and the ability to directly affect the lives of the population.

It draws attention to the way in which the construction process of Via São Pedro took place. Popular participation was neglected in many decision-making moments about the road, starting with its route. It is unthinkable that a project from the end of the 70s would be implemented in a consolidated urban area, approximately 20 years after the beginning of its construction without considering population growth, urban morphological transformations, socioeconomic and socio-environmental impacts and which continues in these more than 40 years paying little attention to these dynamics. Furthermore, given all its negative repercussions on society and local politics, the execution of the project translates into contempt for the region's residents, that is, truly for human life. The political cost of carrying out such a challenging and impactful road project was also ignored. However, those

responsible for the controversial work were not held formally responsible, at least that cannot be said in the eyes of society.

It also seems serious that a city that had an urban planning body that was already responsible for preparing in-depth technical studies that were reflected in the extensive creation of various sectoral plans for the city and yet the other bodies that followed it were not able to prevent unreasonable size. A project completely incompatible with the reality in which it was inserted, maintaining an inadequate road layout, as presented, both in an environmental, economic and, above all, social sense.

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Author 1; Preparation, discussion of results, bibliographic research, text review

Author 2: Supervision, final analysis of results and review of the text