Infrastructure Mega Projects and Spatial Polarization in Rio de Janeiro

Mega-Projetos de Infra-estrutura e Polarização Espacial no Rio de Janeiro

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ABSTRACT: This paper looks at a prominent example of planning for sustainable development in Rio de Janeiro, namely the Guanabara Bay Clean-up Programme. We examine the role of the Programme against the background of socio-economic and spatial trends in the last decade, identifying patterns of segregation and polarization on these levels. Beyond the fact that such patterns follow urban development tendencies under the impact of globalization which also have been documented elsewhere, we are interested here in looking at how the Programme has contributed to reinforce existing trends of spatial and socio-economic segregation through the way in which sanitation infrastructure has been implemented in different areas of the city. We look here at two neighbourhoods located on opposite sides of the same, heavily polluted Guanabara Bay. The first is Icaraí, a high-income area where the beach, despite being polluted and being closed for bathing for many years, has remained a recreational amenity. The second is Conjunto Esperança, a low-income community which has been closed off from the bay by series of urban interventions, such as the free-way containing the main traffic towards Rio de Janeiro International Airport and Baixada Fluminense region. The Programme interventions in both areas have contributed to reinforce patterns of spatial segregation, both between neighbourhoods of different socio-economic status and between such neighbourhoods and potential environmental amenities.

Keywords: urban design, strategic planning, sustainability, environmental design, Rio de Janeiro, urban development, Guanabara Bay Clean-up Programme.

RESUMO: Este artigo analisa um proeminente exemplo de planejamento para desenvolvimento sustentável no Rio de Janeiro, denominado Programa de Despoluição da Baía de Guanabara. É examinada a influência do Programa nas tendências sócio-econômicas e espaciais da metrópole carioca na década de 1990, onde são identificados padrões de segregação e polarização. Além do fato de que tais padrões seguem tendências de desenvolvimento urbano sob o impacto da globalização, investiga-se como o Programa contribuiu para reafirmar as já existentes tendências de segregação sócio-econômica espacial nos modos em que a infra-estrutura sanitária foi implementada nas distintas áreas da metrópole. Foram analisados dois bairros localizados em lados opostos da mesma altamente poluída Baía de Guanabara. O primeiro é Icarai, um bairro habitado por população com médio e alto poder aquisitivo onde a praia, apesar de poluída e fechada para banho durante anos, permaneceu como área recreativa. O segundo é o Conjunto Esperança, um bairro habitado por população de baixo poder aquisitivo, que foi ao longo das décadas separado fisicamente da Baía de Guanabara através de uma série de intervenções do Poder Público, tais como a Linha Vermelha (free-way que conecta a Zona Sul carioca ao Aeroporto Internacional e à Baixada Fluminense). As intervenções do Programa nos dois bairros contribuíram para reafirmar padrões de segregação espacial, tanto entre bairros de diferentes status sócio-econômico e entre tais bairros e o respectivo potencial de usar a Baía de Guanabara como amenidade ambiental.

Introduction

An earlier study on intra-metropolitan spatial inequalities in Rio de Janeiro (Silva & Ribeiro, 2005 a) analyses the impact of the Guanabara Bay Clean-up Programme (GBCP), the biggest environmental management programme in Rio de Janeiro in the last three decades with a budget of US$ 860.5 Million. The main conclusion of that study was that whilst the GBCP plays an important role in improving existing infrastructure of low-income areas in the Rio de Janeiro Metropolitan Area, it has also contributed to reaffirm inherited patterns of spatial segregation between different social groups through the design and implementation of sanitation facilities. In addition, the GBCP has limited its environmental approach in the process of implementation and instead of dealing with the Guanabara Bay as a complex ecosystem it has narrowed its scope to become a sanitation programme. In this paper we move from an analysis at a metropolitan scale, to an investigation at a local scale, focusing on two neighbourhoods located on the Guanabara Bay’s waterfront, tracing the impact of GBCP interventions in each of those areas and thus providing further evidence and documentation for the above claims.

The Guanabara Bay Hydrographical Basin (GBHB)

The Guanabara Bay Hydrographical Basin (GBHB) accommodates 2/3 of the entire metropolitan population of Rio de Janeiro (approximately eight million people). The vast majority of that population lives in Guanabara Bay’s North Zone and consists of low-income groups housed in modest residential schemes or in informal settlements (Silva & Ribeiro, 2005 b). The Guanabara Bay’s South Zone on the opposite side of the Guanabara Bay accommodates, by contrast, high-income social groups living in flats costing up to € 1.5 million.

The Guanabara Bay Area receives 17 m³/second of domestic sewage – that is 465 tons per day. Only 68 tons of this sewage has had some kind of treatment and most of that treatment is just primary. In addition, it receives a large volume of industrial waste: 64 tons/day of organic material and 0.3 tons/day of oils and heavy metals (chrome, lead, zinc, mercury, etc). On the whole, 7 tons/day of waste are released by oil refineries and ports (Governo do Estado do Rio de Janeiro, 1997; Japan International Cooperation Agency, 1994).
Other sources of pollution are the rivers belonging to GBHB that contribute with 4,000,000 tons/year of waste. In addition, there are many garbage landfills, official and unofficial, that have a large environmental impact and release 800 litres/day of chorume (extremely toxic liquid that leaks from solid waste landfills) in the Guanabara Bay. Another type of intervention with a large degradation impact are landfills which cover 91 km$^2$, an area which previously integrated the Guanabara Bay – that amounts to 29.1% of its area. These landfills have contributed to a pronounced depletion of the Bay’s ecosystem, mainly due to the destruction of mangroves – an essential feature of the Guanabara Bay. Those mangroves that originally covered an area of 260 km$^2$ are confined today to only 82 km$^2$ (Amador & Lima, 1998; Governo do Estado do Rio de Janeiro, 1997).

**Guanabara Bay Clean-up Programme (GBCP)**

The Guanabara Bay Clean-up Programme (GBCP) was launched in the wake of the Rio World Summit in 1992 with an initial budget of US$ 860.5 million. This Programme has mainly focussed on the provision of sanitation infrastructure (an activity which takes up 88.19% of the overall budget of the programme). This has been realised through the creation of a sanitation belt around the Guanabara Bay with the construction of new sewage treatment units and the upgrading of existing ones, as well as the extension and implementation of sewer pipelines, collectors and submarine emissaries (Britto, 2003; Japan International Cooperation Agency, 1994). The choice of location for sanitation facilities can be described as a piece of strategic urban planning, which has had an important impact on the spatial organization of local neighbourhoods.

This paper looks at two neighbourhoods containing sewage treatment units which were either implemented or upgraded by the GBCP. The first is Conjunto Esperança, a low-income neighbourhood located in the North Zone. The second is Icarai, a high-income neighbourhood located on the Guanabara Bay’s South Zone.
Conjunto Esperança

Conjunto Esperança occupies a landfill on what used to be the Inhaúma Inlet, the most polluted spot of the Guanabara Bay and it belongs to the Maré Complex – an area which contains several social buildings and the biggest complex of “favelas” (informal settlements) in Rio de Janeiro. Maré Complex\textsuperscript{1} is famous in Brazil for its reputation as one of the poorest and most dangerous urban areas of Brazil – it has been dubbed \textit{Gaza Strip} by the media.

The Maré Complex became one of the most notorious Brazilian symbols of urban poverty. In this context, in 1979 the Federal Government announced the Rio Project, an ambitious sanitation programme that had as its main goal the improvement of sanitation conditions around the Guanabara Bay. The project was only partially executed; but in the Maré Complex all the “palafitas”\textsuperscript{2} were removed and the population was located in four social housing complexes. These were constructed on landfills where the “palafitas” used to be and a new sanitation system was implemented. One of the new communities was called \textit{Conjunto Esperança}.

\textsuperscript{1} The Maré Complex is composed of sixteen communities and it is the biggest agglomeration of shantytowns in Rio de Janeiro. It has 132,176 inhabitants distributed in 38,273 houses and represents 1.13% of the population of the Rio de Janeiro Metropolitan Area (CEASM, 2006).

\textsuperscript{2} Palafitas are shanties built on stilts above the swamp.
After the construction of Conjunto Esperança, no further infrastructure investments were made. Thus, the growth of Conjunto Esperança has mainly been characterized by illegal constructions and the collapse of the sanitation system.

As part of preparations for the Rio Summit in 1992, Conjunto Esperança was affected by another major public intervention – namely the Red Line Expressway linking Rio de Janeiro’s International Airport to the wealthy South Zone and by-passing the low-income neighbourhoods of the Maré Complex. It can be said that the Red Line emerges as a prominent symbol of social inequalities in Rio de Janeiro – the raised expressway creates a traffic link for South Zone dwellers and at same time shuts out with a wall the inhabitants of the Conjunto Esperança. Both the Red Line and the wall which separates it from the surrounding shantytowns stand as physical barriers between local inhabitants and the Guanabara Bay.

GBCP interventions in Conjunto Esperança

The Guanabara Bay Clean-up Programme (GBCP) implemented seven new sewage treatment units, the biggest of which was built in Conjunto Esperança waterfront (one of the neighbourhoods of the Maré Complex). Alegria Sewage Treatment Unit, as it is called, was designed to receive sewage from nearly two million inhabitants and to release its waste.
(sewage after primary treatment) on the Conjunto Esperança waterfront (Governo do Estado do Rio de Janeiro, 1997; Japan International Cooperation Agency, 1994). Construction of Alegria Sewage Treatment Unit started in the late 1990’s. The unit is already operational and receives mainly sewage from wealthy neighbourhoods located in Rio de Janeiro’s South Zone. Sewage from the North Zone is released directly in the Guanabara Bay as collection pipes linking the Conjunto Esperança to Alegria Sewage Treatment Unit are yet to be implemented.

The urban development process of the Conjunto Esperança has been marked by accentuated degradation, and the Alegria Sewage Treatment Unit can be said to have played a role in this process in that it greatly reduces the potential of the waterfront as a leisure area and as environmental amenity.

Conjunto Esperança concentrates the poorest segments of the society and it is notorious for narcotics gangs warfare. It is located in the most polluted spot of the Guanabara Bay, in the vicinity of industries, waste landfills, motorways and now the biggest sewage treatment unit of Rio de Janeiro.
Icaraí

Icaraí is located in the south-eastern margin of the Guanabara Bay, in the Municipality of Niterói, and it has 62,494 inhabitants (Prefeitura de Niterói, 2006). During the twentieth century the population of Icaraí grew rapidly and that neighbourhood consolidated its status as a high-income residential area. The urban development of Icaraí through the twentieth century can be described according to three important moments.

The first moment was marked by the transferral of the Rio de Janeiro State capital to Niterói in 1903. In this connection, the public sector implemented key urban development policies, promoting infrastructure improvement and the revitalization of the central urban areas.

In this context, important urban interventions took place in Icaraí in the first decade of the twentieth century: namely, the construction of a tram system linking Icaraí to Niterói City Centre and the construction of a monumental waterfront avenue in the “belle époque” style along Icaraí Beach.

According to the local Mayor at the time, the tram would support urban development in the most exclusive bourgeois neighbourhood of Niterói; and the new waterfront avenue would be the site of hotels, casinos, sports courts and other centres of leisure and diversion. Furthermore, Niterói City Hall was ahead of its time concerning the introduction of an agenda for environmental protection and the exploration of the tourist potential of selected spots of the Guanabara Bay, notably Icaraí Beach.

A second moment points to a somewhat contradictory development: the loss of state capital by the city of Niterói and the construction of the Rio-Niterói Bridge linking the most important municipality of the Metropolitan Area – namely Rio de Janeiro – to Niterói. Such infrastructure investment caused a boom in the Niterói real state market, especially in Icaraí, which has since then emerged as one of the most exclusive neighbourhoods in the Rio de Janeiro Metropolitan Area. On the other hand, in parallel to this market boom, Niterói Municipality underwent a period of economic decay, the sanitary infrastructure of Icaraí collapsed and environmental degradation in that part of the Guanabara Bay became extreme. These factors contributed to erode the image of this neighbourhood. Icaraí Beach was closed for bathing. Interviews carried out by the present authors with local residents indicate that
they used Icaraí Beach up to the late 1970’s. After that, it became impossible to bath in it due to its accentuated environmental degradation.

A last important moment of inflexion in the urban development process of the Icaraí started in the 1990’s together with the economical recovery of Niterói Municipality following the oil boom. Two public urban interventions have contributed to the revitalization of this neighbourhood: (a) the opening of the Contemporary Art Museum (1996), designed by the architect Oscar Niemeyer, which is located in the Icaraí waterfront; and (b) the Guanabara Bay Clean-up Programme interventions in Icaraí.

In the 1990s Niterói Municipality introduced, as a strategic planning component, the construction of the “Niemeyer Path,” which when completed will rank as the second biggest project ever built by Oscar Niemeyer (the largest being his work in the Federal Capital Brasília). The Niemeyer Path is a set of nine buildings on the Guanabara Bay waterfront aimed at raising the profile Niterói in the international scene.

**GBCP interventions in Icaraí**

Icaraí had a sewage unit providing secondary treatment. That unit was built in the 1960s. But its capacity was already exhausted a decade later. Despite of the negative impact in the Guanabara Bay, the GBCP implemented the expansion of the capacity of this unit by changing the level of treatment from secondary to primary (Governo do Estado do Rio de Janeiro, 1997; Japan International Cooperation Agency, 1994). The decision was based on the fact that the unit did not have available physical space in which to expand so as to receive a larger volume of sewage.

The GBCP solved the possible negative impacts of the discharge of waste treated at primary stage in Icaraí through the construction of a submarine emissary which releases the waste 3,300 meters away from Icaraí waterfront (Governo do Estado do Rio de Janeiro, 1997; Japan International Cooperation Agency, 1994). The discharge point is exactly in the middle of the deep canal in the Guanabara Bay and there are conflicting analyses about the impacts of releasing sewage in that particular point. Technicians from the Sewage Company say that there are no negative impacts on the Bay. On the other hand, some specialists from NGOs and universities say that there will be long-term impacts.
The fact is that Icaraí Beach has been officially declared suitable for bathing since 2004. And according to the population and local organizations the results are already visible and the dwellers are coming back to use the beach.

Figure 4. Sewage Treatment Unit of Icaraí and its submarine emissary

The combined actions of the public sector were decisive to improve the life quality of the inhabitants and also to start a speculation process on the real state market. At the moment, there are apartments in Icaraí waterfront costing up to € 1.5 million.

Views of the Local Population of Icaraí and Conjunto Esperança

The analysis presented in this section builds on a field study carried out by the authors in February/March and October/November 2006. Questionnaires were applied to 142 residents in Icaraí (0.23% of the population of Icaraí) and 137 residents in Conjunto Esperança (1.72% of the population of Conjunto Esperança).
The survey showed that Icaraí residents are on the whole very satisfied with living in their neighbourhood. While residents in Conjunto Esperança show a much greater level of dissatisfaction.

What was particularly interesting about this survey was to inquire into Icaraí residents perception of Conjunto Esperança and vice-versa. There emerged a pronounced stigmatization of Conjunto Esperança by Icaraí residents. Expressions used to describe that neighbourhood included the following: “slum”, “sewer”, “image of hell”, “Brazilian shame”.

**Guanabara Bay as an Environmental Amenity**

In this paper we can verify a relation between the above-mentioned stigmatization and use of the Guanabara Bay in these neighbourhoods.

Both Icaraí and Conjunto Esperança are located on the Guanabara Bay waterfront, the very same ecosystem, but the interactions between the inhabitants and the Guanabara Bay in these two areas are completely different.

In our survey, the majority of residents in Icaraí stated that they use the waterfront for leisure activities. They also indicated that they would use the waterfront even more if improvements in public spaces were implemented. Nearly all respondents living in Conjunto Esperança do not use the waterfront in any way. Those that use the waterfront, do so for fishing.

A statement by the president of the local community association reveals both an awareness of the stigmatization of Conjunto Esperança, and also a conformist attitude where residents are powerless to change the condition of the Guanabara Bay in their area:

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3 69% of the Icaraí respondents answered that they are very satisfied with living in Icaraí, 23% are satisfied but require some improvements and 8% are dissatisfied.

4 45% of residents of Conjunto Esperança are satisfied with their neighbourhood, 33% are satisfied but demand improvements and 22% are completely dissatisfied.

5 86% of the Icaraí respondents have a very negative opinion about Conjunto Esperança – 14% do not have any opinion about it. But none of those interviewed in Icaraí manifested a positive opinion about Conjunto Esperança. On the other hand, when Conjunto Esperança inhabitants were interviewed, 91% of them had a positive opinion about Icaraí (beautiful, nice beach, well structured, well known, etc.) and 9% did not have an opinion about it.

6 In Icaraí, 64% of the respondents indicated their use of the waterfront for leisure activities and 18% of that total said that they would be prepared to use the waterfront even more if some public space improvements were implemented. 29% of the respondents affirmed that they do not use the waterfront, but 29% of that total said that would use it if public space improvements were implemented.

7 In the case of Conjunto Esperança, 93% of the respondents affirmed that they do not use the waterfront. Only 7% of them use it (mainly for fishing).
“Unfortunately, the Guanabara Bay here is really bad... it seems like when God produced the architectural project of Guanabara Bay that he stated: ‘I think that here in Conjunto Esperança we should have the sewage area of the Bay’”.

**Awareness about the Sewage Treatment Units and the GBCP**

The GBCP is an infrastructure programme in the metropolitan scale, with interventions and debates in the macro and local scales. One of the main challenges of a programme in such scale is the creation of awareness and the stimulation of participation by the local population.

![Graph](chart.png)

Table 1. Icaraí and Conjunto Esperança Respondents Awareness of GBCP and the Icaraí and Alegria STUs respectively

Despite of the large scale of intervention of the Alegria Sewage Treatment Unit and its impact on the Conjunto Esperança waterfront, namely the creation of a physical obstacle and of other environmental impacts – such depletion of the local mangroves, landfill over the bay, air pollution and intense release of heavy pollutants – 78% of the Conjunto Esperança inhabitants are not even aware of the purpose of the building.

In Icaraí, our interviews highlighted a completely different scenario where 94% of the respondents are aware of the Sewage Treatment Unit Icaraí. It is interesting to point out that many more respondents in Conjunto Esperança are aware of the Guanabara Bay Clean-up Programme (56%) than of Sewage Treatment Unit Alegria (22%) – despite its direct physical impact.
Therefore, the debate and information about the GBCP as a metropolitan programme is much more pronounced than the discussion and awareness about the impacts of the programme in the respondents’ own neighbourhood.

Again the answers by Icaraí respondents show a different condition where fewer people were aware of the GBCP (87%) than of STU Icaraí (94%). These results indicate that there is more debate and information about the local themes than the metropolitan ones, it indicates that there is a bigger focus in the local environment. Despite the different results, both are satisfactory and show that the Icaraí local population is, in general, aware of the GBCP and of STU Icaraí. These results highlight the relationship between urban management and environmental awareness, on the one hand, and socio-economic status, on the other hand.

**Local Population Participation**

Our research reveals that there was no participation by the local population of either Conjunto Esperança or Icaraí in the GBCP. The Government simply ignored this aspect both in the elaboration as well as in the implementation of the programme.

The Rio de Janeiro Government – the main responsible for the GBCP – did not create effective participatory mechanisms. In that way the GBCP can be considered a top-down programme. The lack of participation by local residents reveals the Government’s lack of capacity, administrative limitations and political will to create more participatory and democratic procedures.

**Local Population Opinion about the Sewage Treatment Units Impacts**

The two sewage treatment units have different environmental impacts on the local neighbourhoods where they are located. But data from interviews with local residents highlighted the fact that the socio-economical conditions of the inhabitants and their local demands play an important role in their perception of these two interventions as much as the former relation between the populations of these two neighbourhoods and the Guanabara Bay as an environmental amenity.

Among the remaining 38% of the Conjunto Esperança respondents that know the STU Alegria purpose, 83% consider the unit to be a very good public investment that will create jobs and upgrade the neighbourhood for it denotes the presence of the public sector.
This position can be related to the socio-economic conditions of the dwellers and the absence of investments by the public sector in the region for a long period. Thus, economic development is a priority for Conjunto Esperança residents and the environmental issues are of lesser importance. But this position reveals that local residents do not take into account the fact that the implementation of hazardous facilities does not necessarily attract economic development. In fact, it can both degrade the neighbourhood and make it unattractive to other investments. Certainly low income groups are more susceptible to accept investments that can be environmentally hazardous because of their economic and educational fragile conditions.

17% of respondents in Conjunto Esperança expressed concerns about possible environmental impacts on the neighbourhood, especially related to the bad smells released by the sewage treatment unit. None of the respondents identified the depletion of mangroves, the landfill or the physical barrier between their neighbourhood and the Guanabara Bay as problems. This clearly shows that the local population does not recognize the Guanabara Bay potential as an environmental amenity.

Among the Icaraí respondents aware of the STU, 66% identified it as a positive intervention in the neighbourhood. In contrast with Conjunto Esperança, they made comments about the positive impacts of the unit in the quality of life of the neighbourhood, the environmental improvement and also the increase in real state value (by 80%). On the other hand, 20% pointed out that the unit should be located elsewhere, because this kind of facilities conflicts with residential land uses, and this may lead to depreciation in the value of dwellings in the unit’s vicinity.
Conclusion

The above analysis confirms the assertion that the Guanabara Bay Clean-up Programme (GBCP) has promoted a differentiated pattern of intervention in high-income and low-income neighbourhoods and has, in that way, contributed to perpetuate spatial segregation from the waterfront in the latter and consolidation of the Guanabara Bay as a recreational amenity in the former.

The Guanabara Bay is located in the middle of the Rio de Janeiro Metropolitan Area and is of key strategic importance in its urban development. The spatial analysis of the bay area reveals intrinsic inequalities that are reaffirmed through the design of the waterfront and the assignment of land uses. The elaboration and implementation of the GBCP highlight two important challenges both to local authorities and to international agencies that are involved in implementing strategic planning on a regional scale.

The first challenge relates to the question of how to address regional demands as well as local ones. The implementation of GBCP shows that regional goals where not linked with the demands of the residents of Conjunto Esperança. The physical intervention obliterated the potential of the waterfront as an environmental amenity. In addition, our interviews highlight the gap between local demands and the GBCP interventions and the fact that community based organizations and residents did not participate in the processes of design and implementation.

This lack of participation reflects a lack of capacity as well as managerial limitations in the agencies involved in the implementation of the Guanabara Bay Clean-up Programme (GBCP) and in the Government of the Rio de Janeiro State. In addition, the interviews with residents of the Conjunto Esperança in particular reveal that lack of participation limits their understanding of the purpose of the sewage treatment unit (let alone its impact). The ostensible endorsement of 67% of that minority (i.e. 38% of the total) who is actually aware of the purpose of the unit can be seen in the light of the extreme disregard by the public sector vis-à-vis those neighbourhoods. Any public intervention stands out in an indiscriminate landscape of neglect and is taken as a sign of commitment, even if such intervention ignores the potential of the Guanabara Bay as an environmental amenity. The fact remains that the residents of the Conjunto Esperança have to live next door to a unit treating sewage of a population of two million inhabitants. The infrastructural onus is therefore placed on this
particular neighbourhood, with little consideration of the potential of the Guanabara Bay as a leisure area and as an environmental amenity.

The second challenge relates to the promotion of a development which operates at the three levels of environment, economy and equity; which in the case of Rio de Janeiro amounts to dealing with extreme environmental degradation, pronounced socio-spatial inequality and serious economic decay as interrelated problems.

The GBCP was managed by a governmental agency in a top-down fashion and its implementation emphasised a sanitation approach that neglected its potential as a strategic element in the development of the Rio de Janeiro Metropolitan Area. But it is important to point out that the initial scope of the GBCP encompassed such three-fold dimensionality of environmental, social and economic goals. This was formulated in the following terms: (a) clean-up the Guanabara Bay, (b) minimize socio-spatial inequalities through provision and extension of sanitation infrastructure and (c) attract investments to the city through the improvement of its image.

The Guanabara Bay clean-up process is far away from achieved. The programme focused in the sewage system expansion, which is definitely an important step in the clean-up process but there are still several interventions required for its completion. In addition, the sewage network expansion put further environmental pressure on the Guanabara Bay as an ecosystem by increasing the amount of sewage which is released in the bay after primary treatment.

Concerning equity, the GBCP expanded the sewage system provision especially to low-income neighbourhoods, but as pointed out above, this analysis highlights deep inequalities of the GBCP treatment between low-income and wealthy neighbourhoods as the Conjunto Esperança and Icaraí comparison reveals.

Finally, the potential of the GBCP as a generator of economic growth has remained unfulfilled. The Guanabara Bay is still far from being cleaned-up and as our interviews with local inhabitants indicate, parts of the Guanabara Bay, such as the Conjunto Esperança, are still perceived as being highly polluted. So, the ambition of the GBCP that a clean Guanabara Bay would promote a new image of the Rio de Janeiro Metropolitan Area and that it would be a key factor in attracting international events (such as the Olympics) as well as other investments is still far from being a reality. The case of Icaraí, on the other hand, could
support the argument that the interventions by the Guanabara Bay Clean-up Programme may have played a role in increasing in the value of property in that neighbourhood. The extent to which such financial benefit has reached others than real state speculators and those who own property in the area is a matter for further research.

References


