

The need for a social pact to facilitate urban mobility planning

A necessidade de um pacto social para a viabilização dos planos de mobilidade urbana

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ABSTRACT

In this article we have sought to identify strategies to facilitate urban mobility planning in Brazilian cities. These plans follow bold guidelines, such as giving priority to active and collective public transport modes. The challenge, therefore, is to overcome the resistance of social agents who are unwilling to make sacrifices for the benefit of the community. Among the methodological procedures, the authors analyze the main challenges facing urban mobility in Brazil, introduce Mancur Olson's ideas on the logic behind collective action to transport engineering and evaluate two proposals for an urban mobility pact: that of the then President Dilma Rousseff and that of the Ipea. The result of this analysis points to the need for an urban mobility pact following “win-win” reasoning. A pact that involves not only the public authorities, but also various private social agents, and according to “win-win” reasoning: they win if they participate and the community wins with their participation.

RESUMO

Este artigo buscou identificar estratégias para viabilizar os planos de mobilidade urbana nas cidades brasileiras. Esses planos seguem diretrizes ousadas, como a priorização dos modos ativos e públicos coletivos. Portanto, o desafio é vencer a resistência de atores sociais não dispostos a serem sacrificados em prol da coletividade. Como procedimentos metodológicos, os autores analisaram os principais desafios da mobilidade urbana no país, trouxeram para a engenharia de transportes o debate de Mancur Olson sobre a lógica da ação coletiva e avaliaram duas propostas de pacto da mobilidade urbana: a da então presidente Dilma Rousseff e a do Ipea. O resultado dessas análises aponta para a necessidade de um pacto da mobilidade urbana na lógica “ganha-ganha”. Um pacto que envolva não só o poder público, mas também diversos atores sociais privados, e que seja na lógica “ganha-ganha”: eles ganham se participar, e a coletividade ganha com a participação deles.

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1. INTRODUCTION

In this new century, the matter of urban mobility is taking on increasing urgency in political and technical discussion within Brazil, in view of the growing negative impact of congestion on people's quality of life and on municipal economies. Although there is virtually a consensus that something needs to be done, conflicts arise when proposals are presented that would effectively alter the structure of urban mobility within Brazilian cities. The problem lies in determining who will have to make sacrifices in order for the whole society to enjoy higher quality urban mobility.

The politics is complex. It is an illusion to believe that the power of decision over transport outcomes in a city lies only with the public authorities (local government traffic management, Congressional legislation of the sector, etc.). Other social agents also have power, even when not conferred by formal authority. Taxi drivers, store owners in a given street, the residents of an upmarket area, motorcyclists and the owners of driving schools, for example, have strong lobbying influence over councilors, are very adept at mobilizing and know how to use the local press and other means to derail any transport policies that threaten their interests.

Consequently, it is not enough to offer advanced legislation covering urban mobility, nor to have a well-intentioned mayor and a municipal secretary with technical knowledge about the field. It is necessary to also involve other social agents, so that genuine transformation of the quality of urban mobility within a city is feasible, going beyond superficial traffic engineering measures. One therefore needs to devise a pact – an urban mobility pact. Balbim *et al.* (2013b) provide a good definition of what an urban mobility pact would be like. It would involve “specific elements and solutions that, by coming together in a system and through negotiated agreements and the support of various agents, can effectively transform a social situation of precariousness and immobility”.

Brazil has a National Urban Mobility Policy (Law No. 12,857/2012) that, among other things, determines that municipalities should draw up their mobility plans according to its advanced principles, objectives and guidelines (Brazil, 2012). In other words, there is a direction, an interesting path to be followed. It is now necessary to make it possible to follow that path. And that is precisely the objective of this article: to identify the elements necessary for the formulating of an effective urban mobility pact that can make urban mobility plans feasible and actually transform the quality of mobility within Brazilian cities.

This article is divided into five parts. Following this introduction, there is a brief discussion of the urban mobility situation in Brazil and about the federal requirement for municipalities to draw up urban mobility plans. Then, in the third section, the logic underlying collective action is discussed, pointing out the reasons that can lead members of a group to act in favor of that group. In the fourth section, the subject is the urban mobility pact, looking at the 2013 demonstrations that gave rise to proposals for a pact by the then president Dilma and the technical specialists at the Ipea, up to an outline of the present study for what may become an effective urban mobility pact that can make implementation of an urban mobility plan for a Brazilian city feasible. And then there are the final considerations.

2. URBAN MOBILITY

This article has arisen out of the perception that there is a yawning gulf between the reality of urban mobility in Brazil’s cities and the directions indicated by the urban mobility plans. And, furthermore, the political difficulty of bringing these plans to fruition in cities where the practices differ so greatly from what the theory exhorts. In order to know how to combine theory and practice, it is first necessary to know the reality of urban mobility in the country and the paths indicated by the plans.

Therefore, this section is divided into two parts. The first will address the current situation of urban mobility in Brazil. Then the second part will analyze the federal requirement, by law, for municipalities to devise urban mobility plans and the impact of that requirement on the directions of urban mobility in Brazilian cities.

2.1. The present urban mobility situation in Brazil

Urban mobility in Brazil follows the norm of developing countries around the world, with the migration of passengers from public mass transit (PMT) to individual motorized transport, increased motorization rate (mainly motorcycles) and, consequently, the growing negative consequences of the use of cars and motorcycles – congestion, accidents and pollution. Within the Rio de Janeiro Metropolitan Area (RMRJ), for example, between 2003 and 2012, the total number of people traveling by car went from 2.9 million to 3.6 million, an increase of 26% over the period. As for motorcycles, the increase was 70%, from 100,000 to 170,000 (Leal, 2015).

And this scenario reinforces and is reinforced by the vicious circle of PMT fares: as passengers migrate to cars and motorcycles, this generates a loss of demand for the PMT services; less demand means fewer paying users and with fewer users, the cost of the system is shared by a smaller number of passengers, which means more expensive fares; and with more expensive fares, more users are tempted to migrate to cars and motorcycles, which also brings about an increase in the rate of urban immobility, since a larger proportion of society is unable to afford the fares. Thus, the PMT vicious circle is formed (see Figure 1), with ever fewer passengers and ever higher fares.

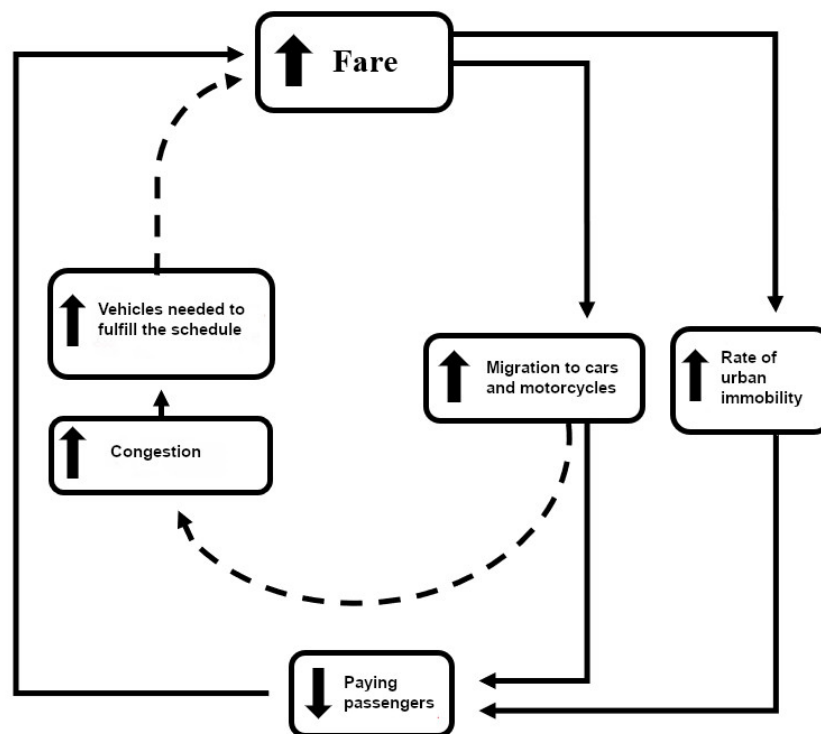


Figure 1. The public mass transit vicious circle

Furthermore, without any traffic priority, the buses get held up in the congestion caused by the cars. Consequently, to fulfill their schedules, the bus companies have to put more vehicles on the roads, in order to complete the same number of trips, which raises the cost of the system and, as a result, the fares (where there is no subsidy), while adding to the congestion, additionally fueling the vicious circle.

An important component of this vicious circle is the PMT financing model. In the great majority of Brazilian cities, it is the paying passengers who pay for the system, even covering

the free benefits (students, the elderly, etc.). That is the norm. But there are exceptions, such as São Paulo (city and metropolitan area), which partially subsidizes the system from its budgetary resources (municipal and state), and Rio de Janeiro, Goiânia and Brasília, which finance specific free benefits out of public funds (Balbim *et al.*, 2013a). On the whole, it is a transport reality that is deteriorating and becoming ever more expensive precisely for the poorer stratum of society that needs it most, as they are unable to get around by car or motorcycle.

At the same time, the increase in individual motorization during the 2000s brought other social parties into play, with interest in improving their urban mobility: the wealthy. If, up to that point, the car was regarded by those with money as a solution to the lack of or inefficiency of public transport, that is no longer the case. With the increasing congestion, it is no longer possible to use a car to overcome a poor urban mobility system (Rodrigues, 2016). This means that social agents with greater bargaining power vis-à-vis governors and legislators – and historically less willing to forego their privileges – may now be more willing to pay a price (not necessarily monetary) in exchange for improved urban mobility.

2.2. The urban mobility plans

A legal milestone for urban mobility in Brazil was Law No. 12,587/2012, the so-called “Urban Mobility Law”, which introduced guidelines for National Urban Mobility Policy, in addition to important concepts, objectives and principles regarding the subject. Moreover, it established deadlines and specifications for the municipalities in relation to their urban mobility plans (Brazil, 2012).

Under this law, municipalities with more than 20,000 inhabitants were obliged to draw up their respective mobility plans. That obligation also applies to municipalities that are part of a metropolitan area or urban agglomeration with a total more than one million inhabitants, as well as those in areas of tourist interest. Following successive extensions of the deadline, it was decided that municipal administrations that have not drawn up their plan by April/2022 (for those with more than 250,000 inhabitants) or April/2023 (for those with up to 250,000 inhabitants) will only be able to receive federal funding for urban mobility if it used for the drawing up of the plan itself (Brazil, 2012).

And what is a municipal urban mobility plan? According to Article 24 of the law, it is “the instrument for implementing the National Urban Mobility Policy and must include the principles, objectives and guidelines of this Law” (Brazil, 2012). In other words, the principles, guidelines and objectives of the national policy are to be put into practice, in each municipality, by means of the mobility plans.

Those principles, objectives and guidelines include: non-motorized transport must have priority over motorized transport; PMT must have priority over individual motorized transport; PMT must be funded not only by the direct beneficiaries, but also by the indirect ones; the benefits and burdens arising from the use of different modes and services must be distributed fairly by society; and the urban mobility policies must seek to reduce inequalities and promote social inclusion (Brazil, 2012). Note that Law No. 12,587/2012 indicates a path that could be considered daring, considering today’s practices regarding transport policy in Brazilian cities.

Considering the premise that the municipalities have drawn up – or are going to draw up – urban mobility plans along those lines, a new challenge arises: how to put into practice, within a city, an urban mobility plan with principles, objectives and guidelines that are so different to the mobility patterns one sees in the current Brazilian urban reality?

3. THE LOGIC BEHIND COLLECTIVE ACTION

An urban mobility plan can be put into practice by means of laws, edicts, regulations and other municipal policies that implement what, up to that point, was simply theoretical. However, if one has, on the one hand, the State with the force of the law, on the other, there may be social agents with the power to apply pressure to prevent a given law being passed, to revoke a law that has already been approved or to substantially alter the contents of a public ruling or policy. There is also the possibility that a law will not be complied with, given the limited supervision capacity of the public authorities.

Consequently, for an urban mobility plan to actually transform the reality of a city, it is necessary that various social agents, and not just the State, share that objective. As already mentioned, giving priority to public mass transit and reducing the fares, for example, can yield considerable urban mobility gains, as fewer cars and motorcycles on the streets would mean fewer negative consequences brought about by individual motorized transport – accidents, pollution and congestion. In other words, there would be a collective gain for society as a whole. However, the fact that the collective gains from such measures does not necessarily mean that the members of that collective would be interested in contributing to those measures.

Similarly, car restriction policies yield benefits to the community, but as DOUGLAS *et al.* (2011) show, there is a tendency among the general population to reject policies of this kind, largely due to social dependence on the car. That dependence works through social norms and social and economic structures that make it hard for individuals to live in society without that object of dependence. The authors also point out that there are similarities between the car and the cigarette: both cause damage to the health of the users and third parties; undermine global sustainability; use is seen as a matter of individual choice; and political efforts to restrict it face fierce and powerful industry lobbying.

To understand what could motivate the various social agents connected to urban mobility to work in favor of an Urban Mobility Plan, one can turn to Olson (2015), for a better understanding of “the logic behind collective action”, as that author discusses, within the fields of economics and the social sciences, what can induce a member of a group to work on behalf of their group.

3.1. Olson’s constructs

To understand Olson's discussions (2015), it is first necessary to know some of his constructs. “Group” is a group of individuals (whether formalized or not) who share a common interest. “Common interest” is an interest shared by all the group members, without exception. That interest is precisely to generate a “collective benefit” for the group: one that can be enjoyed by all the members of the group, regardless of whether a particular member paid or not the “individual cost” to obtain this collective benefit.

As an example of such a concept: a professional category wants a pay increase, and that pay increase is obtained through the endeavors of the category's union. The “group” is the professional category. The “common interest” is the pay increase. Unionizing is the “individual cost” for each member in favoring the collective cause. And the “collective benefit” is the pay increase obtained, which will be enjoyed by all workers within that category, including those who are not union members.

But if group members are going to enjoy the collective benefit even if they do not contribute to obtaining it, why would they contribute? In a large group (which is the case in the context of this article), there is no possibility for members to contribute of their own free will to the pursuit of the collective benefit. Firstly, for a selfish motive, since each member knows that, if it is obtained, they will enjoy the collective benefit even if they do not contribute towards obtaining it. Secondly, for a rational motive, since each member knows that their contribution (or lack thereof) will not make a noticeable difference to the other members in the pursuit of the collective benefit, given that each member represents a very small fraction of the total number of members of the group.

In this scenario, if the members do not contribute to the pursuit of the collective benefit, it will not be obtained. To change that, there are two possible steps – which ideally should be taken together. The first is coercion, an example of which is taxation. Even in countries with a strong nationalist culture, where the citizens share a strong desire for the nation's progress, taxation is a mandatory instrument, because people would not spontaneously give money to the government.

Another possible step is the use of non-collective benefits. As Olson (2015) explains, a “non-collective benefit” is one that can be discriminatory. Unlike the case of a collective benefit, group members will only enjoy a non-collective benefit if they contribute to the collective cause. It is “win-win” reasoning: the member wins if they participate and the group wins as a result of their participation.

In the example of the trade union, a non-collective benefit would be the provision of a credit card or club membership for union members: only those who contribute to the collective cause will get one.

3.2. Olson’s reasoning in the pursuit of higher quality urban mobility

The discussion introduced by Olson (2015) is fundamental to this article. That is because, if the objective is to get various social agents to work on behalf of a common interest, which is higher quality urban mobility for all, then it is necessary to identify how that author’s other constructs fit within the topic of this work.

It is already known what the common interest is (improving the quality of urban mobility) and that the collective benefit is the achieving of this common interest, with urban mobility indeed becoming better for everyone. Moreover, as the concept of collective benefit shows, higher quality urban mobility cannot be discriminatory, since those who contributed to it and those who did not will all reap the benefits.

It is also known that coercion, using the force of the law, may not be adequate within the context of the topic addressed in this study. As already mentioned, the opposition lobby or even non-compliance with the law can make such legal coercion in favor of improved urban mobility unfeasible. Hence the need for non-collective benefits that will persuade different social agents to work on behalf of this collective cause.

It remains, therefore, to identify who will be part of the group, what individual cost each member shall incur in pursuit of this collective benefit and what non-collective benefit each member will derive if they contribute to the collective cause.

4. AN URBAN MOBILITY PACT

The group, discussed in the previous section, shall be comprised of various social agents, each of whom is willing to bear a cost for working on behalf of the common interest, namely higher quality urban mobility. So, these different social agents will enter into a pact, sharing the costs and benefits between the members, due to their common interest. Thus, it will be known as an urban mobility pact.

The idea of an urban mobility pact is not new, but it has gained prominence in Brazil over the last decade. In 2013, increases in urban bus fares in the cities of Rio and São Paulo gave rise to popular protests that, over the following weeks, swelled in size, spreading to other cities and adopting other banners, in addition to the bus fares. These were known as the “2013 Protests”, “June Demonstrations” or “Brazilian Spring”. This historical display led politicians and transport engineering specialists to discuss proposals for an urban mobility pact, which would represent an effective response to the popular outcry by citizens dissatisfied with the high cost and low quality of PMT in Brazilian cities (Balbim *et al.*, 2013b).

This section is divided into four parts. In the first, there is an overview of what the June/2013 demonstrations were about. The second addresses the proposal for an urban mobility pact presented by then President Dilma Rousseff, in response to the protests. The third presents analysis of a proposed pact drawn up by transport and mobility specialists at the Ipea (Institute of Applied Economic Research) and the fourth subsection presents an outline of what could become an effective urban mobility pact.

4.1. The June/2013 demonstrations

In 2013, the month of June was marked in Brazil by popular demonstrations that brought together hundreds of thousands of people across the country. It was a political and social phenomenon that was hard to understand (even for political scientists, journalists and especially the government and legislators), largely because of the diverse agendas, the socioeconomic heterogeneity of the participants, the vast scale of the events, the lack of leadership and the call to assemble via the social networks. In short, it was difficult to understand who was demanding what and, moreover, who would gain from this new circumstance within the national political scenario.

In fact, the protests began before June and ended after that month. But June was marked by the peak of the demonstrations, which took place in hundreds of large and medium-sized cities throughout Brazil, but especially in São Paulo, Rio de Janeiro and Brasília. As noted by Marilena Chauí (2013), among the characteristics common to all those cities was the starting point of the protests regarding public transport fares.

“The trigger for the demonstrations in São Paulo was the increase in public transport fares and the left-wing protests of the Free Pass Movement (MPL), which dates back to 2005 and comprises left-wing party activists. With regard to its specific demands, the movement was successful in two ways. It managed to get the fares reduced and it defined the issue of public transport in terms of citizens' rights, thereby affirming the core of democratic practice, namely, the creation and defense of rights through the clarification (not hiding) of social and political conflicts” (Chauí, 2013).

The first major response by the authorities to the protests, in relation to the matter of fares, occurred on May 31st. Then President Dilma Rousseff signed Provisional Measure No. 617, which in practice did away with the federal taxes levied on the turnover of municipal public

transport companies. More specifically, the measure reduced to zero the PIS and Cofins tax rates applying to the sector. It meant a fare reduction, already in June, in dozens of cities across the country, including Rio de Janeiro and São Paulo, which went back to charging the amounts prior to the 20-cent increase that had sparked the protests.

4.2. President Dilma's pact

On June 24th, Dilma sought to provide a new response to the demonstrations that, by that point, were bringing millions of people onto the streets across the country. The president gathered together governors and the mayors of the state capitals and proposed five national pacts: fiscal responsibility, political reform, health, public transport and education. The transport pact, according to Dilma's proposal, would have three pillars: tax relief for the sector, with a view to reducing fares; investments amounting to R\$ 50 billion in urban mobility, with the aim of improving the quality of the transport services; and the setting up of a National Public Transport Council, to improve transparency within the sector.

However, as time went by, without the agreement of governors and mayors, the public transport pact was reduced to federal investments in the area that consequently did not fulfill the aims of the initial proposal. As shown by Balbim *et al.* (2013b), four months after it was announced, the pact was reduced to the Growth Acceleration Program (PAC) for mobility, through which the federal government was investing around R\$ 50 billion in PMT. But they state, "In regard to an agreement with the various sectors of society, seeking changes in the urban mobility scenario, there is no news of any progress being made".

However, even under the original proposal, the public transport pact was shown to be insufficient to meet its objectives, as it was limited to investment by the public authorities and to social control through transport councils. Thus, the public transport pact would, in practice, be a pact of the public authorities, or more specifically of the municipal, state and federal executive bodies. In other words, a federative pact for the sector, with the three entities of the federation devising a new apportioning of the taxation and budgetary costs of urban public transport, in order to reduce the fares.

4.3. The Ipea technical notes

In addition to the government, in the wake of the 2013 demonstrations, transport engineering and urban planning specialists also sought to develop a format for an urban mobility pact that would meet the demands coming from the streets. That was the case with the Ipea. Over the course of that year, the institute published three technical notes, with the aim of contributing to the discussions sparked by the protests, which culminated in a proposal for a pact.

The first technical note, entitled "Fares and the financing of urban public transport", was published in July, amid the protests that were still erupting across the country. As the title indicates, the purpose of the note was to come up with solutions for the financing of public transport in Brazilian cities, in addition to fares, so that the entire cost of the system – including free benefits – would no longer be borne entirely by the paying passengers, as is the norm in Brazil.

To that end, those authors consulted the literature and looked into Brazilian and foreign examples and came up with 11 possibilities of new sources of PMT funding (see Table 1). Of those 11 proposed sources, five would in practice be funded by the users or owners of cars and motorcycles. The reasoning of those authors is that it is precisely the individual motorized

transport that most generates negative consequences for society – accidents, pollution and congestion. For that reason, the users of those modes of transport should pay the most (Carvalho *et al.*, 2013).

The 11 proposed new sources would involve six social agents: society; car users; car owners; the production sector; property owners benefiting from transport investments; and transport-related commerce and services. Under this Ipea proposal, none of these six agents would gain anything from this new PMT financing model. On the contrary, they would only participate by assuming new costs. The reasoning of those authors is that these agents in fact already benefit from the PMT without, under the present financing model, actually paying for the return they obtain from it (Carvalho *et al.*, 2013).

Table 1 – Possibilities of new sources of financing, according to the Ipea

Social Agent	Source
Society	<ul style="list-style-type: none"> • Overall budget • Funding linked to other public policies
Car users	<ul style="list-style-type: none"> • Taxes on fuels • Taxes on the use of roads that are subject to congestion • Charges on parking along public roads • Charges on private parking
Car owners	<ul style="list-style-type: none"> • Taxes on the production, selling and ownership of individual vehicles
Production sector	<ul style="list-style-type: none"> • Travel vouchers • Taxes levied on company payrolls
Property owners benefited by investment in transport	<ul style="list-style-type: none"> • Value capture instruments
Transport related commerce and services (e.g.: advertising)	<ul style="list-style-type: none"> • Income generating activities related to transport

A model like the one proposed by the Ipea may be correct from the point of view of taxation and social justice – and also when considering the positive impact it would have on urban mobility, if implemented. Nevertheless, it is unlikely that, as presented, it will be put into practice in any Brazilian city, for the reasons already mentioned in this work: strong opposition lobby and the likelihood of non-compliance with what is determined (default, evasion, etc.).

The second note was published in August, with the title “Enhancing the access to Urban Public Transport – Proposals in course in the Brazilian National Congress”. The aim of those authors was to identify instruments that could put a social transport policy into practice in the country – more specifically, guaranteed access to public transport. The text analyzes projects for bills of parliament (PLs) and amendments to the Constitution (PEC) relating to urban mobility, presented before Congress in response to the June demonstrations or speeded up because of the protests (Balbim *et al.*, 2013a).

In the opinion of those authors, the projects before Congress would bring important advances, in relation to gratuities (social transport voucher and student free pass) and public transport exemptions (Reitup - Special Incentive Scheme for Public Metropolitan and Urban Passenger Transportation). However, with the PLs and the PEC, the cardinal error was made of not being coordinated with one another or with the country’s existing planning instruments – the projects analyzed did not even mention the National Urban Mobility Policy, which had been in effect since the previous year.

Instead of isolated initiatives, those authors argue in favor of coordination between laws and programs to thereby expedite "robust instruments of a National Urban Mobility Policy". That is because "apparently independent topics such as tax exemption, price reduction, gratuities, fares, financing and integration need to be jointly and symbiotically addressed, each one enhancing the others in favor of the right to [access] the city" (Balbim *et al.*, 2013a).

Moreover, in the opinion of those authors, this coordination to favor the effectiveness of the national policy could be achieved through an urban mobility pact, led by the Executive branch, as announced at the time by then President Dilma, and "that could consider the proposals and their advantages and improve them, in the programmatic sense of making each of them, and the Mobility Policy itself, effective" (Balbim *et al.*, 2013a).

In the third note, published in November with the title "Integrated Social Transport – a proposal for the urban mobility pact", the Ipea (Balbim *et al.*, 2013b) finally presents a proposal for a pact. In practice, the proposal is a solution, presented in response to the criticisms that the institute itself made in the previous note, to the lack of coordination of the projects in course before Congress. In other words, the Ipea pact proposal coordinates those projects. Thus, in brief, the Ipea urban mobility pact comprises: broad tax exemption for PMT across the three federative entities (federal, state and municipal); gratuities of a social nature (informal workers, the unemployed and students, according to income criteria similar to those of the Bolsa Família program) and financed by the government; fare integration; setting up a Transport Council for each entity participating in the pact; and other service control and transparency mechanisms.

The costs of the transport operators that adhere to the pact are limited to compliance with Law No. 8,987/1995 (Law on Concessions and Authorization for Public Services), subject to the presentation of debt-free certificates, publication of economic data and charging the fares specified in the technical report produced by the authorization authority (Balbim *et al.*, 2013b). In other words, the Ipea pact makes little progress in relation to Dilma's proposal, restricting the main sacrifices to the public authorities, through exemptions and subsidies. Car and motorcycle users, for example, who bring about so many negative consequences, are not included in this pact.

4.4. Outline for an urban mobility pact

So, this work proposes, in a very incipient manner, a structure for an urban mobility pact, as can be seen in Table 2, identifying certain social agents that could participate in this pact and the respective non-collective benefits.

For example, an urban toll, with the proceeds financing the PMT system, would raise the cost of using individual motorized transport. Which in turn would increase the likelihood of car users migrating to the PMT. With that migration, there would be fewer cars on the streets and, consequently, fewer negative consequences caused by them. As a result, there would be an improvement in the quality of the urban mobility in that city. But, apart from the collective benefit, what would the driver who migrates to the PMT gain from this? And what about the driver who chooses to continue using the car, even being charged a toll fee?

Those who choose to migrate would enjoy travel savings, because they will no longer have the cost of toll fees, while PMT fares would be cheaper than they were before the charges for the use of individual motorized transport. Meanwhile, those who choose to continue using a car will enjoy the benefit of a road with fewer cars, where they can move freely. And the community will gain from their financial contributions at the toll booths.

In such a scenario, PMT tends to be an ever more attractive option for users of cars and motorcycles. Not only for financial reasons (fare reductions weighed against toll fees), but also for journey time, punctuality and the quality of the service as a whole. With fewer cars on the roads, there will be less congestion. Consequently, bus journeys will be quicker; the urban bus system will gain planning capacity, becoming better able, for example, to guarantee service punctuality; and the cost of the system will be lower (fewer vehicles necessary for the same number of trips), while the revenue will be higher (more passengers), which means greater capacity for investment in the service.

Table 2 – Outline for an effective urban mobility pact

Social agent	Individual cost	Non-collective benefits	Collective benefits
Car users	Urban toll fees and other charges for car use	Less congested roads for drivers	
Car users who decide to migrate to PMT	Loss of convenience of car use	Lower spending on transport	
PMT passengers	No more migration to individual motorized transport	Lower spending on transport	Improved urban mobility for everybody
Bus companies	Smaller gains in an inefficient and low productivity scenario	Larger gains if the quality of urban mobility in the city improves	
Public authorities (municipal, state and federal executive bodies)	Commitment of budget resources to exemptions and subsidies	Government electoral gains due to lower bus fares	

The toll fees could be differentiated according to specific cases, for certain professional or resident categories, as well as in times of low demand. The best solution, however, would be seeking to set up PMT lines that can serve the interests of car or motorcycle users. So, for such people, it will be cheaper to pay the PMT fare than to use their vehicle.

Miguel and Rodriguez (2019) interviewed around 1,300 residents of Madrid (Spain), to learn how the population would behave if an urban toll was implemented in the city center. The survey showed that 25% of motorists would migrate to sustainable modes (PMT, walking or cycling), 18% would pay the toll to be able to continue using the car, 30% would change their route or timing to escape the charge, 11% would not be affected (they don't frequent the area where the charge would be levied) and 17% would be entitled to some kind of exemption (e.g.: local residents).

Another important feature of the pact would be in relation to the bus companies. Orrico *et al.* (1996) emphasize that the Geipot spreadsheet – predominantly used by Brazilian cities for fare calculations – has a number of methodological inconsistencies. Among these is the fact that "the increased productivity of a company is not included in the fare calculations, as a benefit, but on the contrary, such an increase could be detrimental to the company". That is because the companies are remunerated according to the capital invested. In a scenario of increasing congestion, buses are stuck in traffic and are unable to fulfill their schedules. As a result, the companies need more vehicles for the same number of journeys. More vehicles means more capital invested and therefore higher financial returns for the companies.

Following the logic of the mobility pact, it would be essential to use a fare calculation model that would encourage company productivity. In such a scenario, the cost to the companies of adhering to the pact would be to stop profiting from the inefficiency of the system.

The non-collective benefit would be the possibility of increasing profits from the opposite scenario, where there is improved urban mobility.

From the government point of view, there is an eternal conflict between the political costs of implementing certain transport measures (individual cost) and the electoral gains that they can achieve (non-collective benefit) if they can indeed improve the quality of the urban mobility within that city (collective benefit). This is clear in the strategies to regulate demand, as in the case of urban tolls. According to Torres (2007), government officials who intend to adopt such regulatory strategies should do so at the beginning of their mandate, when they still have the political margin to cope with a period of rejection until the results prove to be successful.

As already stated, this is just an outline of what could become an urban mobility pact. Each item needs to be scrutinized, with analysis of the results obtained in cities around the world where such an instrument (e.g.: urban toll) has been applied. Furthermore, other agents need to be identified and inserted within this process.

5. FINAL CONSIDERATIONS

This work has shown that an urban mobility pact can be an efficient tool for bringing urban mobility plans to fruition in Brazilian cities. It offers a way to overcome the resistance of certain social agents who are not willing to bear any costs for the sake of improved urban mobility for all. To that end, based on the reasoning of Olson (2015), one needs a set of non-collective benefits, whereby each agent will be rewarded for their participation. It is win-win reasoning. So the costs to each agent are not imposed as a punishment, as that would, in practice, make the spontaneous adherence of the punished unfeasible, but as the price of admission to the future gains.

The urban mobility pact presented in this article is, therefore, a feasible instrument that can and should be used in Brazilian cities. This is a study that can help to bring about concrete changes in the urban mobility structure of a city, so that mayors and municipal transport secretaries, for example, do not limit the management of the sector to traffic engineering measures – reversing the direction of one-way streets, altering the timing of traffic signals, etc.

For the work that follows, the idea is to transform the present pact outline into a more detailed proposal, with more social agents involved and scrutiny of the participation of each one of them.

When talking about PMT – a defining factor in the quality of urban mobility within a city – the discussion must not be limited to the triad of public authorities, transport operators and passengers. There are several other agents who benefit from PMT and are affected when, for example, the quality of the bus services in a city declines. They include car users, companies with large numbers of employees and schools, among others. Therefore, future work on this topic should include other agents, identifying the non-collective benefits that may convince them to participate in the pact.

An important feature of an urban mobility pact is active transport. Future work should indicate the non-collective benefits that may entice users of individual motorized transport to change to walking or cycling, for example. One possibility is the devising of political arrangements following “win-win” reasoning that, for example, make it possible for areas at the edge of the sidewalk that are reserved for the parking of cars to be transformed into bike lanes or used to widen the sidewalks.

Others to be considered are taxi drivers and new transportation services such as Uber, bearing in mind that not every social agent involved in mobility is interested in improved urban mobility (moto-taxi services, for example). So not every social agent is suitable for inclusion in the pact.

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