REVISION OF MUNICIPAL DEVELOPMENT CHARGES IN PORTUGAL: CONTRIBUTIONS TO A NEW URBAN PARADIGM

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Abstract

This communication fits into the overall structural reform of the legislation that frames the territorial planning and urban development currently taking place in Portugal. This reform aims at strengthening a new urban paradigm, providing the legal support to policy development and implementation in more equitable, flexible, transparent and sustainable ways.

Within this scope, this communication presents a proposal to reformulate the Portuguese Municipal Development Charges. This revision is crucial within the current socio-economic crisis that strongly shapes municipal finances, and expresses the concern to provide municipalities with sustainable tools in order to fight for the rights of their citizens. It is applied, as a case study, to the municipality of Bragança. This reassessment of municipal development charges fits the goals of the structural legal reform underway, and is deeply important for territorial development processes and for populations´ well-being as it warrants: (a) a greater resilience in the use of urban land, (b) the economic and financial sustainability of urban operations through a proper funding of development infrastructures; (c) higher transparency in the use of public funds; and (d) an increased fairness in the distribution of development costs and benefits among the population.

1. Introduction

All the legislation concerning land, territorial ordering and urban development is currently underway in Portugal. The new Portuguese Basis Law of Land Policy, Territorial Ordering and Urbanism was already approved (Lei nº 183/XII, 2014), linked together with the revision of the juridical regime of Territorial Management Instruments, the juridical regime of Urbanization and Edification, and the new Cadastral Law. This is a deep amendment that intends to surmount some drawbacks and contradictions that accrued from the previous legislation, on the one hand, and to contribute to the structural reform of the state concerning these matters, on the other. In fact, the previously enforced legislation revealed hard to apply and often contradictory especially due to different complex plans that overlapped on the same territories (which exerted adverse effects on the clearness of applicable rules), the existence of several territorial plans and urban development models specific to each municipality (which hampered integrated

development and sustainable articulation among municipalities), and a planning model founded on urban sprawl (which was unable to stop the quick sprawl of vacant land).

Thus this revision involves the reassessment of the core paradigms that underlie land planning and management, territorial ordering, and urban development processes. The new launched paradigm founds on three basic guidelines: planning increased flexibility; Municipal Master Plan´s strengthening as a strategic tool; and a bet on urban rehabilitation to favour town development. One of the core innovative goals of this new paradigm consists in ensuring that urban development processes are sustainable from economic and financial perspectives.

Framed by this revision of territorial legislation, the reform in municipal development charges is especially relevant in the scope of the current economic and social crisis that, besides other consequences, strongly affects municipal finances. This reform grounds on the recognition of the importance of urban development and building in all municipal activities, and the need to foster them as driving forces. It further aims at providing municipalities with instruments that enable them to defend the interest of their population in a sustainable way.

The research reported in this article proposes a reformulation in municipal development charges as instruments of urban management, in order to assure the economic and financial sustainability of urban operations, and the transparency in the equal distribution of benefits and costs that accrue from planning decisions. It is suggested the harmonization of these charges among the whole territory – namely through its introduction in general enforced legislation -, as well as its standardization in order to fit all municipalities (despite its proposed application upstream the municipal legislation, the revenues of these charges should still be allocated for municipal purposes). Thus inter-territorial differences can be smoothed and fairly balanced, irrespective of the specific location of urban development operations.

The methodology pursued in the current research goes through the following steps: (a) reformulation of municipal development charges, pointing out its main goals and characteristics; (b) analysis of the current situation resulting from the application of the currently enforced municipal development charges to the municipality of Bragança; (c) assessment of the potentially chargeable value of these new development charges; (d) comparison between the predicted and the current values, within the context of different urban development scenarios; and (e) identification of the benefits and costs that accrue to the Municipality of Bragança from this new territorial management instrument (as compared to the current situation).

2. Theoretical framework: Municipal Development charges in the municipality of Lisbon

The municipality of Lisbon have recently reformulated the Municipal Development Charges for the execution, maintenance and reinforcement of urban infrastructures (TRIU), in its Proposal of the Municipal Regulation of Charges related to development activities and related operations (Câmara Municipal de Lisboa, 2012). According to this document, these charges ought to cover public investments in primary and secondary urban infrastructures that accrue from land parcelling out operations, construction, reconstruction, enlargement or land use changes. Those include the costs with the execution, maintenance and reinforcement of primary and secondary infrastructure (TRIU) required by changes in the extension, intensity or land kind of use that result from urban development operations (article 11th - municipal instalments rewarded by these charges).

So the most relevant factors to assess the overload thus implied to infrastructure (article 17th –Incidence) are: (a) floor surface creation or increase as compared to the pre-existent legal situation; (b) kind of use; and (c) urban space qualification demarcated in the ordering plan of the Municipal Master Plan.

Article 18th (Exemptions and reductions) specifies concrete situations where exemptions and reductions of development charges for infrastructures may be applied. Part of the urban infrastructures costs provided by the promoter may be deducted to the charges he should pay (article 19th - Reductions as a setback of providing urban infrastructures).

As development charges are aimed at paying urban general infrastructures´ maintenance and reinforcement that accrue from urban development operations, they shall impinge on gross surface increases or use changes (expressed in square meters), multiplied by the average unit infrastructure costs/m^2 (article 20th - Computation formulae), according to the following formula (Câmara Municipal de Lisboa, 2012):

$$\mathbf{TRIU = [\Sigma(A \times C_3) + (25 \times L \times E)] \times VU_{TRIU}}$$

where:
A – floor surface (m^2) that accrue from parcelling out procedures, urban development or building operations, considering space categories of use;
C_3 – coefficient that translates the type of operation, according to location (qualification of the urban space stated by the Municipal Master Plan). This coefficient amounts to 3,0 in consolidating spaces, and to 4,0 in already consolidated ones for housing, tourism, urban facilities, tertiary, industry and logistic uses.
L – number of parking spaces above the minimum stated by the regulation of the Lisbon Municipal Master Plan for a certain urban development operation;
E – additional coefficient that applies to the number of parking spaces over the minimum stated in the Regulation of the Municipal Master Plan, which values range from 0,0 to 2,0 (according to the areas stated in that regulation)
VU_{TRIU} – unit value of costs/m^2 for the execution, maintenance and reinforcement of urban infrastructures, based on the relation between the values of the annual investments in primary and secondary urban infrastructures supported by the municipality and the values of the charged municipal development charges (upgraded yearly).

This formula observes the principles of juridical equivalence (the upper bound meets the costs of primary and secondary infrastructure´s execution, maintenance and reinforcement), transparency (based on clear and objective parameters), and proportionality (the values of charges are proportional to increases in built surfaces, and weighted according to different types of uses). Besides, the computation of development charges may be easily rendered automatic, and supported on digital cartography.

This model should. However, be continuously monitored, especially in what concerns its coefficients and proposed unit value, with real quality data suitable for analysis and experimentation (it is proposed the use of statistical- based information provided by the authors and validated by the technicians responsible for the prior control over the urban development operations).

3. Methodology

3.1. Proposal to reformulate Municipal Development Charges: justification, relevance and objectives

The reformulation of municipal development charges reported in this article founds on the municipal charges for urban infrastructures´ execution, maintenance and reinforcement (TRIU) proposed by the municipality of Lisbon, despite the procedures adopted to compute the C_3 coefficient and the infrastructure costs/m^2 are rather different. Its main goals consist in standardizing the formula to compute these charges, and in extending its application throughout the whole national territory, in order to warrant a more balanced and fair assessment of Urban Development Charges.

As systematized data concerning parking spaces in different kinds of development operations is hardly comparable among municipalities, this parcel should not be considered in the computation of the reformulated charges. It means the values herein proposed will probably be lower than the ones that could be reached through the previous formula. However, each municipality could be responsible for a parcel of development charges specifically concerning parking spaces, more adjusted to its specific reality that could add some accrued income.

The reformulated Municipal Development Charges herein proposed are computed through the product between the gross built surface (expressed in m^2) (or increase in this surface), the coefficient C_3 (that distinguishes development interventions according to location), and the average cost/m^2 with urban infrastructures´ execution, maintenance and reinforcement.

The surfaces correspondent to the different types of land uses (within the categories of urban developed and developable land) are first pinpointed in the Municipal Master Plan and enforced complementary documents. In order to point out respective maximum licensed building capacities, these surfaces are, then, multiplied by land occupation and use indexes settled in the regulation of respective Municipal Master Plans. Each type of developed or developable land accounts for a share of coefficient C_3, given by the product between the percentage that respective surface represents in relation to the total surface within the land category the building capacity refers to. The final value of coefficient C_3 for developed and developable land is, thus, the sum of the shares assigned to the different types of land within respective category.

Finally, the values of these reformulated charges are assessed, and compared with the values of the charges currently levied for different alternative urban development operations. This analysis shows how the presented proposal is sustainable for the studied municipality.

3.2.Methodology to compute and implement the reformulated Municipal Development Charges

The methodology pursued to compute the reformulated Municipal Development Charges consists in the following succession of steps:

- Computation of the current average annual value of Municipal Development Charges (TMU) per m^2 of gross built surface;
- Computation of the average cost per m^2 for infrastructures´ execution, maintenance and reinforcement;

- Computation of the predictable value of the reformulated Municipal Development Charges (TMUr) per m^2 of gross built surface. This includes the identification of the applicable C_3 coefficient to developed land, and to land which development may be programmed (according to both categories of land assigned to urban uses proposed in the Municipal Master Plan that correspond, respectively, to consolidated spaces and spaces aimed at consolidation);
- Comparative analysis – for different scenarios of alternative urban development operations – between the values of the reformulated Municipal Development Charges applicable to developed land and to land which development may be programmed, and the homologous values of the currently enforced Municipal Development Charges, pointing out the differences.

These values were computed as the annual average of four years[1], in order to avoid fluctuations depending on very specific temporal-focused investments.

Formulae to compute current and reformulated Municipal Development Charges were applied to the municipality of Bragança, in order to find out respective values/m^2 of licensed gross built surface. These formulae were subsequently applied to urban development operations that fit concrete parcelling out operations and building typologies (Leitão, 2012), so to find out the total amount of the corresponding charges. Within each operation, the typologies of single-family dwellings, multifamily dwellings, and multifamily dwellings with trade and services were further considered (that reflect different kinds of uses). The studied typologies and respective gross built surfaces (see Leitão, 2011) were specifically the following ones (Table 1):

Table 1. Typologies of urban operations studied in the current research

Typologies / Gross surfaces	Construction		Parcelling out operations	
	Housing	Trade and services	Housing	Trade and services
Single-family dweelings	210 m^2		2 100 m^2	
Multifamily dwellings	4 200 m^2		12 600 m^2	
Multifamily dwellings with trade and services	3 150 m^2	1 050 m^2	8 400 m^2	4 200 m^2

3.3 .Computation of the current annual average value of Municipal Development Charges

According to the Municipal Regulation of Urban Development, Edification and Taxes of the Municipality of Bragança (Câmara Municipal de Bragança, 2002), the municipal development charges are computed according to the following formula:

$$TMU = AC \times C \times K$$

where:
AC – building or added surface (m^2);
C – building or enlargement cost/m^2, according to the values tabulated by the Municipality (€/m^2);
K – infrastructural impact coefficient that amounts to:

- 1, 0 if the operation is served by water supply network and sewerage system;
- 0,5 if the operation isn´t served by any of these infrastructures;
- 0 for defined special situations.

[1] The latest four years provided with available data from the Portuguese National Statistics Institute and from municipal sources

This expression to compute Municipal Development Charges is rather easy, and it resorts to computation parameters commonly adopted by other Portuguese Municipalities (Leitão, 2011). However, building or enlargement costs/m^2 are worked out by the municipality and are not clear for promoters/builders (as they are not explained in the publicly provided pluriannual plans). However, charges on different types of urban development operations are rather balanced.

3.4. Computation of the average cost with urban infrastructures´ execution, maintenance and reinforcement

The amount of budgeted investments was collected for the following urban infrastructures, for each considered year (2009, 2010, 2011 and 2012): streets and road network; drainage systems of domestic, industrial and pluvial residual waters; public lighting; public parking; neighbourhood facilities and public spaces.

The annual cost/m^2 with urban infrastructures´ execution, maintenance and reinforcement was then computed through the quotient between that average annual municipal investment, and the corresponding annual gross built surface, considering the percentage of land assigned to urban uses, settled in the Regional Plan of Territorial Ordering.

In order to compute the annual gross built surface, data concerning the total number of finished buildings (new construction, and buildings´ enlargement, changes or reconstruction) was collected from the statistical northern regional yearbooks (INE, 2009, 2010, 2011, 2012). The total liveable surface for urban uses (m^2) was assessed through the product between this value and the average liveable surface per building. The latter surface, by its turn, was reckoned through the product among the average number of floors per building, the average number of dwellings per floor, the average number of compartments per dwelling, and the average liveable surface per room. Thus the total gross built surface is assessed through the division of the total average liveable surface by 0,65, considering that the liveable surface usually amounts to about 65% of the gross surface.

3.5. Computation of the value of the coefficient C_3 for the Municipality of Bragança

The analysis proceeded, then, with the computation of coefficients C_3 for the reformulated Municipal Development Charges, according to the following methodology:

- The different types of land assigned to developed spaces - within the categories of developed land and land which development may be programmed - are first identified (INE, 2012);
- The maximum building capability/m^2 licensed by the Municipal Master Plan is, then, computed for each of these predicted land uses, through the product between land maximum occupation and use indexes;
- For each category of urban development-assigned land, the percentages of each specific type of use are reckoned through the quotient between respective anticipated surfaces and the total surface of that land category (according to the report of the Municipal Master Plan);
- The contribution of each type of land within each category for the correspondent coefficient C_3 is, thus, computed as the product between this percentage and respective building capacity;

- The total sum of these individual contributions extended to all types of land - within the categories of developed land and land which development may be programmed - leads, finally, to the corresponding values of C_3.

3.6. Computation of the values of the reformulated Municipal Development Charges, and comparison with the values of the current Municipal Development Charges

The reformulated Municipal Development Charges are reckoned through the product between the value of the licensed gross built surface, the applicable coefficient C_3 and the costs/m^2 with the execution, maintenance and reinforcement of urban infrastructures.

After the computation of the reformulated Municipal Development Charges, some concrete urban development operations were simulated, so to find out the total amount the municipality should collect. Finally, the values that accrue from the application of the reformulated Municipal Development Charges are compared with the current values for homologous operations, pointing out the differences. Thus conclusions are drawn concerning either the meaning or feasibility of adopting the reformulation herein proposed.

4. Case study: the municipality of Bragança

4.1. Brief Description of the Municipality of Bragança

The Municipality of Bragança is located in the Portuguese northeast extreme, in its northern region, in Alto Trás-os-Montes sub-region. It covers a surface of 1 173.9 Km^2 and lodges 35 341 inhabitants (INE, 2011). This Municipality is bordered at north and east by the Spanish regions of Ourense and Zamora, at southeast by the Municipality of Vimioso, at southwest by the Municipality of Macedo de Cavaleiros and at west by the Municipality of Vinhais (wikipedia; Nemus, 2009; Plural, 2009). It is one of the Portuguese biggest administrative districts, and is made of by forty-nine parishes (Figure 1).

Figure 1. Municipality of Bragança (Source: www.mapadeportugal.net)

The Municipal Master Plan (Diário da República, 2010c) is an instrument of territorial planning that, based on the strategy for local development, settles the spatial structure, land classification and qualifications, as well as the parameters for land occupation, and the requirements of urban facilities (Câmara Municipal de Bragança, 2010b).

According to its 2nd article – Goals and strategy -, the goals pursued by this Municipal Master Plan consist in: (i) the promotion of a municipal balanced development considering its territorial diversity, and the evolution that took place during the latter years; (ii) its articulation with the applicable higher-order territorial management tools; (iii) its easy application and management, as well as its connection with other enforced plans; (iv) its adjustment to the specific features of the Municipality, correcting abnormal situations, and fitting enforced legislation; (v) framing urban uses in rural spaces, respecting growth perspectives, favouring the filling in interstitial spaces; (vi) standing up for the built heritage in general, and the historic and cultural heritage in particular; (vii) betting on forest diversification, regulating their possible uses, as well as the urban occupation of rural and isolated areas; (viii) maintaining the environment and the landscape; (ix) establishing a normative framework for municipal investments, specifying public municipal and state investments, and (x) restructuring the road network, linking it up with the road and train plans within the proposed ordinance interventions.

The development strategy outlined by this Municipality to achieve these settled goals consubstantiates through: (i) the projection of an innovative image of the city, centred around the eco-town concept, strengthening their potentialities as a regional pole, an international link, and a trade and services centre; (ii) the strengthening of the competitiveness and attractiveness of rural areas on population, through the provision of facilities, infrastructures and equipment, and through the requalification of their public spaces; and (iii) to enhance the natural, cultural and landscape heritage, and to boost the economic appreciation of endogenous potentialities.

As far as land occupation, use and use changes are concerned, the municipal land can be classified into rural and urban land. The latter is recognized potentialities to undergo development and building processes, and it covers developed land or land which development may be programmed inside the urban perimeter, and well as land allotted to the urban environmental structure. According to the section I of the 4th chapter – Qualification of urban land -, the category of developed land includes developed spaces of types I, II, II, IV, V and VI, spaces for urban equipment, and industrial spaces. The category of land which development can be programmed include, by its turn, the subcategories of developing spaces of types I, II, III, IV and V, spaces for urban equipment, and industrial spaces.

The developed spaces of types I, II, III, IV, V and VI within the category of developed land can be described by their high infrastructure levels and building concentration, being this land mainly assigned to construction (article 42nd). These spaces locate in central areas and other rather homogeneous places, characterized by high building concentration where housing, trade and services functions are prevalent, and they may even contain interstitial spaces. The designations assigned to these spaces correspond to their location within different built-up urban areas, and the applicable building indexes are systematized in Table 2:

Table 2. Building regime in developed spaces by space typology (Source: Diário da República, 2010c)

Space typologies	Built-up urban areas	Maximum occupation index (%)	Maximum use index
Developed spaces of Type I	Bragança	60	4
Developed spaces of Type II	Bragança	-	-
Developed spaces of Type III	Izeda	40	0,8
Developed spaces of Type IV	Babe, Baçal, Coelhoso, França, Gimonde, Grijó de Parada, Nogueira/Couto, Outeiro, Parada, Paredes (Parada), Pinela, Quintanilha, Rabal, Rebordãos; Salsas, Santa Comba de Rossas, São Pedro de Sarracenos e Serapicos	40	0,6
Developed spaces of Type V	Alfaião, Aveleda, Calvelhe, Carragosa, Carrazedo, Castrelos, Castro de Avelãs, Deilão, Donai, Espinhosela, Faílde, Formil (Gostei), Freixedelo (Grijó de Parada), Gondesende, Gostei, Macedo do Mato, Meixedo, Milhão, Mós, Oleiros (Gondesende), Paçó (Mós), Paradinha (Outeiro), Paradinha Nova, Parâmio, Pombares, Quinta das Carvas (Bragança - Santa Maria), Quintela Lampaças, Rebordainhos, Rio de Onor, Rio Frio, Sacoias (Baçal), Sanceriz (Macedo do Mato), São Julião, Sarzeda (Rebordãos), Sendas, Sortes, Vale de Nogueira (Salsas), Varge (Aveleda) e Zoio	30	0,5
Developed spaces of Type VI	Remaining built-up areas	30	0,4

According to the definitions set out in the 5th article, the land occupation index is given by the quotient between the total implantation surface ($\sum$Ai) and the land surface (AS) the index refers to, and it is expressed as a percentage [($\sum$Ai/AS)x100]. The land use index, by its turn, is given by the quotient between the total built area ($\sum$Ac) and the land surface (AS) the index refers to [($\sum$Ac/AS)].

The developable urban spaces that belong to types I, II, III, IV and V within the category of land which development may be programmed – and also according to their location in built-up urban areas – are made up by the areas expected to acquire the characteristics of developed spaces, despite they don´t possess them yet. These spaces are aimed at different occupations and uses, namely housing, equipment facilities and public urban green spaces, trade, services, industrial businesses of type 3, and activities compatible with the prevailing use. New buildings require approval through detailed plans, parcelling out operations or execution units. To build in already existing built-up spaces presumes the existence of paved streets, urban infrastructures and wastewater treatment plants (article 52nd). The building parameters applicable to these spaces are systematized in Table 3:

Table 3: Building regime of the developing spaces by space typology (Source: Diário da República, 2010c)

Space typologies	Built-up urban areas	Maximum occupation index (%)	Maximum use index
Developing spaces of Type I	Bragança	60	4
Developing spaces of Type II	Bragança	60	2
Developing spaces of Type III	Izeda	40	0,8
Developing spaces of Type IV	Bragança, Gimonde, Parada, Rebordãos, São Pedro de Sarracenos e Santa Comba de Rosas	30	0,6
Developing spaces of Type V	Quinta das Carvas (Bragança - Santa Maria), Rio Frio e Sarzeda (Rebordãos)	25	0,5

The current Municipal Master Plan increased by 26,6% (1 207.8 hectares) the surface of urban land in relation to the previous Municipal Master Plan. It results from a rigorously space delimitation, from the integration inside the urban perimeter of buildings originally outside it as well as neighbouring buildings erected in the meanwhile, from the creation of new industrial areas or from the expansion of the already existing ones, as well as from the delimitating borders integrated in the environmental urban structure (Nemus, 2009; Plural, 2009) (Table 4):

Table 4: Surfaces assigned to urban land uses proposed by the enforced Municipal Master Plan of Bragança (Source: Plural, 2009)

Space subcategories			Surface (ha)		%
			Partial	Total	
Developed land	Developed spaces	Type I	384,8	2184,1	57,2%
		Type II	32,1		
		Type III	49,7		
		Type IV	593		
		Type V	616,8		
		Type VI	507,7		
	Equipment spaces			156,1	4,1%
	Industrial spaces			151,4	4,0%
Land which development may be programmed	Developing spaces	Type I	2,3	382,8	10,0%
		Type II	49,4		
		Type III	12		
		Type IV	299,2		
		Type V	19,9		
	Equipment spaces			134,2	3,5%
	Industrial spaces			187,7	4,9%
Environmental urban structure				622,5	16,3%
Total urban land				3818,8	100,0%

4.2. Application of the methodology to the Municipality of Bragança

The minimum and maximum values of Municipal Development Charges/m^2 of licensed built surface, in light of the regulation and charges currently enforced in the Municipality of Bragança (according to the minimum and maximum values anticipated for the parameter K) (Câmara Municipal de Bragança, 2002) are presented in Table 5:

Table 5: Values of Municipal Development Charges currently enforced in the Municipality of Bragança per m^2 of licensed gross built surface

Computation parameters		AC (m^2)	K	C (€/m^2)	TMU (€/m^2)
Typology: Construction	Minimum value	1	0,5	14,21	7,105
	Maximum value	1	1	14,21	14,21
Typology: Parcelling out operations	Minimum value	1	0,5	1,58	0,79
	Maximum value	1	1	1,58	1,58

The values of the municipal development charges for the studied development operations are systematized in Table 6:

Table 6: Minimum and maximum values of the Municipal Development charges currently enforced in the Municipality of Bragança applied to the studied development operations

Typology of urban development operations	TMU (€/m^2)
Single-family housing - construction	1.492,1 €
	2.984,1 €
Multifamily housing - construction	29.841,0 €
	59.682,0 €
Multifamily housing with trade and servicess - construction	29.841,0 €
	59.682,0 €
Single-family housing - parcelling out operations	1.659,0 €
	3.318,0 €
Multifamily housing - parcelling out operations	9.954,0 €
	19.908,0 €
Multifamily housing with trade and services - parcelling out operations	9.954,0 €
	19.908,0 €

The differences between the minimum and the maximum values of the municipal development charges for the different kinds of urban development operations solely depends on the existence of water supply networks and sewerage systems. This difference may take on a fixed value of 50% (and not a gradual change), and it is explained by the fact that it makes sense to charge a certain amount, according to the benefit provided by the available infrastructures.

The average annual investment in urban infrastructures´ execution, maintenance and reinforcement amounted to 5 980 625 € (Table 7):

Table 7: Investments allotted to urban infrastructures´ execution, maintenance and reinforcement in the Municipality of Bragança (Source: Câmara Municipal de Bragança, 2007, 2008, 2009, 2010a)

Investments in urban infrastructures´ execution, maintenance and reinforcement	2009	2010	2011	2012
Repairs in different streets in the city of Bragança	25.000	20.000	700.000	150.000
Reconversion of urban Infrastructures in Forte de S. João de Deus area	500			
Different pavements in the city of Bragança	5.000	5.000	5.000	5.000
Reconversion of Av. João da Cruz and other streets	500	5.000	5.000	1.000
Remodelling of Av. Cidade de Zamora and Av. Do Sabor	500	5.000		
Duplication of Av. General Humberto Delgado from the school Abade de Baçal to the inside circular road	2.100.000	400.000	5.000	1.000
Construction of the west approach road to the city since the inside circular road till Av. Abade de Baçal	500	5.000	5.000	1.000
Construction of the cycle lane in the environmental area of IPB	1.600.000	1.800.000	500.000	100.000
Requalification of approach roads to different villages	25.000	5.000	5.000	5.000
Requalification of squares in villages	120.000			
Execution of lot infraestrutures in S. Tiago - 1st Phase	450.000	50.000	20.000	1.000
Repavement of residential areas in the city of Bragança	1.000.000	500.000	50.000	25.000
Different pavements in the city of Bragança	80.000	300.000	50.000	20.000
Requalification of Izeda´s central street		5.000	5.000	1.000
Construction of the cycle lane - 2nd Phase - connection to CCV		30.000	895.000	200.000
Construction of the cycle lane of Mãe d´Água		200.000	530.000	200.000
Construction of the new sqare of Mãe d´Agua		100.000	400.000	200.000
Repavement of Av. Abade de Baçal and the twentieth-century residential area				60.000
Repavement of the streets in the industrial area	500			
Construction of the inside circular road - connection to Av. Abade de Baçal				350.000
SEWERAGE	523.500	430.000	585.000	1.791.000
WATER SUPPLY	254.000	410.000	410.000	209.000
ENVIRONMENTAL PROTECTION AND CONSERVATION OF THE NATURE			130.000	
Gardening of different municipal spaces	30.000	30.000		31.000
Acquisition of equipment and urban maintenance	10.000	30.000		30.000
Protection of built-up areas	1.000	5.000		1.000
Green park of Coxa	500	20.000		
PUBLIC LIGHTING	145.000	110.000	110.000	47.500
Construction of infrastructures in the industrial area	205.000	10.000	10.000	1.000
Maintenance of the municipal road network	85.000	30.000	40.000	35.000
Different pavings	150.000	550.000	100.000	50.000
Traffic signs in the municipal road network - directional and informative signs	5.000	5.000	75.000	10.000
Urban road signs	25.000	20.000	50.000	10.000
Maintenance of the urban road network - road signs and painting	125.000	30.000	30.000	20.000
Construction of a little bridge in the CM over the Fervença River		30.000	20.000	1.000
Construction of the international bridge over the Maçãs River	55.000			
Pavement of municipal roads	1.271.000		15.000	3.000
Pavement of different villages with granit cubes	880.000		30.000	1.000
Repairs and paving of municipal roads	100.000		435.000	147.000
Repirs, widening and paving of municipal roads			366.000	40.000
Maintenance of car parks		25.000		5.000
Ground leveling and widening of the streets	150.000			
Parking	1.500			
TOTAL	9.424.000	5.165.000	5.581.000	3.752.500
Annual average investment (€)	5.980.625			

The total gross built surface in each year is assumed to correspond to the municipal total land surface assigned to urban uses, which represents about 70,4% of its total surface (according to the Municipal Plan of Territorial Ordering). The average annual costs/m^2 with the execution, maintenance and reinforcement of urban infrastructure thus corresponds to 70,4% of the quotient between the municipal average annual investment (expressed in euros) and the average annual gross built surface (Table 8):

Table 8: Computation of the average annual cost/m^2 with urban infrastructures´ execution, maintenance and reinforcement carried out by the Municipality of Bragança during 2008, 2009, 2010 and 2011 (Source: INE, 2009, 2010, 2011, 2012)

	2008	2009	2010	2011	Total	Annual average
Total number of finished buildinds	240	184	120	132	676	169
Floors per building (nº)	2,55	2,40	2,60	2,40	9,95	2,49
Dwellings per floor (nº)	0,64	0,80	0,80	0,70	2,94	0,74
Compartments per dwelling (nº)	5,47	5,40	4,90	5,30	21,07	5,27
Average liveable surface per compartment (m^2)	20,04	19,90	19,70	20,80	80,44	20,11
Total gross built surface (m^2) (urban uses)	66.054,6	58.405,3	37.067,5	37.610,5	199.138	49.784
Average annual investment (€)	5.980.625					
Average annual cost with infrastructures´ execution, maintenance and reinforcement (€/m^2)	84,6					

The average costs with infrastructures´ execution, maintenance and reinforcement amount to 84.6 €/m^2, what is in part due to the fact that settlements are dispersed throughout many different parishes (49), most of them with rural characteristics. This value points out the strong investment in infrastructures that translates an important bet in the whole municipality´ s development (especially in less developed built-up areas, with lower building levels).

The computation of the values of the coefficient C_3 for the categories of developed land and land which development may be programmed are systematized in Tables 9 and 10:

Table 9: Computation of coefficient C_3 of the reformulated Municipal Development charges for developed land in the Municipality of Bragança

Space subcategories			Maximum occupation index (%)	Maximum use index (m^2 of gross built surface/m^2 of land)	Land building capacity/m^2	Surfaces assigned to each type of use (ha)	% of surfaces assigned to each type of use	C_3 (Developed land)
Developed land	Developed spaces	Type I	0,6	4	2,4	384,8	17,6%	0,42
		Type II	0	0	0	32,1	1,5%	0,00
		Type III	0,4	0,8	0,32	49,7	2,3%	0,01
		Type IV	0,4	0,6	0,24	593	27,2%	0,07
		Type V	0,3	0,5	0,15	616,8	28,2%	0,04
		Type VI	0,3	0,4	0,12	507,7	23,2%	0,03
						2.184,1	100,0%	0,57

Table 10: Computation of the C_3 coefficient of the reformulated Municipal Development Charges for developing land in the Municipality of Bragança

Space subcategories			Maximum occupation index (%)	Maximum use index (m^2 of gross built surface/m^2 of land)	Land building capacity/m^2	Surfaces assigned to each type of use (ha)	% of surfaces assigned to each type of use	C_3 (Land which development may be programmed)
Land which development may be programmed	Developed spaces	Type I	0,6	4	2,4	2,3	0,6%	0,01
		Type II	0,6	2	1,2	49,4	12,9%	0,15
		Type III	0,4	0,8	0,32	12	3,1%	0,01
		Type IV	0,3	0,6	0,18	299,2	78,2%	0,14
		Type V	0,25	0,5	0,125	19,9	5,2%	0,01
						382,8	100,0%	0,33

The values obtained per m^2 of licensed gross built surface for the municipal development charges concerning developed land and land which development may be programmed are systematized in Table 11:

Table 11: Value of the reformulated Municipal Development charges/m^2 of gross built surface licensed by the Municipality of Bragança

	AC (m^2)	C_3	Infrastructure´s costs/m^2 (€/m^2)	TMUr (€/m^2)
Developed land	1	0,57	84,6	47,84
Land which development may be programmed	1	0,33	84,6	27,62

The differences between the reformulated and the current Municipal Development Charges were, then, identified (these differences per square meter of built gross surface are systematized in Table 12):

Table 12: Difference between the values/m^2 of the reformulated Municipal Development charges and the Municipal Development charges currently enforced in the Municipality of Bragança

Parameters	TMUr			TMU	Land which development may be programmed	Developed land
	AC (m^2)	Land which development may be programmed (C_3 = 0,33)	Developed land (C_3 = 0,57)		TMUr - TMU	
Typology: Construction	1	27,6 €	47,8 €	7,105	20,5 €	40,7 €
				14,21	13,4 €	33,6 €
Typology: Parcelling out operations	1	27,6 €	47,8 €	0,79	26,8 €	47,1 €
				1,58	26,0 €	46,3 €

The application of these differences to the studied urban development operations (considering the infrastructures´ costs of 84,6 €/m^2 previously computed) enables the establishment of the income that accrues to the municipality, from this new Development Charges in relation to the current ones, for homologous development operations (Table 13):

Table 13. Difference between the values of the reformulated Municipal Development Charges and the Municipal Development Charges currently enforced in the Municipality of Bragança, according to the current proposal for the studied development operations

Tipology	TMUr			TMU (€/m^2)	Land which development may be programmed	Developed land
	AC (m^2)	Land which development may be programmed (C_3 = 0,33)	Developed land (C_3 = 0,57)		TMUr - TMU (€/m^2)	
Single-family housing - construction	210	5.800,6 €	10.047,3 €	1.492,1 €	4.308,5 €	8.555,3 €
				2.984,1 €	2.816,5 €	7.063,2 €
Multifamily housing - construction	4.200	116.011,3 €	200.946,4 €	29.841,0 €	86.170,3 €	171.105,4 €
				59.682,0 €	56.329,3 €	141.264,4 €
Multifamily housing with trade and servicess - construction	4.200	116.011,3 €	200.946,4 €	29.841,0 €	86.170,3 €	171.105,4 €
				59.682,0 €	56.329,3 €	141.264,4 €
Single-family housing - parcelling out operations	2.100	58.005,7 €	100.473,2 €	1.659,0 €	56.346,7 €	98.814,2 €
				3.318,0 €	54.687,7 €	97.155,2 €
Multifamily housing - parcelling out operations	12.600	348.034,0 €	602.839,2 €	9.954,0 €	338.080,0 €	592.885,2 €
				19.908,0 €	328.126,0 €	582.931,2 €
Multifamily housing with trade and services - parcelling out operations	12.600	348.034,0 €	602.839,2 €	9.954,0 €	338.080,0 €	592.885,2 €
				19.908,0 €	328.126,0 €	582.931,2 €

It can be noticed that the reformulated Municipal Development Charges enables the municipality to recover amounts considerably higher than previously to tackle the costs with infrastructures´ execution,

maintenance and reinforcement. Besides, recoverable values are potentially higher in developed land and, within this category, in parcelling out operations.

5. Conclusions and recommendations

The reformulation of the Municipal Development Charges herein proposed ponders building capacities licensed by the Municipal Master Plan, and considers the real costs of infrastructure provision by municipalities, contrary to other less clear criteria that have currently prevailed in most enforced Municipal Development Charges.

The advantages of these new Municipal Development Charges in relation to most ones currently enforced refer, namely, to: (a) the economic and financial sustainability of investments in urban infrastructures, so that charges cover the total costs, thus avoiding municipal debts and outside funding, (b) a transparent and objective parameter setting, and a fair charges levy on the benefits promoters/builders derived from infrastructure provided by the municipality; (c) the simplification and debureaucratization of the processes to compute these charges, favouring their connection with digital cartography; and (d) the clarification of the origins and applications of funds assigned to urban development purposes.

However, it is important to assure that, besides the sustainability of infrastructure municipal investments, social cohesion is also reinforced. The application of the current instrument of territorial management based on the same parameters to all municipalities supports this cohesion through all citizens' balanced treatment. It further prevents territorial imbalances accrued from urban initiatives often leaded by private interests that engender disparities in the distribution of the costs and benefits they create.

Besides, considering the eminently social character of urban planning and development, the design and application of the current or new instruments of territorial management should be complemented with incentives targeted to urban development and construction, namely urban rehabilitation and the promotion of other urban operations with municipal interest.

This proposal to reformulate the Municipal Development Charges strongly supports the new urban paradigm that underlies the territorial planning and urban development revision underway in Portugal, especially because it reinforces municipal economic and financial sustainability based on urban development operations.

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