

# Urbanisation costs and charges: an italian perspective

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## Abstract

*The paper illustrates some parameters about urbanisation costs as an useful tool to set up the urbanisation charges in a more balanced way. From the theoretical point of view, the link between urbanisation costs and charges is clear in Italy, but it is not assumed in the legislation nor in technical guidelines for public administrators or professional consultants.*

*Already in the 70s, some researches proposed parameters to evaluate urbanisation costs. Those results were not considered within the urban dynamic management and the attention on them fell down. Then the problem was faced only to prove the different costs of facilities for high and low density settlements, aiming at demonstrating that sprawl is an expansive urban dynamic.*

*Now municipal budgets are facing serious problems to balance incomes and outcomes, due to the new urbanisation areas; also the gain of private developers, that in the past was higher when compared to the public one, is tailing off.*

*Nevertheless, the right balance of public and private gain is essential: without a clear evaluation of the costs and benefits obtained by every player, it is impossible to support the real estate market.*

*Some parameters will be proposed in the paper, whereas more detailed ones might be implemented in future researches, especially in relation to the secondary urbanisation works.*

*Applied researches should also be developed, where one or more municipalities could test the effect of the parameters on the urbanisation costs and on the real estate market.*

## The urbanisation costs: a renown topic

Evaluating urbanisation costs at local level is a main issue: per capita parameters or per square meter can help to evaluate the size of investments of municipalities.

The emphasis on economic parameters finalised at urbanisation was strong in Italy in the 70s. Forte and De Rossi (1974) proposed a list of about thirty parameters to evaluate size and unit costs of main supply and social services (road network, water supply, sewerage, electricity, gas network, school buildings, municipal buildings, hospitals and green areas). Bruno and Piccinato (1977) proposed a method to evaluate urbanisation costs using specific functions. They also observed that municipalities did not take into consideration the discount rate when realising the works. Furthermore, at different steps of realisation, the decision makers did not assure a complete optimal solution because they tried to minimize the costs of their single section (cf. system theory).

The law n. 1102/1971 was the first attempt in Italy to integrate urban planning and economic programmes: it established a new authority to administrate group of municipalities in the mountains (the so called Mountain Communities), with the aim of producing a plan for social and economical develop-

ment along with an urban plan. Nevertheless, the authority was abolished in a short time.

After the 70s, urban planners and administrators were paying less attention to account urbanisation costs, with the result that most of urban charges are now underestimated.

The law n. 10/1977 connected the urbanisation works (water supply, sewerage, electricity, road network, etc.) with the building permission. The link between urbanisation costs and land development became more evident from a practical point of view. The *master plan* indicates the theoretical urban capacity in terms of new population, surfaces and volumes. The *plan of public works* defines the public facilities to be built in three years time, along with municipal budget.

No connection is expected between building costs of public services and urbanisation charges for the developers in urban areas. The amount of urbanisation charges should be set according to: demographic growth, geographic features and land use. The service costs are not appointed and the maintenance costs are never considered by local or supra-local authorities. The dependency of public services on municipal revenues is heavy and the quality of services in-

fluences land values. The municipal revenues come largely from property taxation (in continuous) and building fees or urbanisation charges (one time). The process of updating the value of property taxation and the urbanisation charges do not include the assessment of real urbanisation costs.

The need to coordinate urban and economic plans is evident, but its application is difficult. The urban plan is a mid-long term process, while the economic planning needs to be continuously and rapidly updated. A possible way out is to bypass the strategic view and work on single situations: the so called operational planning, that is a bottom up approach.

Property taxation, based on market values, should be also upgraded. The system to evaluate property taxation is obsolete: it used to be a great income for the municipalities, but the main tax on housing was abolish in 2008 (D.L. N° 93/2008), being re-introduced again in 2012 (L n. 214/2011) with a different name, but with less incidence for the incomes of the municipal budget.

### A tool for the evaluation of urbanisation costs

Many researches on urbanisation costs try to compare low and high density settlements (e.i. Camagni, Gibellini, Rigamonti, 2002; Castel 2005; Hortas-Rico, Solé-Ollé, 2010; Guelton, Navarre 2010). These researches proved the possibility to estimate urbanisation costs, but they did not use the results obtained to improve the knowledge about urban management. The aim was to prove that the extensive settlements will face higher costs than the intensive ones.

A recent research (Tira and Richiedei, 2011) evaluated the urbanisation costs for residential areas in Lombardy (Italy): the results obtained could be scalable and used as parameters to update urban charges. The case study analysed the realisation and the maintenance costs for some public works: the realisation costs include water supply, sewerage, electricity

and gas network, whether the maintenance costs include green areas, electricity, parking and road network. The costs were calculated for a sample of residential areas between 2,700 and 62,500 sqm. The settlements were built between 2006 and 2011 in a municipality near Brescia (Rovato).

Table 1 shows the average realisation costs for different facilities including some additional measurements. The average of about 20 €/sqm (of residential extent) has been proved to be the minimum amount to cover the urbanisation costs.

The *unitary costs for residential parcels* are calculated by using the below formula, where total costs for the facilities are shown:

$$\text{Unitary costs for residential parcel (€/sqm)} = \frac{\text{Total cost of facility (€)}}{\text{extent of residential parcels (sqm)}}$$

Parking, road network and green areas may generate additional realisation costs: these facilities were evaluated by using useful operational suggestions of Brescia municipality technical staff. The average of realisation costs for residential parcels is roughly: 3 €/sqm for parking, 15 €/sqm for road network and 4.5 €/sqm for green areas.

The overall unit costs is about 40 €/sqm and it includes the realisation of primary facilities for residential area as requested by the Law 10/1977.

Some of those facilities need continuous maintenance: for example parking places, road network and green areas. Table 2 shows the yearly maintenance costs for the above mentioned facilities.

The road networks have the main incidence in the yearly expenses for maintaining public spaces. The incidence of green areas and parking are equivalent. The average of yearly maintenance costs for residential areas is 1.54 €/sqm.

Other maintenance costs are not evaluable because they are covered by public service corporations, for example about water supply, sewerage, electricity and gas network.

Table 1 – Average of realisation costs for residential parcel, unit cost per square meter and incidence of facilities over total urbanisation costs.

Facilities	Average costs (€)	Unit cost for residential parcels (€/sqm)	Incidence (%)
Water supply	26,918	2.332	13
Sewerage	167,865	10.602	61
Gas network	33,527	2.117	12
Additional measurements	38,106	1.269	7
Electricity	18,231	1.151	7

Table 2 – Average of maintenance costs for residential parcel of parking, road network and green areas.

Facilities	Unitary costs for residential parcels (€/sqm)
Green areas	0.75
Road network	15.00
Parking	3.00

## Comparison between municipal income from urbanisation charges and expenses for urbanisation costs

Urbanisation charges are related to specific public works in Italy and both can be divided into primary and secondary ones. The primary public works are mainly: road network, water supply, sewerage, electricity and gas network. The secondary public works are, among others: school buildings, municipal buildings, hospitals and main green areas. No cost parameters of these public works are proposed by legislation or supra-local authorities to help municipalities to evaluate the amount of charges.

An analysis of a sample of municipalities in the province of Brescia proves a significant underestimation of the amount of urbanisation charges. The average of primary urbanisation charges for residential areas is about 4 €/sqm, with a minimum of 1.50 €/sqm and a maximum of 9.0 €/sqm. The average of secondary urbanisation charges for residential areas is slightly more than 7.0 €/sqm, with a minimum of 1.2 €/sqm and a maximum of 15.0 €/sqm.

Considering a favourable situation to use all primary and secondary urbanisation charges to build only primary public works, the imbalance is clear: 9 €/sqm or 24 €/sqm of charges to build 40 €/sqm of public works, bearing in mind that parameters for evaluating secondary public work are not available and they will be explored in future researches.

There are also two kind of charges linked with the urbanisation: the *equivalent building cost fee* and the *cash in*. Even when including this components in an unique *building fee*, the evaluation of balance between income and outcome to manage urbanised areas by the municipalities is unfavourable. An easy analysis on residential areas proves that less than a half of building fee derives from urbanisation charges (figure 1): 35% from equivalent building cost fee, 25% from cash in, 23% from secondary urbanisation charges and 17% from primary urbanisation charges.

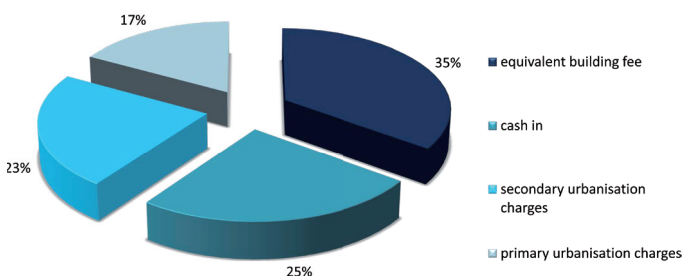


Figure 1 – Components of building fee for residential areas.

The municipalities seem to provide new development areas in their Master Plans in order to cover public costs left from other urbanisation areas.

A law about the possible use of building fees (issued in 2004) worsened the situation: the building fees can be used to cover ordinary expenses, not related to public services and facilities. Since in 2008 (for example) the 60% of municipalities in Lombardy had problems in ordinary budget (Richiedei, 2013), the lack of balance in ordinary expenses forced the Administrators to use building fees to cover ordinary over-spending (figure 2). As a consequence, some municipalities had to plan new urban development areas where buildings and services will be built, but the municipalities will also spend for new urbanisation works and management of public spaces, so increasing the balance problems and the soil consumption! In the last ten years, that negative circle caused the increase of 15% of urbanised areas in Lombardy, without the necessary money to maintain them.

As a secondary effect, the forecast budget of the plan of public works was blown up by hypothetic incomes. The municipalities planned new areas (more than they needed) and forecast a lot of new incomes from building fees, so allocating more money to use for public services than the real last incomes. Those findings will certainly be useful for the awareness of local and supra-local administrators and to define new proposals to review the use of urbanisation fees.

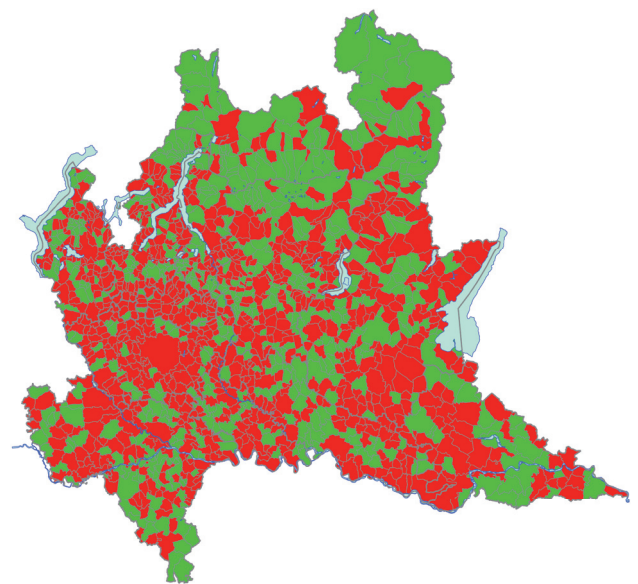


Figure 2 – Thematic map of Lombardy: in red the municipalities with ordinary budget problems and in green the municipalities without ordinary budget problems in 2008 (Richiedei, 2013).

## Some possible rounding up/down

As briefly explained above, the primary and secondary urban charges are not the only contributions of private developers in public works. There are also two more components that can contribute to the building charges. Also including them

in the evaluation, the increase of construction charges have to be more than 60% in order to cover the costs of realisation and maintainance (for almost 25 years) of public facilities.

Another possible rounding up of construction charges could be given by environmental compensation. An increase of 6% of building charges can be enough to compensate the CO2 emissions for building and maintaining houses and mitigate the traffic generated in a residential area for 50 years. In other words a little increase should be useful to improve the environmental situation.

In a situation of real estate market crisis, the increase of private contributions can definitively block the market, which could be positive for containing sprawl. The real estate market crisis should be overcome with strong incentives of building renewal and brownfield regeneration. The redevelopment could be pushed by the decrease of redevelopment urban charges, as the public works already exist in those areas.

The *quality standards* could be another system to increase the income from urbanisation areas. This system rely on more charges or services to increase the quality of life. Since the land and building values increase thanks to urban development processes, a portion of the capital gain must be captured through additional charges. The amount of this quality standards could vary from double to six time the basic urbanisation charges.

The economic sustainability of this approach should be discussed with private developers, as the highest the charges are, the lower is the possibility of investments from real estate market actors.

## Conclusive remarks

The paper investigated the use of parameters on urbanisation costs evaluation. Some case studies were analysed to produced some interesting results that could describe broader situation. The underestimation of the problem places the municipalities in a weaker position when negotiating with the private developers.

The paper highlighted the disequilibrium between urbanisation costs and charges requested by municipalities. The gap is a great disadvantage for the municipalities when the charges are lower than the urbanisation costs and the budget equilibrium suffers.

A limit of this paper is the stronger dependence on the case studies analysed, so that the results are somehow strictly valuable only in the specific context. Furthermore the costs of works are quickly changing, so a continuous update is necessary. Some other detailed public works should be taken into account as well.

Future researches should address the problem of evaluation of secondary urbanisation charges, that should define the optimal dimension of the parameter (per person, per surface, per volume, etc...). An interdisciplinary research with planners, lawyers and professionals on real estate market should be proposed in order to analyse the situation from different points of view and also an experimentation, according with some municipalities, should be brought forward.

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## References

Forte, C., and B. De Rossi. *Principi di economia ed estimo*. Collana Testi universitari, 33. Milano: Etas Libri spa, 1974.

Bruno, S., and G. Piccinato. "Note sulla questione dei costi di urbanizzazione," *Urbanistica*, no. 66 (gennaio 1977).

Tira, M., and A. Richiedei. "Impatti e costi delle urbanizzazioni: ragioni per il contenimento dell'uso del suolo." In *Città Energia. Atti del convegno nazionale - 20 e 21 Gennaio 2012*, Brienza: Le Penseur, 2012.

Richiedei, A. "Sostenibilità economica delle trasformazioni territoriali: tra problemi di bilancio comunale ed effetti ambientali." Tesi di dottorato di ricerca in Luoghi e tempi della città e del territorio, Ciclo XXV, Università degli studi di Brescia, 2011-2012.

Camagni, R., M.C. Gibellini, and P. Rigamonti. "I costi collettivi di differenti tipologie di espansione della città. Un'analisi sull'area di metropolitana milanese," *Scienze regionali*, no. 1 (2002): 93-126.

Castel, J. *Les côtes de la ville dense ou étalée*, CERTU, 2005.

Hortas-Rico, M., and A. Solé-Ollé. "Does urban sprawl increase the costs of providing local public services? Evidence from Spanish municipalities," *Urban studies*, no. 47, 7 (2010):1513-1540.

Guelton, S., and F. Navarre. "Les coûts de l'étalement urbain: urbanisation et comptes publics locaux, Faibles densités et coûts du développement urbain", *FLUX*, no. 79/89 (2010).