

# **Olympic Games Impact (OGI) Study – RIO 2016**

## **Initial report to measure the impacts and the legacy of the Rio 2016 Games**

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**For:**

The Organising Committee for the Rio 2016 Olympic and Paralympic Games  
(Rio 2016™)



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## Abbreviations and Acronyms List

ABIH (*Associação Brasileira da Indústria de Hotéis*) – Brazilian Association of Hostel Industry

ABRELPE (*Associação Brasileira de Empresas de Limpeza Pública e Resíduos Especiais*) – Brazilian Association of Public Cleaning Services and Special Residues

APO (*Autoridade Olímpica Brasileira*) - Olympic Public Authority (federal level)

ASCOM (*Assessoria de Comunicação Social*) - Social Communication Office (support of SECOM)

BNDES (Banco Nacional de Desenvolvimento Econômico e Social) – Brazilian Development Bank

BRS – Bus Rapid Service - dedicated bus lanes, select bus stops, and a reduced fleet, the BRS system claims to have reduced travel times significantly.

BRT – Bus Rapid Transit - A high capacity mass transit system operating on exclusive right-of-way lanes that transfers the strengths of a rail system to road transport.

*Carioca* – A person from or living in the city of Rio de Janeiro

CEDAE (*Companhia Estadual de Águas e Esgotos*) - Water and Sewage Company of Rio de Janeiro

CEF (*Caixa Econômica Federal*) – Federal Economic Bank

COB (*Comitê Olímpico Brasileiro*) – Brazilian Olympic Committee

Comlurb (*Companhia Municipal de Limpeza Urbana*)- Municipal Urban Cleaning Company of Rio de Janeiro

CONAMA(*Conselho Nacional do Meio Ambiente*) - National Environment Commission

COR (*Centro de Operações Rio*)- Operations Centre of Rio de Janeiro

CPB (*Comitê Paralímpico Brasileiro*) - Brazilian Paralympic Committee

EGP-Rio (Subsecretaria Adjunta de Gerenciamento de Projetos) - Projects Management Office (state level)

EOM (Empresa Olímpica Municipal) - Municipal Olympic Company (municipal level)

FAU/UFRJ (*Faculdade de Arquitetura e Urbanismo da UFRJ*) – Architecture and Urbanism Faculty (Federal University of Rio de Janeiro)

Fecomercio RJ (*Federação do Comércio do Estado do Rio de Janeiro*) – Federation of Commerce of the state of Rio de Janeiro

Fetranspor (*Federação das Empresas de Transportes de Passageiros do Estado do Rio de Janeiro*) – Federation of Passenger Transport Companies of the state of Rio de Janeiro

FIPE (*Fundação Instituto de Pesquisas econômicas*)- Economic Research Institute Foundation

*Fluminense* – A person from or living in the state of Rio de Janeiro

GDP – Gross Domestic Product

Geo-Rio – Institute of Geotechnics Foundation of the Municipality of Rio de Janeiro

GHG – Greenhouse Gas

IBDD (*Instituto Brasileiro dos Direitos da Pessoa com Deficiência*) -Brazilian Institute for the Rights of Persons with Disabilities

IBGE (*Instituto Brasileiro de Geografia e Estatística*) – Brazilian Institute of Geography and Statistics

ICMBio (*Instituto Chico Mendes de Conservação da Biodiversidade*) – Chico Mendes Institute for Biodiversity Conservation

ILO - International Labour Organisation

INEA (*Instituto Nacional de Estado do Ambiente*) – Rio de Janeiro State Institute of Environment

INESC Coimbra – Institute for Systems Engineering and Computers at Coimbra

Infraero – Brazilian Airport Infrastructure Company

IOC – International Olympic Committee

IPC – International Paralympic Committee

IPCA – (*Índice Nacional de Preços ao Consumidor Amplo*) - Price Index of Broad Consumer  
 IPEA –(*Instituto de Pesquisa Econômica*) Institute of Economic Research  
 IPP (*Instituto Pereira Passos*) – MunicipalUrbanism Institute Pereira Passos  
 ISP (*Instituto de Segurança Pública*) – Public Safety Institute  
 ME (*Ministério do Esporte*) – Ministry of Sport  
 MEC (*Ministério da Educação*) – Ministry of Education  
 MinC (*Ministério da Cultura*) – Ministry of Culture  
 MMA (*Ministério do Meio Ambiente*) – Brazilian Ministry of Environment  
 MS (*Ministério da Saúde*) – Ministry of Health  
 MSW – Municipal Solid Waste  
 MT (*Ministério do Turismo*) – Ministry of Tourism  
 MTE (*Ministério do Trabalho e Emprego*) – Ministry of Labour  
 NOG – Non-Governmental Organisation  
 OCOG – Olympic Games Organising Committee  
 OG – Olympic and Paralympic Games  
 OGI – Olympic Games Impacts  
 OSCIP (*Organização da Sociedade Civil de Interesse Público*) – Public Interest Civil Society Organisation  
 PAC (Programa de Aceleração do Crescimento) Programme to Accelerate Growth  
 PNC (*Plano Nacional de Cultura*) – National Culture Plan  
 RAIS (*Relação Anual de Informações Sociais*) – Social Information Annual List (monitored by MTE)  
 RioTur (*Empresa de Turismo do Município do Rio de Janeiro*) Rio de Janeiro Municipal Tourism Company  
 Rio 2016<sup>TM</sup> – Organising Committee for the Rio 2016 Olympic and Paralympic Games  
 SEA (*Secretaria de Estado do Ambiente*) – Environmental State Office  
 SECOM (*Secretaria de Estado de Comunicação Social*) – Social Communication Federal Office  
 SEOP (*Secretaria Municipal de Ordem Pública*) – Public Order Agency  
 SETUR (*Secretaria de Estado de Turismo*) – Special State Office  
 SMAC (*Secretaria Municipal de Meio Ambiente*) – Municipal Environmental Office  
 SMC (*Secretaria Municipal de Cultura*) – Municipal Cultural Office  
 SMH (*Secretaria Municipal de Habitação*) – Housing Office (municipal level)  
 SMPD (*Secretaria Municipal da Pessoa com Deficiência*) – Municipal Office for people with disabilities  
 SNIIC (*Sistema Nacional de Informações e Indicadores Culturais*) – Cultural Information and Indicators System  
 SNIS (*Sistema Nacional de Informações de Saneamento*) – National Information System on Sanitation  
 SNUG (*Sistema Nacional de Unidades de Conservação*) – National System of Conservation Units  
 Sub-WG-OGI – sub-working group OGI  
 UFRJ (*Universidade Federal do Rio de Janeiro*) – Federal University of Rio de Janeiro  
 UFRJ/IE (Instituto de Economia da UFRJ) – Economic Institute of the Federal University of do Rio de Janeiro  
 UFRRJ (*Universidade Federal Rural do Rio de Janeiro*) – Federal Rural University of Rio de Janeiro  
 UTFPR (*Universidade Tecnológica Federal do Paraná*) – Federal University of Technology – Paraná  
 WHO – World Health Organization

The present report has been prepared by the group of *Universidade Federal of Rio de Janeiro* researchers, during the year 2013. The OGI Research Team who participated in the elaboration of this report are:

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**Disclaimer:** All information given in this report is the sole responsibility of the Technical Team of SAGE/COPPE/UFRJ. The report does not reflect the opinion, or the position, of COI, the Organising Committee Rio 2016, or the Brazilian government.

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## About the Report and Key Findings

This initial report is submitted by the Organising Committee for the Rio 2016 Olympic Games to the International Olympic Committee (IOC) for partial fulfilment of its role in the implementation of the *Olympic Games Impact Study (OGI) – Rio 2016*. It is based on the Technical Manual on *Olympic Games Impact Study, Post-Vancouver Winter Games, 2012*<sup>1</sup>. Following its orientations, this initial report (R1) provides the level (baseline) with which the data of future reports will be confronted and analyzed, beginning with the next report by the First Quarter of 2015. For OGI, data analysis comes at a later stage when Games effects may or may not be evident.

The International Olympic Committee (IOC) requires an *Olympic Games Impact Study (OGI)* for all host cities, with three main objectives:

- To measure and understand the local, regional, and national impact of the Olympic Games;
- To help bidding city and the Olympic organisers identify potential legacies in order to maximise the benefits of the Games;
- To enable to create knowledge base of impacts and legacy of the Games.

Great caution is needed when attributing causality to the Olympic Games regarding legacies and impacts. Some economic, environmental and socio-cultural changes could occur even without hosting the Games. This may have been the case in every one of the previous host cities, but the context of Rio 2016 involves a number of unique factors that can hinder the assignment of assigning causal links:

- Rio is at the very centre of an oil production boom that can be expected to influence economic indicators to an extent that overshadows Olympic factors.
- Since the city submitted its candidacy, the world has experienced a major economic reversal that affected Brazilian the growth rate. As the economy recovers, it may be hard to find accurate Olympic-related trends.
- The country is also preparing the 2014 FIFA World Cup. This may well skew a number of socio-cultural and economic aspects, making the pure Olympic effect harder to distinguish.

At this moment, it is particularly difficult to attribute direct cause of some on-going projects to the Games. The Olympics are part of a wider picture, adding impetus to ongoing change, rather than being the sole cause. Future reports will benefit from more disaggregated data and therefore, may be able to reveal the Games effect.

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<sup>1</sup>IOC – International Olympic Committee. *Technical Manual on Olympic Games Impact Study* – 5<sup>th</sup> edition – *Post-Vancouver 2010 Winter Games, 2012*.

The Rio de Janeiro OGI Study encompasses the period of 2007 to 2019, portraying a 12-year evaluation of consistent economic, social and environmental variables. According to the IOC methodology, this initial public report (R1) should refer essentially to the period from the beginning of the bidding process (2007) to the moment of the election of Rio de Janeiro as Host City (2009), providing the baseline with which the data of the three future reports will be handled and analysed. Due to the specific circumstances of the Rio 2016 preparation, some indicators on this report also include data subsequent to 2009 although, keeping the same structure layedout by the IOC. There are no definite changes to report at this stage of the preparation of the Games. Only observations over time will show if an impact occurred, or not. Therefore, the objective of this report (R1) is to define the initial situation. Future reports will be able to give a more detailed and overarching evaluation and analysis of impacts and legacy.

This report is divided into two main parts:

1. The first five sections provide the background context for the Study and a recap of key methodological points.
2. Section six sets out detailed findings for each of the *thematic topics* and *focus areas* covered at this stage of the study, under their respective categories of environmental, socio-cultural and economic outcomes. These specific results are supported by substantial appendices.

The environmental, socio-cultural, and economic spheres are made up by thematic topics (TT), which are represented by focus areas (FA) where impacts would be evidenced. The indicators, and their parameters, will only serve as a means for this evaluation. The list of TT and FA proposed by the IOC Technical Manual has been slightly modified, in order to incorporate the local context. Not all of them are treated in this first report, either because data was not available or because they refer to Games-related aspects that have not occurred yet. The remaining thematic topics and focus areas will be covered in subsequent reports.

Table 1 - TT and FA for OGI study of the Games

Sphere	Thematic topics	Focus areas
Environmental	5 (10)	8 (20)
Socio-cultural	11 (12)	21 (28)
Economic	6 (9)	7 (12)

(\*): numbers in brackets refer to the total number expected in the full study  
Source: Own elaboration.

In preparing this report, the research team faced some difficulties in accessing primary data. In many cases, secondary information (such as reports published by the sources) had to be used. Therefore, some data are presented differently than originally intended (for example, because the budget structure of Rio 2016 Organising Committee is still under revision, the data reported has the Candidature Dossier as its source). Nevertheless, some key findings are robust enough to be disclosed.

- Rio is experiencing major infrastructure investments that are related both to an economic boom and to the upcoming mega-events (including the Games). Changes in transportation and sanitation combined with previous security projects have expanded the real estate market and house prices in Rio de Janeiro have increased dramatically. In general, public spending, judged excessive and unnecessary is feared and contested by the Brazilians. Citizens are critical about high expenditures for the mega-events, instead of prioritizing investments in health and education.
- An important amount of legislation was passed on account of the Games, mostly in regards to administrative aspects, not necessarily directly related to the sustainability of the Games.
- Those two factors, public concern and legislation, have put the preparation for the mega-events on the extensive political agenda, including the popular demonstrations that took place in the middle of 2013 and which were initially focused on transport quality fares, as well as other urban issues. There is also a still unsettled controversy over removing existing inhabitants from sites that are directly related to Games' staging. Experts say that there is a larger shift in Brazilian society regarding attitudes to the authorities and that the preparation for the World Cup and Olympic Games have served as catalysts for accelerating this political change.
- Funding of the athletes preparations (lotteries and state-owned companies resources, athlete scholarships), and of sports education ("Second Half" programme), points toward better future Olympic results for Brazil. The possible legacy of the Games lie in the fact that the event is being seen as the official starting point, and not a deadline, for the country to reach a new level of results on the international scene. At the moment, however, the sports infrastructure available to Brazilian athletes is quite limited, as are sports facilities and sports education offered to the population.
- Regarding environmental quality, Rio benefits from a still incomplete, but growing, monitoring network, is capable of providing reliable data. Sand and air quality show satisfactory results, but an adequate water quality is still dependent on on-going sanitation investments. This problem affects some water bodies chosen as competition sites. Rodrigo de Freitas lagoon can already attest to the results of recent recovery projects, but current status of the Guanabara Bay shows that is not yet up to Olympic standards.

## 1 Olympic and Paralympic Movements and the Rio 2016 Games

The goal of the Olympic Movement is "to contribute to building a peaceful and better world by educating youth through sport practised without discrimination or any kind, in a spirit of friendship, solidarity and fair play"<sup>2</sup>.

The International Olympic Committee (IOC) acts as a catalyst for collaboration between all parties of the Olympic family: the National Olympic Committees (NOCs), the International Sports Federations, the athletes, Organising Committees for the

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<sup>2</sup> IOC. Olympic Charter, 2013. Available on: [www.olympic.org](http://www.olympic.org)

Olympic Games (OCOGs), the Olympic partners, the broadcast partners, and the United Nations agencies. IOC shepherds success through a wide range of programmes and projects. On this basis, the Committee ensures the regular celebration of the Olympic Games, supports all affiliated member organisations of the Olympic Movement, and strongly encourages, by appropriate means, the promotion of the Olympic values.<sup>3</sup>

The International Paralympic Committee (IPC) is the global governing body of the Paralympic Movement. Its purpose is to organise the summer and winter Paralympic Games, and act as the International Federation for nine sports, supervising and coordinating World Championships and other competitions. The vision of the IPC, run by 200 members, is “to enable Paralympic athletes to achieve sporting excellence and to inspire and excite the world”. Enable means, “to create conditions for athlete empowerment”. To inspire and to excite means, “to touch the heart of all people for a more equitable society”<sup>4</sup>.

The organisation of the Olympic Games is entrusted by the International Olympic Committee (IOC) to the National Olympic Committee (NOC) of the country with the Host City, as well as to the Host City itself. The NOC creates, for that purpose, an Organising Committee for the Olympic Games (OCOG) that, from the time it is constituted, communicates directly with the IOC, from which it receives instructions. In the case of the Rio 2016 Games, the OCOG is the Organising Rio 2016™ Committee, created in 2010 and to be extinguished in 2017.

The Rio 2016 Games embrace the values of the Olympic movements (celebration of friendship, showing respect for all and pursuit of excellence) and Paralympics (search for courage, determination, inspiration, and equality). The Candidature File states that the motivation of the city's bid to host the Games was “the passion to associate the power of Olympic and Paralympic sports to the festive spirit of people from Rio de Janeiro, with the goal of bringing sustainable benefits to Brazil and Rio de Janeiro”. As shown in **Box 1** the Organising Committee of the Olympic and Paralympic Games highlights that the vision and mission of Rio 2016 Games were inspired by a global planning strategy predicted for the city, and country, over the long term.<sup>5</sup>

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<sup>3</sup> IOC. Available on <http://www.olympic.org>, 2013.

<sup>4</sup> Available on <http://www.paralympic.org/TheIPC/HWA/AboutUs>

<sup>5</sup> Candidature File 2016, volume 1, page 18.

### Box 1 Vision, Mission and Values of the Rio 2016 Games

**Vision:** The union of all Brazilians, carrying out the biggest sporting event in the world and building with pride, through sports, the national promise of progress.

**Mission:** To deliver excellent Games with memorable celebrations that will promote the overall image of Brazil based on sustainable transformation, through sport in the social and urban scope, contributing to the growth of the Olympic and Paralympic Movements.

**Values:**

- Celebration: The passion, spontaneity, and youthful spirit by which Rio is known, will permeate all activities involving all of the participants and spectators in festive celebrations with a high energy level.
- Accomplishment: With organisation, innovation, and optimism, we will work to create positive changes and tangible benefits to all those involved with the Games.
- Participation: Teamwork, warmth, and solidarity are the guidelines for delivering inclusive Games that celebrate diversity and accessibility.

Source: Rio 2016™ Organising Committee. *Sustainability Management Plan of Rio 2016™ Games*, version 1, March 2013, Page5

The institutions involved in the organisation of the Rio 2016 Olympic and Paralympic Games include:

- International Olympic Committee (IOC) – Private international organisation responsible for the Olympic Movement and the choice of cities that host the Games every 4 years.
- International Paralympic Committee (IPC) – Private international organisation responsible for the Paralympic Movement.
- Rio 2016 Organising Committee™ – Non-profit private Brazilian Association, created exclusively for planning and organising the Olympic and Paralympic Games Rio 2016™. It coordinates all those who work for the Games: volunteers, suppliers, and staff.
- Federal, State (Project Management Office of the Government of Rio de Janeiro [EGP]) and Municipal Governments (Municipal Olympic Company [EOM]), responsible for infrastructure works and public services.
- Olympic Public Authority (APO) – Public entity created especially to coordinate, and integrate, the work of governments in the provision and operation of the infrastructure needed for the Games.

## 2 Sustainability in the Management Cycle of Rio 2016 Games

In line with a global historical change, the candidacy of Rio de Janeiro to host the Games in 2016 has assumed a commitment to integrate sustainability criteria throughout the management cycle of the Games (for example, from design and planning, to the activities of implementation, review and post-event). The principles underlying this integration are those defined in the ABNT NBR ISO 20121 standard for sustainability management systems in events: responsibility, inclusion, integrity, and transparency.

## Box 2- Principles of the Sustainability Management of the Rio 2016 Games

**Responsibility:** We are responsible for conducting all our activities with social, environmental, and economic responsibility, for example, in all our initiatives we seek balance between economic considerations, reduction of the negative environmental impact, and promotion of social benefit.

**Inclusion:** We are referring a relationship of respect with all stakeholders, regardless of race, sex, age, color, religion, sexual orientation, culture, national origin, income, disability (mental, intellectual, sensory, and physical), or any other form of discrimination.

**Integrity:** We act based on ethical principles, within the international standards of behavior.

**Transparency:** We communicate in a clear, accurate, timely, and honest way about how our activities affect society, the economy, and the environment, by regularly publishing the results of the decisions made, and the impact of the Games on the environment, society, and economy.

Source: Rio 2016™ Organising Committee. *Sustainability Management Plan of Rio 2016™ Games*, version 1, March 2013, Page7

The Rio 2016 Organising Committee™ developed a Sustainability Management Plan, which is based on the proposals of action and commitments contained in the Candidature File, on gains of maturity in projects, on previous Olympic and Paralympic Programs, and on the evolution of practices, technologies, international standards, and legislation. The plan seeks to integrate the principles, actions, and projects related to sustainability during the planning and operation of the Games. Its strategic goals correspond to the Principles of Sustainable Development ratified by the United Nations Conference on Environment and Development Rio 2012:

- **Planet:** Reduction of the environmental impact, and footprint, of projects related to the Games Rio 2016™.
- **People:** Planning and execution of the Rio 2016 Games™ in an inclusive manner, delivering Games for everyone.
- **Prosperity:** Contribution to economic development of the state and city of Rio de Janeiro by planning, managing, and reporting the projects involved with the Rio 2016 Games™ with both accountability and transparency.

In the plan, these three strategic objectives are unfolded into nine thematic axes, grouping the infrastructure programs under the responsibility of governments and operational projects under the responsibility of the Rio 2016 Organizing Committee.<sup>6</sup>

Table 2 Strategic Objectives and Themes

The three strategic objectives	The nine themes
<b>1. Planet: Reduced environmental footprint</b>	1.1 - Transport and logistics
	1.2 - Design and sustainable construction
	1.3 - Conservation and environmental recovery
	1.4 - Waste management
<b>2. People: Games for all</b>	2.1 - Engagement and awareness
	2.2 - Universal accessibility
	2.3 - Diversity and inclusion
<b>3. Prosperity: Responsible management and transparency</b>	3.1 - Sustainable supply chain
	3.2 - Management and transparency

Source: Rio 2016™ Organising Committee. *Sustainability Management Plan of Rio 2016™ Games*, version 1, March 2013, Page10

<sup>6</sup>*Sustainability Management Plan of Rio 2016 Games*, version 1, March 2013, p. 12.



Speaking at the launch of the Sustainability Management Plan (19 August 2013), Rio 2016 President Carlos Nuzman outlined the important role that sport plays in promoting a more sustainable world. “Following the United Nations Conference on Environment and Development in Rio, in 1992, the Olympic Movement's concern with environmental issues is constantly increasing. In 1996, the Olympic Charter was amended to recognise the environment as the third pillar of Olympism, and in 1999, the IOC created the Olympic Movement's Agenda 21, defining policies associated with sport”<sup>7</sup>. The Rio 2016 OGI Study considers and evaluates the results of this announced attitude of the organisers.

### **3 The context in which the preparation of the Rio 2016 Games is executed**

Brazil is the fifth largest country in the world, both in area (8.5 million km<sup>2</sup>) and population (191 million inhabitants<sup>8</sup>, of which 600,000 belong to some 250 indigenous groups). Natural forests occupy about 60 percent of the territory, while pastures constitute 20 percent of the land and agriculture, only 7 percent. The age distribution of the population has changed from a very clear pyramidal configuration, which existed in the 1980s, to one shaped like a skyscraper, indicating gradual aging, although less pronounced than in Europe. The country is now the eleventh largest consumer of energy, and it will be the seventh in 2030. Its energy matrix is very clean for being heavily based on hydropower.<sup>9</sup>

The State of Rio de Janeiro is characterised by a high population density: despite having the third lowest population density among the country's 27 states, it concentrates 8.4 percent of its population. It has an area equivalent to that of Denmark (43,696 km<sup>2</sup>), but with a population three-times larger: about 16 million people, 3/4 of them living in the metropolitan area. This is the second largest metropolis in the country (the third largest in South America and 23<sup>rd</sup> largest in the world); half of its population (six million) resides in the city of Rio de Janeiro.

Recent discoveries in marine areas should raise the country to the status of the seventh largest oil producers in the world. The state of Rio de Janeiro benefits the most from this trend because it receives more than half of Brazilian investments in oil and gas. As shown in **Figure 1**, Petrobras will invest approximately R\$ 107.7 billion (including the supply chain) in Rio de Janeiro between 2012 and 2014. In the same period, the infrastructure sector will invest R\$ 51.0 billion; the processing industry, R\$ 40.5 billion; tourism, R\$ 1.8 billion, and other sectors, R\$ 1.9 billion. It has been forecast that the Olympic Games will add R\$ 8.6 billion investment in sports equipment, support facilities, security, and technology.<sup>10</sup>

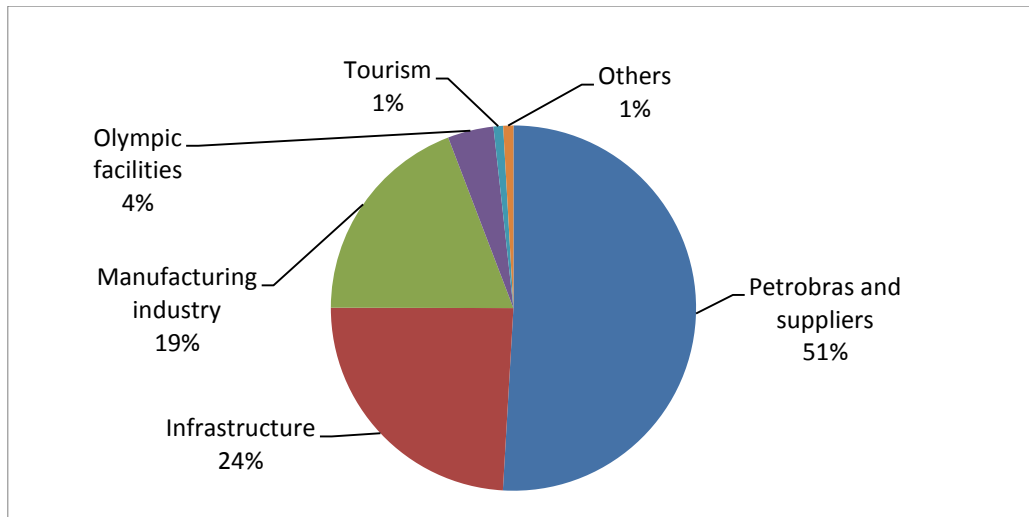
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<sup>7</sup>IOC. Available on <http://www.olympic.org>, 2013.

<sup>8</sup> IBGE. 2010 Census. Accessible on: [censo.ibge.gov.br](http://censo.ibge.gov.br).

<sup>9</sup> Brasil. Energy Research Company (Empresa de Pesquisa Energética). National Energy Balance 2012 - Base Year 2011: preliminary results - Rio de Janeiro: EPE, 2012. 51 p.: 18 il. ; 14,8 cm.

<sup>10</sup>Sistema Firjan, 2012. Available on: [http://www.firjan.org.br/decisaoport2012-2014/files/decisaorio2012-2014\\_pt.pdf](http://www.firjan.org.br/decisaoport2012-2014/files/decisaorio2012-2014_pt.pdf)



**Figure 1 Rio de Janeiro investments by activity sector**  
Source: FIRJAN, 2012

However, in this period the city will be hosting some other mega-events, including the World Cup (2014), which will supply some important lessons for the Olympic Games. The results of the recent Youth World Journey (YWJ), organized by the Catholic Church in July 2013, allows for a first glance of what this could mean. Even with low occupancy in hotels (only 55 percent of rooms were occupied), YWJ injected R\$ 1.8 billion into the city economy. It is estimated that more than 3.7 million people participated in its various events, a number that surprised the people in City Hall themselves, who, a week prior to YWJ expected to receive one million visitors. “It was a week of records, the largest event in the history of this city, with the longest duration and the greatest increase in the city economy”, said the mayor, who did not hesitate to acknowledge that the event revealed flaws in the city, regarding transportation and safety, which must be overcome in light of the Olympic Games. For the sake of comparison, it is expected that future events will attract fewer visitors, but have an even greater economic impact, due to the likely higher purchasing power<sup>11</sup>.

As we shall see later, the region is going through quite striking social changes, especially with regards to public safety, education, housing, and waste management. This extremely dynamic context (economic growth, pre-salt offshore oilfields discoveries, low unemployment, and mega-events) will require great caution in assigning causality to the Olympic Games regarding legacies and impacts. The geographical distribution of the Rio 2016™ Games venues is shown in **Figure 2**.

## **4 The Methodology for the OGI Study in Rio de Janeiro**

### **4.1 The General Methodological Framework**

The Olympic Games Impact Study (OGI) comes from the desire of the International Olympic Committee (IOC) to measure the legacy of hosting the Olympic Games, for

<sup>11</sup>Embratur (federal public company in charge of Tourism) estimates there will be 600,000 tourists coming to the World Cup (the majority of which must pass through Rio de Janeiro) and 380,000 to the Olympics.

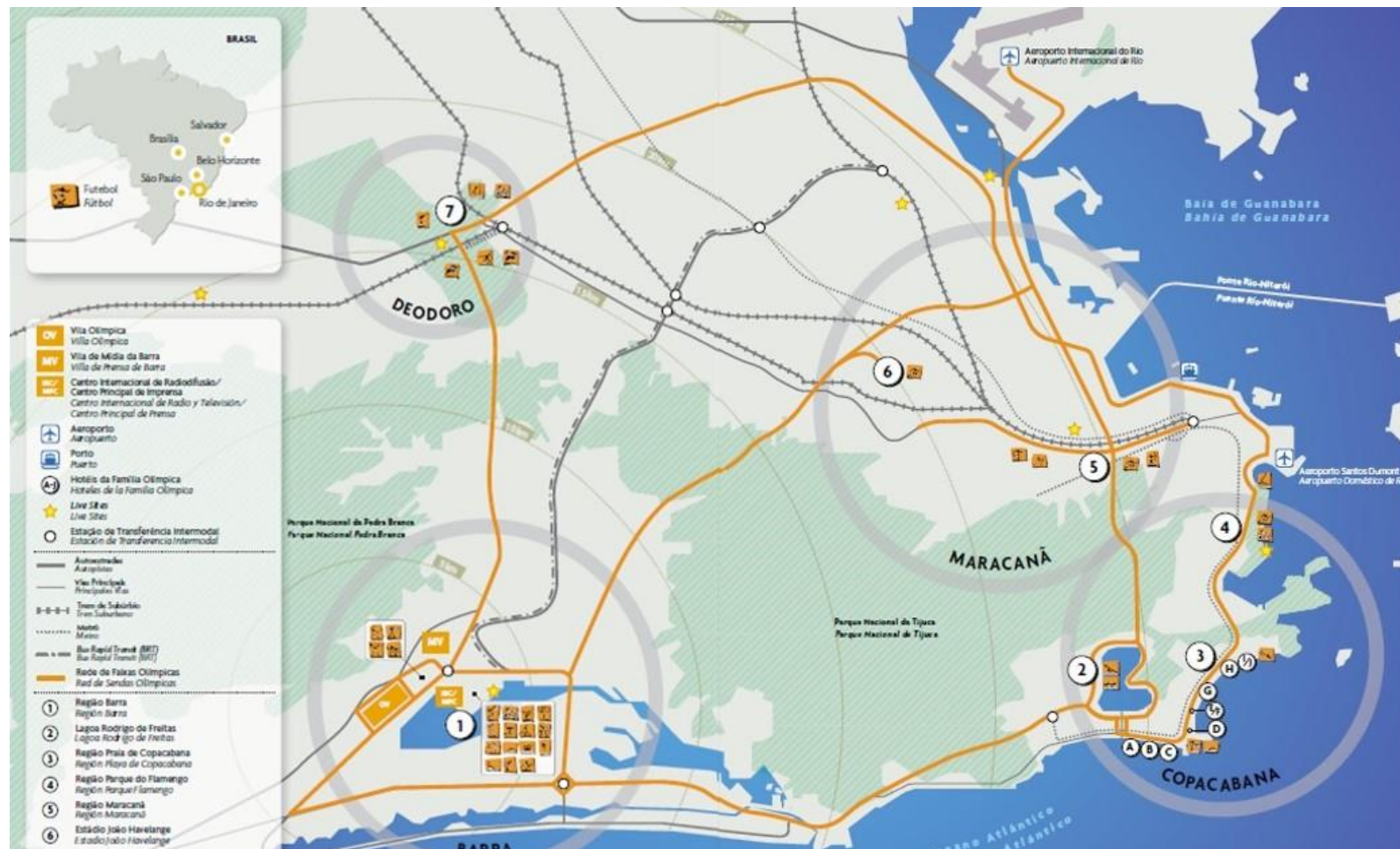
example, the results and impacts of the preparation, implementation, and conversion of the Games. The IOC has developed methodological guidelines formulated in technical manuals to perform such a study, whose latest version, in effect, is the *Technical Manual on Olympic Games Impact Study*, version 2012, *Post-Vancouver Winter Games*.<sup>12</sup> The main objectives of the OGI study are:

- “Measure and understand the impact of the Olympic Games in a Host City, its region and country;
- Help bidding city and Olympic organisers identify potential legacies in order to maximise the benefits of their Olympic Games;
- Enable the IOC to create a relevant and useful knowledge base of impacts and legacy of the Games”.

The goal for the Rio 2016 Organising Committee, and the technical team responsible for the study, is the creation and analysis of a system with integrated environmental, socio-cultural, and economic indicators, in order to monitor the tangible and intangible impacts subsequent to the organisation and realisation of the Rio 2016 Games, while allowing the development of action plans.

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<sup>12</sup>IOC *Technical Manual on Olympic Games Impact Study* – 5<sup>th</sup> edition – *Post-Vancouver 2010 Winter Games*, 2012.



Source: Rio 2016 Organising Committee, 2009

The OGI study uses data and/or information related to a period of 12 years (for the Rio 2016 Games, from 2007 to 2019), covering geographical areas that may be affected by the planning and operation of the Olympic and Paralympic Games: world, country, region (state), city, Olympic, and Paralympic venues. Most of the data and information refers to the municipality of Rio de Janeiro and the Olympic facilities. The study envisages the establishment of four reports, all of them public:<sup>13</sup>

- This initial report (R1) focuses on contextual local data from the candidature moment to 2012 (when available).
- A first interim report (R2) with updated data, to be published before the Games, in the First Quarter 2015.
- A second interim report (R3), to be published after the Games in 2017, reporting on data survey G+12<sup>14</sup>.
- Final Report (R4), to be published in 2019, reporting on data survey G+36.

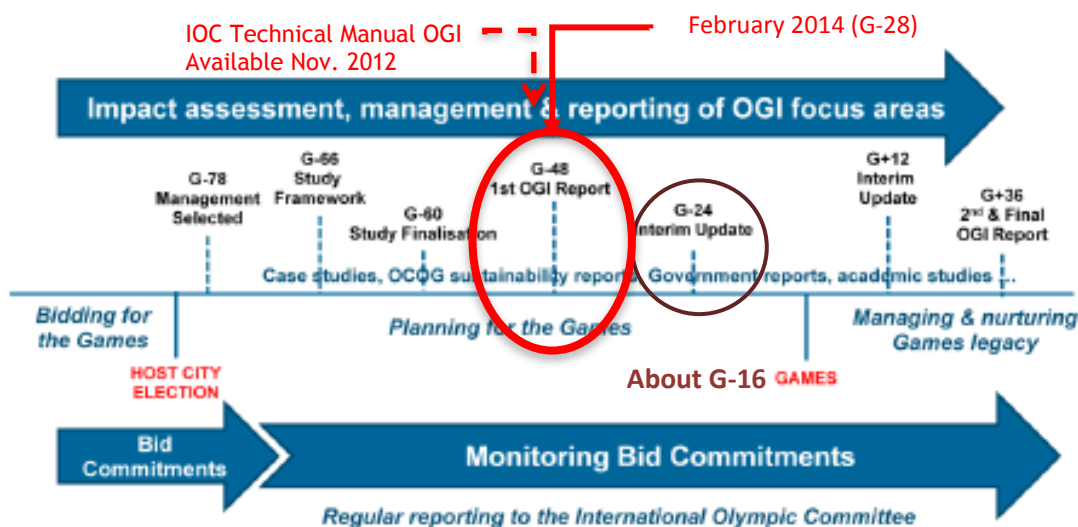
The OGI study was developed in the early 2000's, at a time when considerations about sustainability and legacy evaluation in relation to the Games were in their infancy. Ten years later it was deemed appropriate to review the study in the context of how Host Cities and Olympic Games Organising Committees (OCOGs) have progressed in these areas and if they are in-line with best practices. Following the review, the decision was taken to reformulate the OGI study and place it within a more holistic and exploitable framework<sup>15</sup>. This resulted in a methodological proposal to guide the OCOG to monitor and report on the impacts and legacy of the Games organisation, in order to facilitate transparency and accountability amongst stakeholders. The present study is based on the 5<sup>th</sup> updated version of the Manual (post-Vancouver Winter Games), which was published at the end of 2012. That is why the timeline for these reports publication had to be sensitively altered and postponed (the first report is released in G-28 [2014] instead of G-48 [2012], for example). The following diagram provides a visual description of the OGI deliverables within the Games lifecycle.

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<sup>13</sup>The orientation of the IOC Technical Manual is that at least the initial and final reports are made public. It is not compulsory that the other two reports are also made public, but it is at the discretion of the research team, in agreement with the Organising Committee, to do so.

<sup>14</sup>In the Manual, the timeline is expressed in months and in reference to the moment of the Games "G". For instance, "G+12" means "12 months after the Games", i. e. august 2017.

<sup>15</sup>IOC. *Technical Manual on Olympic Games study – 5<sup>th</sup> update cycle – post-Vancouver Winter Games*, 2012, p.19.



**Figure 3 OGI Study Timeline and Deliverables**

Source: Adapted from the Technical Manual on Olympic Games Study: 5<sup>th</sup> update cycle (IOC, 2012)

#### 4.2 The Approach Used by the SAGE/COPPE/UFRJ Team

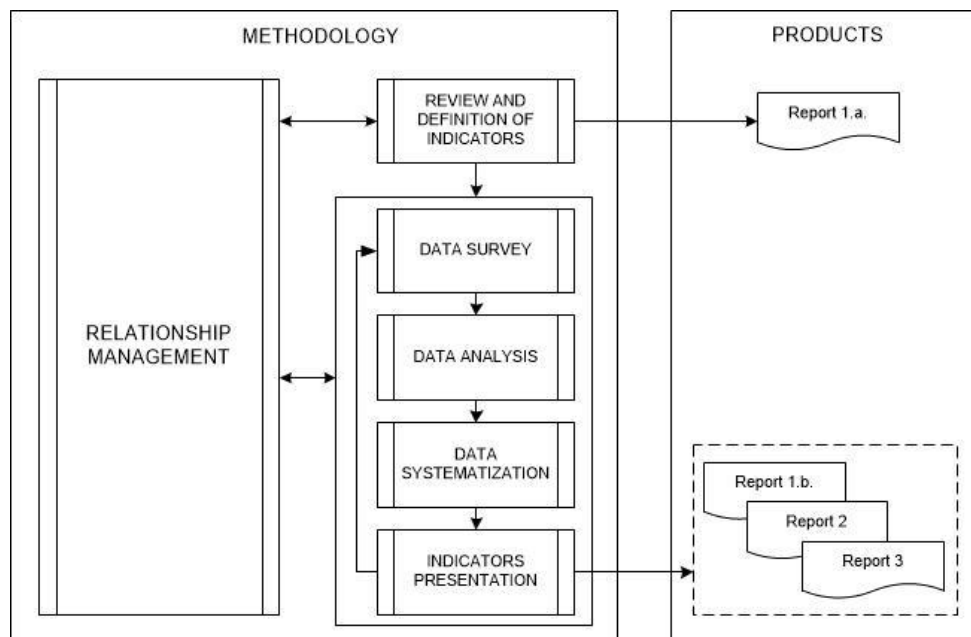
Due to the scope and scale of the study, an independent Research Partner is selected by the Organising Committee to conduct the research, collect the requested data, analyse, and interpret it for the OGI reports. According to the Manual, the Research Partner “must be in a position to work on an independent basis, free from political and commercial pressure, and be able to conduct the study in an objective manner. For continuity and overall management, it is recommended that the Research Partner does not change over the period of the study. The Research Partner must be free from any commercial affiliation”.<sup>16</sup>

The Research Partner responsible for conducting the study, collecting data, and interpreting it for the OGI reports is COPPE, the Alberto Luiz Coimbra Institute of Postgraduate Studies and Research in Engineering of the Federal University of Rio de Janeiro. COPPE was founded in 1963, introducing new patterns for Brazilian universities and contributing greatly to the development of the country. It soon became the leading centre of engineering education and research in Latin America. Supported by three pillars — academic excellence, full-time dedication of professors and students, and a constant attention to the expectations of Brazilian society. COPPE has since served as a centre to spread knowledge, prepare skilled professionals and set teaching methods across the country. This report has been prepared by a research team from SAGE (Advanced Systems of Production Management) — a COPPE laboratory created in 1995 to research and develop sustainable methods of producing goods, services, and events. The team is organised as follows in **Figure 4**:

<sup>16</sup>IOC. *Technical Manual on Olympic Games Impact Study* — 5<sup>th</sup> edition — *Post-Vancouver 2010 Winter Games*, 2012, p. 38.

Members of the Scientific Committee	
Economics	João Sabóia/ Valéria da Vinha (IE/UFRJ) Peter May (UFRRJ)
Accessibility	Izabel Maria Madeira de Loureiro Maior (UFRJ)
Biology	Antonio Solé Cava (IB/UFRJ)
Marine Biology	Ricardo Coutinho, Ph.D (IEAPM)
Socio-cultural area	Laís Abramo (OIT-Brasil); Fernando Guilherme Tenório, Ph.D (FGV)
Sport	Antonio Carlos de Francisco (UTFPR)
Multicriteria Methods	João Carlos Clímaco (INESC – Coimbra)

The general methodology adopted for the Rio 2016 OGI Study is shown in **Figure 5**. Emphasis is given to the process of Relationship Management, essential for the interactions with the stakeholders and, thus, to data quality.



**Figure 5 Methodology for the OGI Study**

To manage the relationship with the various stakeholders is a critical aspect in this study, especially because it is necessary to ensure the data provision over a long period. For this, two specific methods of relationship management are proposed: one directed to have contact with the Rio 2016<sup>TM</sup> Committee itself and another focused on the institutional partners responsible for data provision.

The methodology for this R1 report included the following activities:

1. Study of the *Olympic Games Impact (OGI) Technical Manual*.
2. Study of the Games preparation context, including initial information about the organisational structure (agencies in charge and the relationship structure between them).
3. Analysis and review of Baseline Report indicators.
4. Analysis of other experiences of Olympic Games Organising Committees, particularly Vancouver, Barcelona, and London.
5. Review of topics, focus areas, and indicators, as well as the definition of their parameters, depending on the local specific context.
6. Discussions about the structure and materiality of focus areas and indicators with stakeholders, and with the public agencies responsible for the Games preparation.
7. Development, validation, and deployment of focus areas and indicators templates in the Rio 2016<sup>TM</sup> virtual environment.
8. Collecting data provided by institutional partners, or by secondary sources (public reports), when needed.
9. Analysis of collected data (adequacy and quality), and compilation.



## 10. Writing the Report.

### 4.3 Methodological Assumptions

1. Priority was given to the participatory nature of the process, especially to the engagement of stakeholders and experts.
2. The study complies with the *Technical Manual* methodological guidance. As it recommends, the focus areas were selected and adapted to reflect the local context, aiming at a better portrait of Games' legacy and impacts.
3. The selection of focus areas to be reported met two criteria: relevance and viability. It was during this analytic phase regarding the relevance of the focus areas, and definition of the content that great importance was given regarding stakeholders' participation. Possible bias may be encountered due to the lack of stakeholder representation in the consultation process. This bias was tentatively limited by a validation from the Scientific Committee.
4. The resulting choices were discussed with experts from the Governmental Working Group, which was set up to coordinate sustainability initiatives at the federal, state, and municipal levels. Each of those experts has contributed in their own area of expertise.
5. The object of the assessment will be to focus on the areas of each sustainability topic referenced by the *Technical Manual*. The indicators and their parameters will only serve as a means for this evaluation.
6. We sought to have a consistent and coherent family of focus areas.<sup>17</sup>

### 4.4 Assumptions for the Elaboration of Indicators

Any assessment needs indicators. An indicator always expresses the magnitude of attributes, namely, the inherent qualities of an object. Its most common expression is the ratio, used repeatedly in this study for the development of parameters.

In this study, we use many indicators of situation, that is, indicators describing objective conditions and subjective perceptions, often by relying on statistical or historical data. Many of them are from databases organised by public agencies (Ministries of Education and Sport [IBGE]). We often use indicators of progress, especially to express the evolution of programmes and projects related to the Games. In many cases, the evaluation refers to changes in the periods considered.

The assessment of economic, environmental and socio-cultural aspects associated with the 2016 Olympic Games include topics directly related to values, feelings, mental states, beliefs, or emotions. These cannot be measured quantitatively, but may be estimated qualitatively. In these cases, the elaboration of topics, focus areas and indicators attempted to indicate whether the phenomenon in question occurs, or

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<sup>17</sup>The set of focus areas should be exhaustive (for example, must not omit any subject required for fully portraying the context of Rio de Janeiro), not redundant, and coherent (without indicators trends conflict). ROY, Bernard; BOUYSSOU, Denis. *Aide Multicritère à la décision: Méthodes et Cas*. Paris, Editora Economica, 1993.

if it is present in the *carioca*, *fluminense* or Brazilian societies. Moreover, it sought to indicate the intensity, frequency, and direction of this presence.<sup>18</sup>

All three spheres considered (economic, environmental, and socio-cultural) include both quantitative and qualitative indicators. In the first case, the operational definition of the parameters depends on a convention or rule that associates the concept of focus areas to the indicator. In the case of qualitative indicators, the operational definition depends on some hypothesis about the association between focus area and indicator, which accentuates even more the insertion of the indicator on some theoretical model (for example, some form of structuring ideas, experiences, and observations). For this reason, the study consulted several experts about the most appropriate ways to express what we wanted to portray in the topic or focus area.

#### **4.5 Process for Defining the Focus Areas (FA) for the OGI Study**

To define the report content, the team chose to perform a four-step filter analysis, as shown in **Figure 6**. The starting point was the IOC Manual (*Technical Manual on Olympic Games Impact Study* – version 2012 – *Post-Vancouver*), which sets the guidelines for the Study.

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<sup>18</sup>Thiry-Cherques, Hermano R., Concepts and definitions: the meaning of research applied to human and social sciences (Conceitos e definições: o significado da pesquisa aplicada nas ciências humanas e sociais). Rio de Janeiro, Editora FGV, 2012.

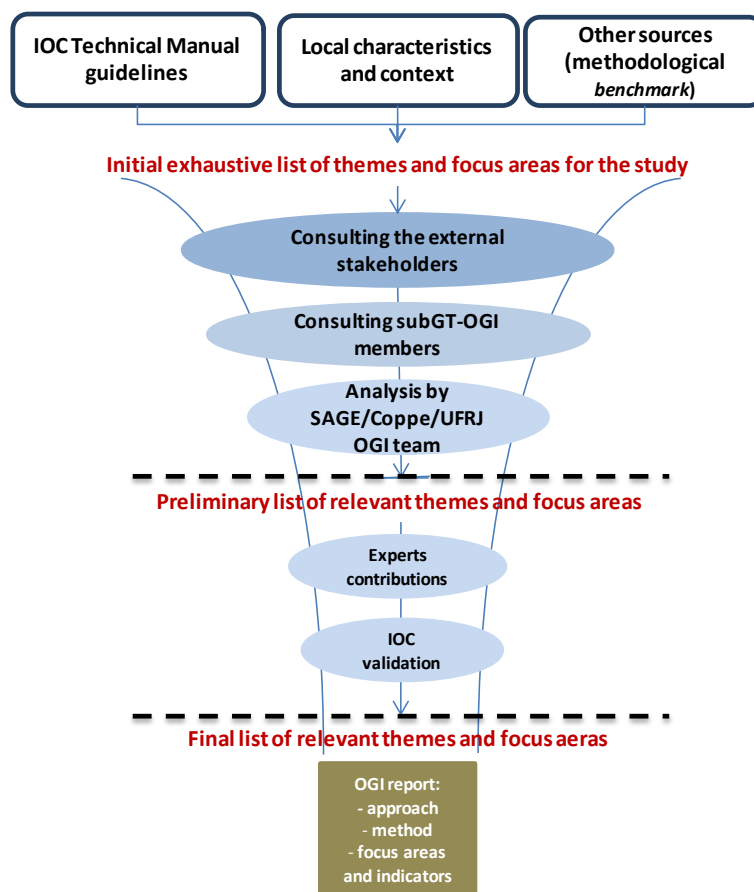


Figure 6 Process for defining the report content

As shown in **Figure 6**, the analysis of significance and determination of focus areas for composing the study were performed according to the following steps:

Consulting stakeholders: representatives of civil society organisations (NGOs, trade unions); specialists in sports, cultural, and environmental spheres; and, sector representatives of activities strongly “affected or affecting” the accomplishment of events (hotel industry, waste management). Nineteen people participated in the consultation, representing 11 interest groups (the table below shows the composition of the group). The full list of consulted external stakeholders is included (see **Appendix 1** List of external stakeholders consulted).

Table 4 Groups of Stakeholders consulted (\*)

Profile of interest groups	Number of representatives
Local NGOs	4
Sports	2
Labour trade union	1
Journalism / culture	1
Hotel sector	1
Environment	2
Economic statistics	1
Accessibility	3
Urban sanitation	2
Transport	1
Organisation of sustainable events	1

(\*) the consultation for prioritising topics for OGI study occurred on 01/29/2013

Consulting the members of the Governmental Working Group set up to coordinate sustainability initiatives at the federal, state, and municipal levels, led by APO:

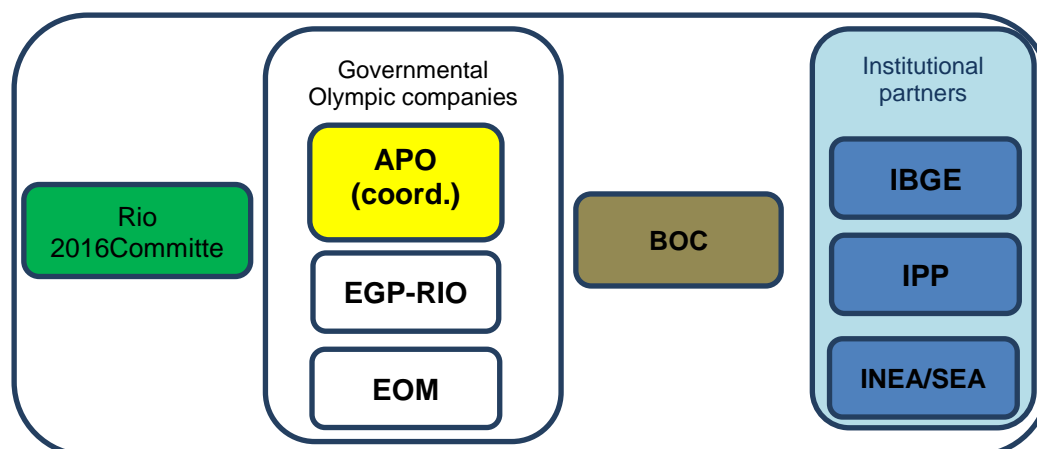


Figure 7 Sustainability OGI subgroup (sub-WG-OGI) composition  
Source: Rio 2016™, 2013

A matrix of relevance has been made, resulting from the compilation of responses of each part consulted (on the one hand the external stakeholders and on the other hand, the sub-WG-OGI members), as proposed by the *Technical Manual* (see **Appendix 2** Matrix of relevance for defining focus areas for the study).

At first, we chose to evaluate the relevance of each topic (or focus area) proposed by the *Technical Manual*, without removing or altering any focus area, also only considering complementary subjects, deemed necessary for the context of city of Rio de Janeiro (inserted in the list as “new”). The goal of this dynamic was to assess what the priority themes were in the local context and then to remove or adjust focus areas when deemed not relevant, or not exactly representative of the context. The focus areas were ranked in the matrix. Those with a “high” or “very high” relevance were kept for the study; the remaining have been excluded.

The research team considered the different contributions and appraised the importance, and feasibility, of monitoring the topics the stakeholders had recommended to be relevant. Stakeholders’ criteria and choices were submitted to a critical analysis, in order to prioritise issues. Some discrepancies between the stakeholders’ contributions and the *Technical Manual* were identified (focus areas proposed by the *Technical Manual* being expressed as indicators, while others were at a higher level of aggregation; concepts referring to different aspects). Hence, some minor adjustments were made, for instance, gathering two themes in the same focus area, when coherent.

Finally, some important contributions were made by the Scientific Committee, the Rio 2016™Committee (March 18<sup>th</sup>, 2013 Technical Meeting), and by institutional partner experts. The draft of the report was submitted to a methodology review by the IOC Technical team, who suggested some adjustments before approving the proposal.

#### 4.6 List of Thematic Topics and Focus Areas Adopted in the Study

As previously stated, the list of thematic topics (TT) and focus areas (FA) proposed by the IOC *Technical Manual* has been slightly changed, in order to take into account the local context. The tables below list the focus areas that are featured in the study, as well as their degree of relevance (Very high [VH] or High [H]); their geographic coverage (if measured for Brazil, the state of Rio de Janeiro, the Metropolitan Area of the city of Rio de Janeiro or Football Cities). The thematic topics and focus areas, which suffered major changes (in most cases due to different ways of aggregating information), are shown in red in the following tables. The last four columns indicate the documents in which the performance of the FA will be reported: Initial Report (R1 in 2014), First Interim Report (R2), Second Interim Report (R3 in 2017), or Final Report (R4 in 2019).

Table 5 Thematic Topics (TT) and Focus Areas (FA) adopted in the study

Environmental TT	Environmental FA	Rel.	Coverage	R1	R2	R3	R4
<b>En01 Environmental Quality</b>	En01.1 Water Quality	VH	City	X	X	X	X
	En01.2 Beach Sand Quality (New)	H	City	X	X	X	X
	En01.3 Air Quality	H	Metropolitan region	X	X	X	X
<b>En02 Greenhouse Gas Emission</b>	En02.1 Greenhouse Gas Emissions of The Olympic and Paralympic Games	H	<i>To be defined, according to specific study</i>		X	X	X
<b>En03 Land Use Changes, Protected Sites, and Biodiversity</b>	En03.1 Olympic-Induced Land Use Changes	VH	State	X	X	X	X
	En03.2 Olympic and Paralympic Venues in Protected Sites	H	City	X	X	X	X
	En03.3 Threatened Species	H	State		X	X	X
	En03.4 Ecosystem Services (New)	H	City		X	X	X
<b>En04 Olympic Venues</b>	En04.1 Venues Development and Design Strategy	H	Olympic sites		X	X	X
	En04.2 Resource Efficiency of Olympic and Paralympic Venues	VH	Olympic sites		X	X	X
<b>En05 Transport</b>	En05.1 Use and Evolution of the Public Transport Network	VH	Metropolitan region	X	X	X	X
	En05.2 Olympic and Paralympic Induced Transport	H	Metropolitan region		X	X	X
	En05.3 Environmental Impacts of the Olympic and Paralympic Transport	H	Metropolitan region			X	X
<b>En06 Energy Consumption</b>	En06.1 Olympic and Paralympic Energy Consumption	H	Olympic sites		X	X	X
<b>En07 Waste and Wastewater</b>	En07.1 Solid Waste Production of the Olympic and Paralympic Games	H	Metropolitan region		X	X	X
	En07.2 Generation of Wastewater in the Olympic and Paralympic Venues	H	City			X	X
	En07.3 New Waste and Wastewater Treatment Facilities and Major Improvements	VH	Metropolitan region	X	X	X	x
<b>En08 Inventory of Energy and Materials</b>	En08.1 Inventory of Energy and Materials of the Olympic and Paralympic Games	H	Olympic sites		X	X	X
<b>En09 Sustainable Sourcing</b>	En09.1 Procured Products and Services with Environmental, Social, and/or Ethical Certification	H	Olympic sites		X	X	X
<b>En10 Natural Disasters</b>	En10.1 Floods and Landslides (new)	H	City	X	X	X	X

Socio-cultural TT	Socio-cultural FA	Rel.	Coverage	R1	R2	R3	R4
So01 Political, Social and Legal Apparatus	So01.1 Legislative Activities Related to the Olympic and Paralympic Games	H	Country	X	X	X	X
	So01.2 Development of Public Policies	H	Country		X	X	X
	So01.3 Pressure Groups	H	Country	X	X	X	X
So02 Accessibility of Public Buildings and Venues	So2.1 Accessibility Of Places Where Public Services Are Offered	VH	State	X	X	X	X
	So02.2 Accessibility of Olympic Venues	VH	Olympic Sites			X	
So03 Public Opinion and Consultation	So03.1 Population Perception Regarding the Olympic and Paralympic Games	H	Country	X	X	X	X
	So03.2 Consultation with Stakeholders	H	Country		X	X	X
So04 Promotion and Participation of Minority Groups	So04.1 Participation of Minority Groups	H	City		X	X	X
	So04.2 Promotion Of Minority Groups	H	Country		X	X	X
	So04.3 Perception of People with Disabilities about Life Conditions (Adapted)	H	Country	X	X	X	X
So05 Human Development	So05.1 Poverty and Social Exclusion	H	State	X	X	X	X
	So05.2 Education	H	State	X	X	X	X
	So05.3 Crime Rates and Public Safety	VH	State	X	X	X	X
	So05.4 Health	H	State	X	X	X	X
	So05.5 Nutrition	H	State	X	X	X	X
So06 Culture	So06.1 Host City Cultural Activities	VH	City	X	X	X	X
	So06.2 Olympic Cultural Programme	VH	City and Football Cities		X	X	X
	So06.3 Olympic and Paralympic Educational Activities	VH	City	X	X	X	X
So07 Sport Development	So07.1 Sport Practices	VH	Country	X	X	X	X
	So07.2 Physical Education and School Sport	VH	Country	X	X	X	X
	So07.3 Sport Facilities	VH	Country	X	X	X	X
	So07.4 Top Level Athletes	VH	Country	X	X	X	X
	So07.5 Major Sporting Events Hosted	VH	Country	X	X	X	X
So08 Anti-Doping Controls	So08.1 National Anti-Doping Programme	VH	Country			X	
So09 Olympic-Induced Housing	So09.1 Olympic-Induced Housing	VH	City	X	X	X	X
So10 Host City and Country Media Image	So10.1 Host City and Country Media Image	VH	Country	X	X	X	X

<b>So11 Professional Sports Education for People with Disabilities</b>	So11.1 Professional Sport Education for People with Disabilities	H	Country	X	X	X	X
<b>So12 Health and Safety at Work</b>	So12.1 Health and Safety at Work	H	City and Football cities	X	X	X	X

Economic TT	Economic FA	Rel.	Coverage	R1	R2	R3	R4
<b>Ec01 Employment and Business</b>	Ec01.1 Jobs <b>(Incremented)</b>	H	Country	X	X	X	X
	Ec01.2 Wages	H	Country	X	X	X	X
	Ec01.3 Economic Legacy and Catalyst Effect <b>(Adapted)</b>	VH	Country		X	X	X
<b>Ec02 Tourism</b>	Ec02.1 Tourism and Hotel Availability <b>(Incremented)</b>	VH	State	X	X	X	X
<b>Ec03 Prices</b>	Ec03.1 Price Index	H	State	X	X	X	X
<b>Ec04 Budget Structure of the Organising Committee</b>	Ec04.1 Budget Structure of Rio 2016 Committee	H	City	X	X	X	X
<b>Ec05 Public Investment <sup>(1)</sup></b>	Ec05.1 Public Investment	H	Country	X	X	X	X
<b>Ec06 Specific Ratios to Olympic Activities</b>	Ec06.1 Olympic Infrastructure Investments	H	City and State		X	X	X
<b>Ec07 Public Economy</b>	Ec07.1 Public Expenditures - Olympic and Context Activities	VH	Country		X	X	X
	Ec07.2 Tax Revenue of the Olympic Games	H	Country		X	X	X
<b>Ec08 Gross Regional Product</b>	Ec08.1 Gross Regional Product	H	State	X	X	X	X
<b>Ec09 Economic Impact of Sustainability Initiatives</b>	Ec09.1 Economic Impact of Sustainability Initiatives	VH	State		X	X	X

(1) As for the thematic topic Ec05 – Public investment; it was initially planned to be disclosed only in future reports (beginning with R2) but, in fact, the availability of some preliminary information allows its anticipation. Therefore, the second part of this report shows the direct investment to be made in Arenas by the Caixa Econômica Federal (CEF).



#### 4.7 Data Sources for the OGI Study

Table 6 below shows the thematic topics with the corresponding sources, both those originally planned (some of which still to be consulted) and those used in this report (R1).

**Table 6 Data sources for the OGI study**

Thematic topics	Sources originally planned	Sources used
En01 Environmental Quality	INEA, SMAC	INEA, SMAC
En02 Greenhouse Gas Emission	Rio 2016 <sup>TM</sup>	<i>(only in R2)</i>
En03 Land Use Changes, Protected Sites and Biodiversity	IPP, Rio 2016 <sup>TM</sup> , INEA, SMAC, ICMBio	IPP, Rio 2016 <sup>TM</sup> , INEA, SMAC, ICMBio
En04 Olympic Venues	Rio 2016 <sup>TM</sup>	<i>(only in R2)</i>
En05 Transport	Transport offices (state and city level), Public transport operators; Fetranspor	Transport offices (state and city level), Public transport operators; <i>Rio Como Vamos (NGO)</i>
En06 Energy Consumption	Rio 2016 <sup>TM</sup>	<i>(only in R2)</i>
En07 Waste and Wastewater	Comlurb, CEDAE, INEA, Rio 2016 <sup>TM</sup>	Comlurb, INEA, Rio 2016 <sup>TM</sup>
En08 Inventory of Energy and Materials	Rio 2016 <sup>TM</sup>	<i>(only in R3)</i>
En09 Sustainable Sourcing	Rio 2016 <sup>TM</sup>	<i>(only in R2)</i>
En10 Natural Disasters	GeoRio, Rio-Águas, Defesa Civil	GeoRio, Rio-Águas, Defesa Civil
So01 Political, Social, and Legal Apparatus	Legislative chambers, local governments, media	Legislative chambers, local governments, media
So02 Accessibility of Public Buildings and Venues	Offices (state and municipal levels) for People with Disabilities	Ministry of Cities, Health ministry (CNES), Mobility Office, Public transport Operators, ISP, SMPD
So03 Public Opinion and Consultation	Rio 2016 <sup>TM</sup>	Rio 2016 <sup>TM</sup>
So04 Promotion and Participation of Minority Groups	Senate, Rio 2016 <sup>TM</sup>	Senate
So05 Human Development	Health, Education Ministries, ISP, IBGE	Health, Education Ministries, ISP, IBGE
So06 Culture	MinC; Culture Offices; Rio 2016 <sup>TM</sup>	MinC
So07 Sport Development	Health, Sports, Education Ministries/Local offices, COB, IBGE	Health Ministry; IBGE (reports - secondary data)
So08 Anti-Doping Controls	UFRJ, Rio 2016 <sup>TM</sup>	<i>(only in R3)</i>

<b>So09 Olympic-Induced Housing</b>	SMH	SMH
<b>So10 Host City and Country Media Image</b>	SECOM; Rio 2016™ press office	<i>Rio Como Vamos</i> (NGO)
<b>So11 Professional Sports Education for People with Disabilities</b>	MEC	MEC
<b>So12 Health and Safety at Work</b>	Rio 2016™	Rio 2016™
<b>Ec01 Employment and Business</b>	IBGE; MTE (RAIS); Rio 2016™	IBGE; MTE (RAIS); Rio 2016™
<b>Ec02 Tourism</b>	ABIH, MT, RIOTUR, HOTELINXEST, Infraero, ANAC, Fecomércio, Rio 2016™	ABIH, MT, RIOTUR, HOTELINXEST, INFRAERO, ANAC, Fecomércio
<b>Ec03 Prices</b>	IBGE, FIPE-ZAP	IBGE, FIPE-ZAP
<b>Ec04 Budget Structure of the Organising Committee</b>	Rio 2016™	Candidature File
<b>Ec05 Public Investment</b>	EOM, EGP, APO, CEF	CEF
<b>Ec06 Specific Ratios to Olympic Activities</b>	EOM, EGP, Rio 2016™	<i>(only in R2)</i>
<b>Ec07 Public Economy</b>	EOM, EGP, APO, CEF	<i>(only in R2)</i>
<b>Ec08 Gross Regional Product</b>	IBGE	IBGE
<b>Ec09 Economic Impact of Sustainability Initiatives</b>	Rio 2016™	<i>(only in R2)</i>

Three main data sources are used in the study:

- Statistics from public authorities and agencies (this forms the majority of the information to date);
- Project records (data from Rio 2016 Organising Committee and Olympic Delivery agencies);
- Primary research (e.g. opinion polls).

In preparing this report, the research team faced some difficulties accessing data from project records and public authorities. In many cases, secondary information (such as reports published by the sources consulted) has been used. Therefore, some data are presented differently than originally intended (for instance, results at the municipal level, instead of discriminated by neighbourhood). It is expected that this difficulty will be overcome in following reports, due to a closer cooperation with public authorities. If access to primary information is not achieved, this could jeopardise the quality of the results and the effectiveness of the focus areas' monitoring.

#### 4.8 The Legacy and Impacts Concepts

As stated by the OGI *Study Technical Manual*, “the OG can be a **catalyst for change** and produce important sustainability outcomes if they are planned, managed and conducted in a way which minimises the adverse environmental impacts and effects. The Games can also be used to provide sustainable environmental legacies, such as rehabilitated and revitalised sites, increased environmental awareness and improved environmental policies and practices. They can further encourage and facilitate strong environmental actions, as well as technologies and product development in a city, country and beyond, through the educational value of good example.” It corroborates the concept of legacy as seen in the IOC Charter, which states that the role of the IOC is “to promote a positive legacy from the Olympic Games to the host cities and host countries”.<sup>19</sup>

There is no simple definition of legacy. According to experience and literature, legacies can be positive or negative, tangible or intangible<sup>20</sup>, and can be categorised as: economic; built and physical environment; Information and education; public life, politics, and culture; sport; symbols, memory, and history<sup>21</sup>. But it is important to highlight that, in all cases, it is the local community that gains or loses from an Olympic legacy, not the event organisers. Nonetheless, the organisers are still responsible for preventing negative impacts, or negative legacies, that might originate from the Games.

In this report we attempt to differentiate two types of changes caused by hosting the Games. We use the term “impact” to describe the immediate effects of public or private Games-related initiatives in the local economy, culture or environment, that result in temporary or permanent, direct or indirect, reversible or irreversible, certain or uncertain, and short-term or long-term changes. We understand legacy as the long-lasting physical, socio-economic, or cultural changes resulting from hosting the Games. Legacy can be illustrated by the example of the Barcelona Games in 1992: legacy momentum is the single most important factor in determining the extent to which the Games can drive the transformation of its Host City<sup>22</sup>. For instance, social leveraging is considered one of the most important Olympic legacies, and refers to maximising the sense of celebration that is generated from hosting the event, with the goal of sustaining the feelings of community long after the event. The ultimate goal is being able to improve the quality of life for residents of the host community and country<sup>23</sup>.

At this stage of the preparation for Rio 2016, we can hardly report definitive changes, but can only delineate tendencies of a particular impact or legacy.

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<sup>19</sup>IOC. *IOC Charter*, 2013 (p.17). Available on:  
[http://www.olympic.org/documents/olympic\\_charter\\_en.pdf](http://www.olympic.org/documents/olympic_charter_en.pdf)

<sup>20</sup> Preuss, H. (2007). *The conceptualisation and measurement of mega sport event legacies*. *Journal of Sport & Tourism*, 12(3-4), 207-227.

<sup>21</sup>Cashman, R. (2003). What is “Olympic Legacy”? In M. Moragas, C. Kennett, & N. Puig (Eds.), *The Legacy of the Olympic Games 1984-2000: International Symposium Lausanne, 14th, 15th and 16th November 2002* (pp. 31-42). Lausanne: International Olympic Committee.

<sup>22</sup> London Assembly, 2007. Available on: <http://www.london.gov.uk>

<sup>23</sup>Agha, N., Fairley, S., Heather Gibson. Considering legacy as a multi-dimensional construct: The legacy of the Olympic Games. *Sport Management review* 15 (2012), 125-139.

Our methodology consists of comparing the potential impacts or legacies to the situation that would arise if Rio de Janeiro were not to host the Olympic Games. Nevertheless, it soon became clear that, at this moment, it is quite uncertain and demanding to attribute a direct causality of some on-going projects to the Games. Comparing the two scenarios requires quantitative and qualitative measure of the potential changes. We have compiled the best available data, while sometimes distancing ourselves from the originally foreseen indicators.

Our basic premise is that this study should aim not only at measuring and understanding the impact of the Olympic Games in Rio de Janeiro and its region, but also to making it easier for local authorities and organisers to identify potential legacies.

## 5 Outcomes

The next sections present a contextual picture of the situation of the Host City region around the candidature period (for example, by the year of 2007, or years further out, according to the topics considered and the data gathered), by measuring the outcomes of each thematic topic (TT) and related focus areas. The thematic topics that are missing are beyond the scope of the present report and will be included only in following editions (see Table 5). Indicators (quantitative or qualitative) are shown inside their focus area. Detailed data is provided in focus areas corresponding Annexes (e.g. **Annex En01** for the focus area **En01**). Introducing each sphere of the Study, environmental, sociocultural and economic, a summary table lists the thematic topics, their related focus areas (FA) and the following information:

**Relevance:** identifies if the relevance of the focus area considered is “high” (H) or “very high” (VH).

### **R1 Data Available:**

- **Y (Yes):** when all the required data were considered and successfully gathered.
- **Part (Partially):** when only part of the required data could be collected.
- **N (Not):** when no data could be obtained.

**Data Sources:** identifies the organisation responsible for the data provided, primary or secondary. The meaning of each acronym can be found at the beginning of this report.

**DSMC - Data Source & Methodology Consistency:** verifies if the data source and aggregation level are consistent (for example, if data is reliable and in the adequate level of detail. If it not fully consistent, indication about its Methodology Limitations is specified.

**Quant./Qual.:** states if indicators give quantitative (Quant.) or qualitative (Qual.) information.

**Methodology Limitations:** informs about data limitations:

- **Temporal discontinuity:** when the total continuity of the data cannot be ensured, due to a lack of data for a period;
- **Data source:** the data source differs from the one that had been previously identified to provide the primary consistent data.

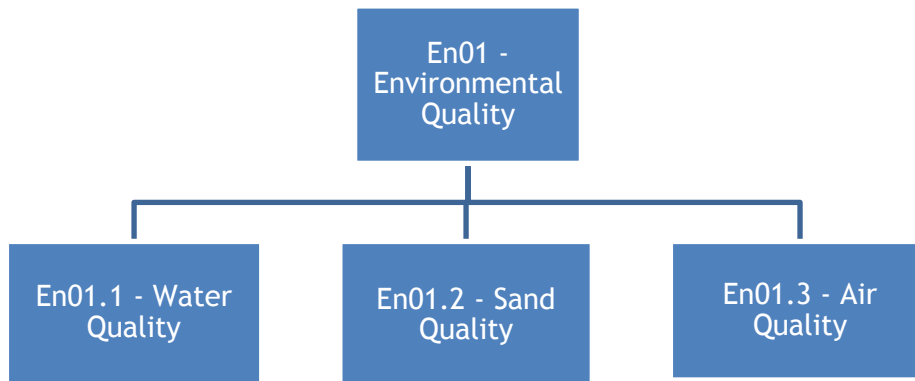
## 5.1 Environmental Outcomes

Table 7 Summary Table of the Environmental Sphere Data

Environmental TT	Environmental FA	Relevance	R1 Data Available			Data Sources	DMSC	Quant.	Qual.	Methodology Limitations	
			Y	Part	N					Temporal discontinuity	Data source
En01 Environmental quality	En01.1 Water quality	VH	X			INEA, SMAC	X	X			
	En01.2 Beach sand quality (new)	H	X			SMAC	X	X			
	En01.3 Air quality	H	X			INEA, SMAC	X	X			
En03 Land use changes, protected sites and biodiversity	En03.1 Olympic-induced land use changes	VH		X		IPP				X	
	En03.2 Olympic and Paralympic venues in protected sites	H	X			RIO 2016, INEA, SMAC, ICMBio	X	X			
En05 Transport	En05.1 Use and evolution of the public transport network	VH		X		Local transport offices, public transport operators	X	X		X	X
En07 Waste and wastewater	En07.3 New waste and wastewater treatment facilities and major improvements	VH		X		Comlurb, SEA, SNIS, ABRELPE	X	X		X	X
En10 Natural disasters	En10.1 Floods and landslides (new)	H		X		GeoRio, Rio-Águas, Defesa Civil	X	X		X	

## En01 Environmental Quality

The thematic topic *Environmental Quality* has three focus areas, aiming to monitor changes in *water, sand, and air quality* in the city, in order to check the impacts of the Games during their preparation and realisation. These focus areas were chosen because they synthesise the environmental quality in the areas where the Olympic Games will occur.

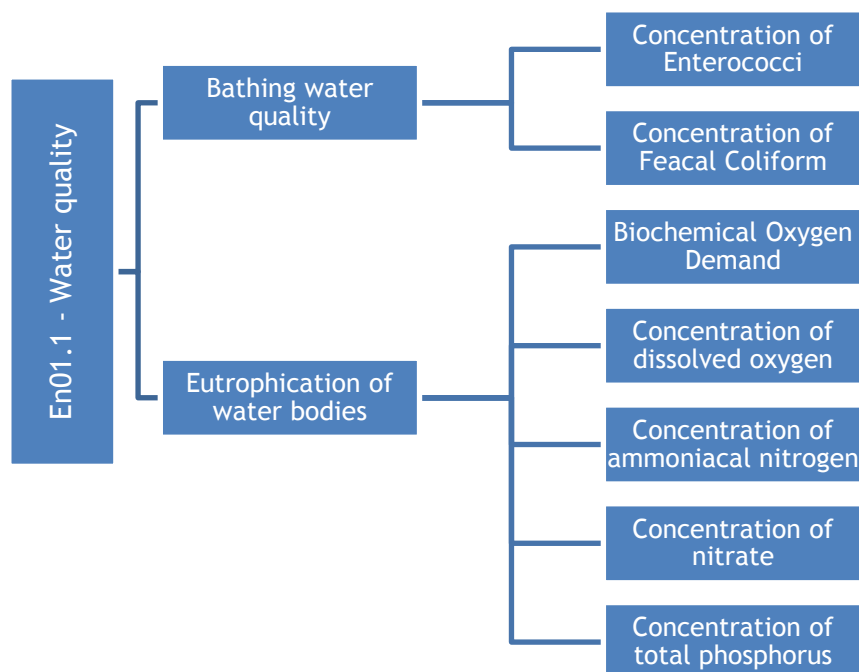




## En01.1 Water Quality

### Purpose

This focus area evaluates the *water quality* in venues of Rio 2016 Olympic Games, the main beaches for recreational use, and the major water bodies in the region.



Indicator	Description
<b>Bathing water quality</b>	Concentration in MPN (most probable number) of enterococci and faecal coliforms in 100mL of water. These bacteria are mainly from human faeces, however they are also present in animal faeces. Their high concentration in water can cause harm to human health.
<b>Eutrophication of water bodies</b>	<p>Concentration in mg / L of the following parameters:</p> <ul style="list-style-type: none"> <li>Biochemical Oxygen Demand (BOD) - provides an indirect measure of the amount of organic matter present in the water body. Represents the amount of oxygen that aerobic bacteria will absorb from the decomposition of organic matter, which usually comes from sewage and food industry effluents;</li> <li>Dissolved Oxygen (DO) - represents the amount of oxygen that can be absorbed by bacteria, fish and all the creatures that live in the water body. Values below 2 mg/L represent a state of hypoxia and can lead to death of these living beings;</li> <li>Ammoniacal Nitrogen (<math>\text{NH}_3/\text{NH}_4^+</math>) Nitrate (<math>\text{NO}_3^-</math>) and Total Phosphorus (P) - nutrients derived from the elements nitrogen and phosphorus. Their excess in water bodies can cause eutrophication, in which excessive proliferation of organisms provokes the consumption of all dissolved oxygen. Nutrients originate from agricultural wastes with high concentrations of fertilisers and sewage.</li> </ul>

Water quality monitoring is one of the most important tools of environmental management. It consists of the systematic monitoring of the qualitative aspects of water. In the state of Rio de Janeiro, the water quality monitoring has been carried out in the main rivers, reservoirs, coastal lagoons, bays, and beaches since the 1970s. Monitoring, according to INEA experts, is performed by collecting samples of water, sediment and biota, followed by a laboratory analysis of the samples. The results are treated statistically and, thereafter, specific diagnoses are made for each water body.

The responsibility for the collection of data concerning water quality in beaches and water bodies is held, in general, by INEA. Nonetheless, the Rodrigo de Freitas lagoon has been monitored by SMAC since December 2011.

For the Olympic Games, the monitoring and evaluation of these data is extremely important. It is necessary to ensure there will be no risk or health damage to the athletes competing in aquatic sports like swimming, sailing, and canoeing, or for the tourists who will visit the beaches of Rio de Janeiro.

The *bathing water quality* indicator allows monitoring the concentration of harmful organisms to human health in rivers and lakes, and at beaches. Water bodies intended for primary contact are classified as *appropriate* or *inappropriate* for bathing, according to the Brazilian legislation specified in the CONAMA Resolution No. 274/2000, which sets the criteria for assessing the environmental quality of bathing waters, based on the concentration values of enterococci and faecal coliforms.

In addition to *bathing water quality*, one must follow the *eutrophication of water bodies* caused by increased levels of nutrients, which can occur due to sewage discharge into rivers and lakes. Therefore, the execution of the Games, as well as the construction of new venues—both competition and non-competition venues—will increase the production of effluents, which may compromise the water quality of water bodies, if these effluents are not treated properly.

The **Table 8** shows the INEA-monitoring stations selected by their location, which are close to the venues. Brazilian law, CONAMA Resolution No. 357/2005, establishes the maximum limits for the concentration of the different parameters evaluated, according to water body salinity (freshwater, brackish, or saline). These features are shown in the table according to the data for each water body provided by the environmental agencies.

Table 8 Selected Water Quality Monitoring Stations

Monitoring Stations	Water body	Salinity
CM0220	Camorim River	Fresh
GN22	Guanabara Bay	Saline
GN25	Guanabara Bay	Saline
GN26	Guanabara Bay	Saline
GN47	Guanabara Bay	Saline
GN64	Guanabara Bay	Saline
GN93	Guanabara Bay	Saline
GN306	Guanabara Bay	Saline
JC341	Jacarepaguá Lagoon	Brackish
JC342	Jacarepaguá Lagoon	Brackish
MN0000	Mangue Channel	Saline
MN240	Marinho River	Fresh
MR361	Marapendi Lagoon	Brackish
MR369	Marapendi Lagoon	Brackish
PN0480	Pavuninha River	Fresh
PV0180	Pavuna Stream	Fresh
RF0000	Rodrigo de Freitas Lagoon	Brackish
RF0002	Rodrigo de Freitas Lagoon	Brackish
RF0005	Rodrigo de Freitas Lagoon	Brackish

Source: Own elaboration from data gathered by INEA

The Jacarepaguá and Marapendi lagoons are a part of the lagoon complex of Jacarepaguá, located in the western area of the city of Rio de Janeiro. These lagoons, as well as the Tijuca, which will not be contemplated in this report, all have brackish water, according to INEA. The rivers in this complex that will be followed in this study include, Pavuna stream, Pavuninha River, Camorim River, and Marinho River, which, also according to INEA, all have fresh water. These stations are located close to the Barra zone, where sports such as Golf, Boxing, Tennis, Cycling, Water Polo, among others, will take place at the Rio Olympic Park and Rio Centro premises.

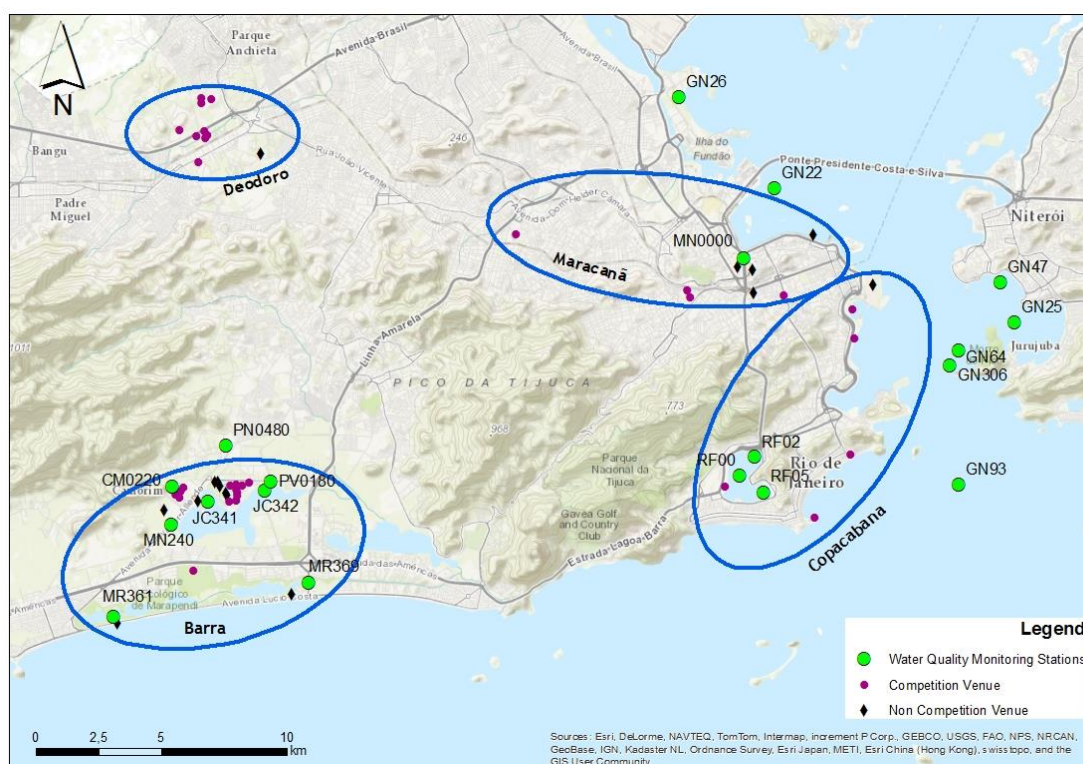
The Rodrigo de Freitas Lagoon is located in the South Zone of Rio de Janeiro and has an area of 2.2 km<sup>2</sup> and approximately 6.200.000m<sup>3</sup> in volume. It connects to the sea through the Jardim de Alá and Leblon channels and, due to its contact with marine waters, it has brackish water. The Rodrigo de Freitas Lagoon is a part of the Copacabana Zone, and the sports that will be taking place there will be Rowing, Canoeing and Kayaking.

The Guanabara Bay is the second largest bay on the Brazilian coast and is about 380km<sup>2</sup> wide, reaching almost all the metropolitan region of the State of Rio de Janeiro. The high pollution levels found in the Guanabara Bay were caused by a process of degradation, which intensified mainly in the 1950s and 1960s with the urban growth that occurred especially in Brazil's Southeast region. The sailing

competitions will take place in the Guanabara Bay, so it is necessary to guarantee the water quality for bathing.

Despite the cyclic renewal of its waters to the sea, which makes its waters saline, the bay is the receptor of a significant watershed, which receives a wide range of liquid and solid discharges. Among the potential pollution sources included are: sewage, various types of industries, marine terminals for oil products, two commercial ports, several shipyards, and two oil refineries, among other economic activities. Population growth and industrial development brought, in addition to pollution, environmental physical issues, such as the destruction of peripheral ecosystems of the Bay, and the embankment of its water surface. It also brought uncontrolled land use and its adverse effects in terms of siltation, bottom sedimentation, flooding, and landslides. Simultaneously, public health problems have characterised the basin region of Guanabara Bay, reflecting the inadequate management of wastewater and solid waste in the region during the expansion of the Metropolitan Region<sup>24</sup>. Throughout this time, the implementation of infrastructure services, such as sanitation and drainage did not follow population growth.

The location of the water quality monitoring stations can be viewed on the map shown in Figure 8.



**Figure 8 Water Sampling Stations**  
Source: SMAC and INEA, 2013

<sup>24</sup> Amador, E. S., *Bacia da Baía De Guanabara - Características Geoambientais e Ecossistemas*, Editora Interciência, 1a. Edição - 2012

## Results

Conditions for bathing water quality were evaluated on the main beaches of Rio de Janeiro city (Table 9). INEA classifies water quality according to the concentration of faecal coliforms and enterococci. Aligning these categories, according to the CONAMA Resolution No. 274/2000, waters classified as having *great* and *good water* quality coincide with the *appropriate* for bathing category, when in 80 percent or more of a set of water samples, there is a maximum of 1,000 MPN/100mL faecal coliform or 100NMP/100mL enterococci. The waters classified as containing *regular*, *poor*, or *very poor* water quality are considered *inappropriate* for bathing.

Table 9 Water Quality of Beaches in Rio de Janeiro

Beach	2007	2008	2009	2010	2011	2012
Flamengo	very poor	very poor	very poor	very poor	poor	poor
Botafogo	very poor	very poor	very poor	very poor	very poor	very poor
Vermelha	great	great	great	great	great	great
Copacabana	great	good	good	great	good	good
Ipanema	good	good	good	good	regular	good
Leblon	regular	regular	regular	regular	regular	regular
Barra da Tijuca	great	good	good	good	good	good
Recreio	great	great	great	great	great	great

Caption: Quality



very poor



poor



regular



good



great

Source: INEA, 2013

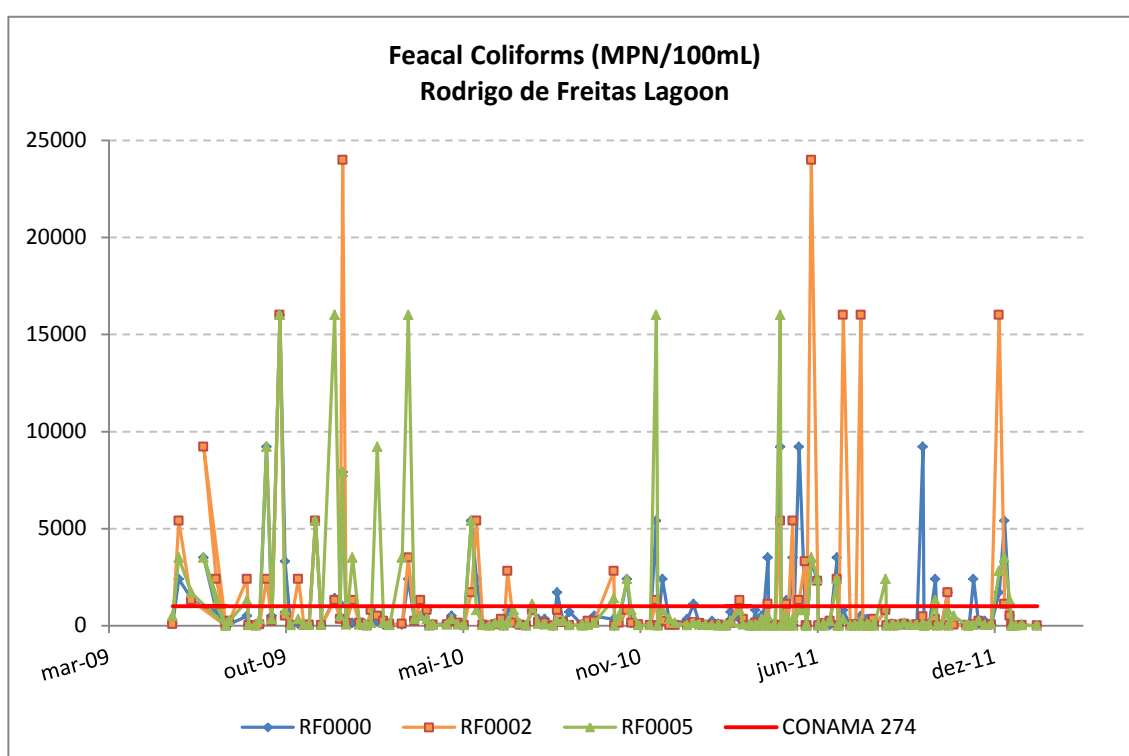
Accordingly, we note that the beaches of Copacabana, Barra da Tijuca, Recreio, and Praia Vermelha were suitable for bathing in all the years between 2007 and 2012. This is a positive result considering that sports such as Aquatics, Triathlon, Marathon, Swimming, Diving and Triathlon, will be occurring only on Copacabana beach and the Olympic and Paralympic beach, a social area for athletes, will be located on Barra beach. Athletes involved in water activities on the beaches will, therefore, have no health hazards if these conditions are maintained until 2016.

It is still possible that at some point these beaches, classified as *appropriate* for bathing on the yearly average, could have been outside the bathing standards. In future reports, the averages will be presented at shorter intervals so there is no doubt about the bathing conditions at the beaches.

However, the beaches of Flamengo, Botafogo, and Leblon were classified as inappropriate for bathing. This is a very unfortunate situation, since they are located in highlighted touristic areas of the city and could be used by swimmers if those beaches were within the standards. The beaches presenting the worst water quality are Flamengo and Botafogo, located inside the Guanabara Bay, which are affected by the amount of discharged pollutants and sewage.

The Rodrigo de Freitas Lagoon will host the Rowing, Canoeing, and Kayaking competitions, so its water also needs to be suitable for bathing. Data concerning the concentration of faecal coliforms started being collected from 2009 onwards, but unlike other stations, data was collected with some regularity, allowing an evaluation of water quality through time series graphs (Figure 9).

In the following graphs, the different parameters' concentrations are shown in blue, orange, and green lines, each representing a different monitoring station within the Rodrigo de Freitas Lagoon (R0000, R0002, R0005, respectively). The legislation standard is represented as a red horizontal line, meaning that all the points located above this line are out of standard and therefore inappropriate for bathing. The points located below the red line are within standards and represent moments in which the water quality was suitable for bathing.



**Figure 9 Thermo Tolerant Faecal Coliforms Concentration in the Various Monitoring Stations of Rodrigo de Freitas Lagoon**  
Source: INEA, 2012

It's easy to see that, at some moments, the concentration of faecal coliforms is highly inadequate in view of environmental legislation. If this situation is not reversed in time for the Olympics, it will represent a potential health hazard to the athletes and tourists.

It is also important to check whether the new sports facilities will release their untreated effluents into the already existing sewage system, any river nearby, or if there will be some kind of pre-treatment. It is, therefore, vital to monitor the eutrophication of rivers, which involves parameters such as biochemical oxygen

demand, dissolved oxygen, ammoniacal nitrogen, nitrate, and phosphorus, to check if there has been any change in the quality of water bodies near the venues.

CONAMA Resolution No. 357/2005 classifies water bodies according to their uses and salinity. From these data are established “quality classes”, and for each class different values are assigned for the concentration of each substance. The minimum requirements for primary contact activities are shown in

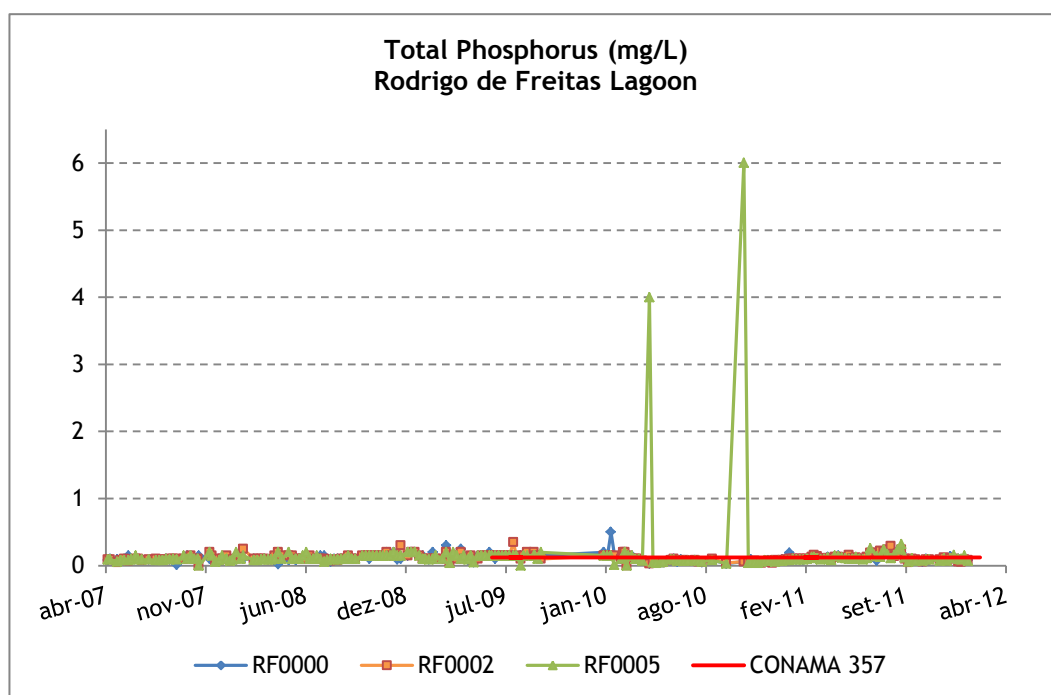
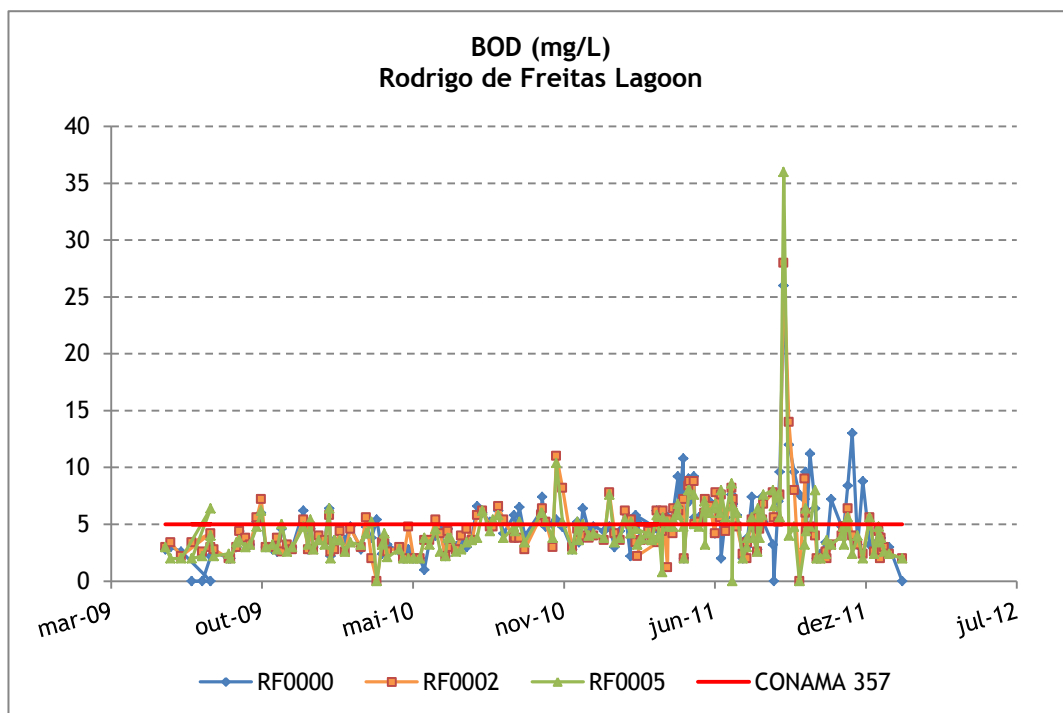
**Table 10.**

**Table 10 Patterns of Bathing**

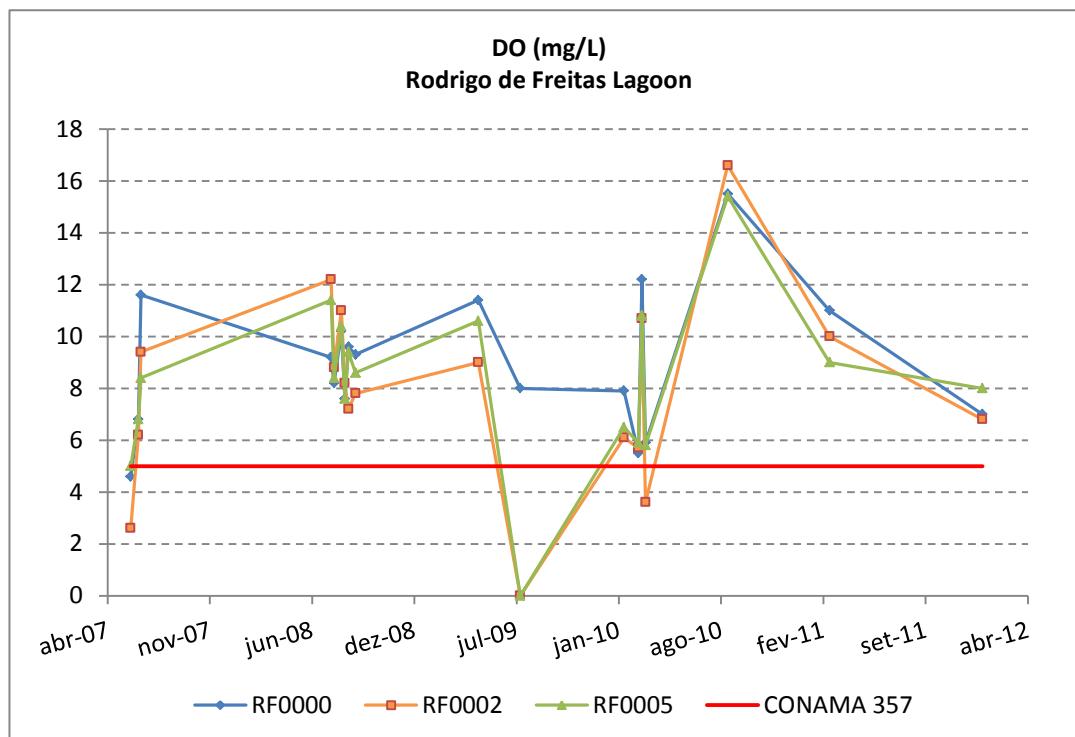
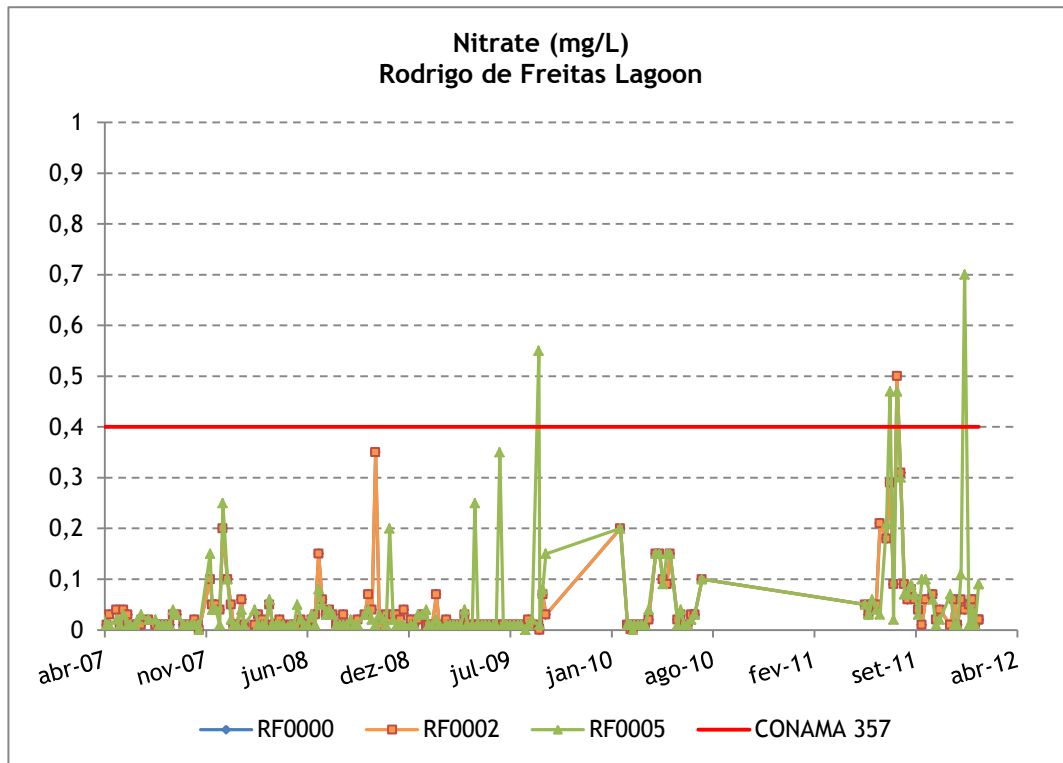
Parameter	Fresh water (Class 2)	Brackish water (Class 1)	Saline Water (Class 1)
<b>BOD</b>	Up to 5mg/L	-	-
<b>DO</b>	Higher than: 5mg/L	Higher than: 5mg/L	Higher than: 6mg/L
<b>Total ammoniacal nitrogen</b>	For pH ≤ 7.5: to 3.7 mg/L	0.4mg/L	0.4mg/L
	For 7.5 < pH ≤ 8.0: to 2.0 mg/L		
	For 8.0 < pH ≤ 8.5: to 1.0 mg/L		
	For pH > 8.5: to 0.5 mg/L		
<b>Nitrate</b>	Up to 10 mg/L	0.4mg/L	0.4mg/L
<b>Total phosphorus</b>	Lentic environment: up to 0.03 mg/L	0.124mg/L	0.062mg/L
	Lotic environment: up to 0.05mg/L		

Source: CONAMA 357/2005

These data, considered extremely important for the evaluation of water quality, is not always available. For a reliable analysis, data should be collected at least every three months. The Rodrigo de Freitas Lagoon, which is located in a touristic area of the city, is more continuously monitored than are the Jacarepaguá and Marapendi lagoons, on the west side of the city. The data concerning eutrophication at Rodrigo de Freitas Lagoon are shown below in **Figure 10**.







**Figure 10 Eutrophication Data for the Rodrigo de Freitas Lagoon**  
Source: INEA, 2012

It can be observed in these graphs that some values are above the threshold set by CONAMA Resolution 357, mainly in the parameters of BOD. The DO is also above the level determined by law but, unlike other parameters, this is a good thing for DO, since the minimum is 5mg/l for brackish water, and the levels are higher than that.

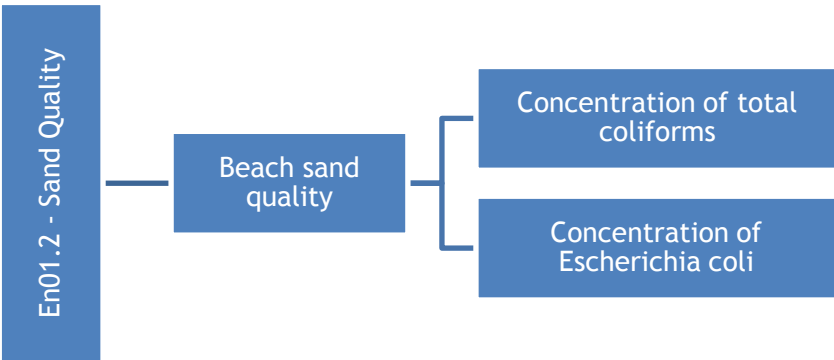
The monitoring of the water quality for rivers is made according to the *Annual Monitoring Plan*, with regular periodicity and frequency for all the hydric bodies monitored by the Instituto Nacional de Estado do Ambiente (INEA). The frequencies can vary and, for example, the rivers running into the basin of the Guabanara Bay are monitored bi-monthly, whereas the Guandu basin is monitored on a monthly basis. Some monitoring stations did not generate data for over a year, a period when several changes might have occurred and gone unnoticed, troubling the evaluation. Data from several stations are not included in this report, since they are incomplete. In addition, standardisation of the collection would be needed, because in spite of peculiarities of each water body, it would be useful to have common parameters that would allow analysts to predict trends of pollutants transportation through the city's water bodies.

There is still no monitoring of the concentration of enterococci and total ammoniacal nitrogen for selected stations, except for those of Guanabara Bay (see **Annex En01.1**). It is expected that the monitoring network will be expanded due to the Games, according to the commitment made in the Rio Candidature File and the Sustainability Management Plan. Currently, there is no water quality monitoring station/s installed nearby the Deodoro Zone, making any assessment of impacts and legacies from the Games in these regions impossible.

**En01.2 Sand Quality**

**Purpose**

This focus area evaluates the *sand quality* changes in Copacabana beach where competitions for Beach Volleyball and the Swimming Marathon will take place, and other beaches of South and West Zones.



Indicator	Description
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**Beach sand quality**

Concentration in MPN (most probable number) of total coliforms (which include the faecal and non-faecal coliforms) and *Escherichia coli* per 100 g of sand. These bacteria get to the sand through the transport of rainwater and if there is a discharge of sewage near the beach. Their concentration in excess can cause harm to the health of athletes and other people in contact with the sandy beaches.

The beaches of Rio de Janeiro are very important touristic spots in the city; additionally, they will as competition sites during the 2016 Olympic Games.

The Copacabana beach will host Beach Volleyball games. The Olympic and Paralympic beach (a recreational facility for athletes) will be located on Barra beach. Therefore, athletes will have direct contact with the sand on both beaches. In subsequent reports, other beaches (such as Ipanema, Leblon, Recreio, Botafogo, Flamengo, and Praia Vermelha) will also be monitored for quality, as they are important tourist attractions for the city.

In the absence of an international legislation, SMAC has developed its own classification standard for sand quality through SMAC's Resolution No. 468/2010, which creates four categories: excellent, good, regular, and not recommended, according to the concentration of total coliforms and *Escherichia coli* (Table 11). Samples are collected fortnightly, and published in public bulletins by SMAC itself.

Table 11 Local Sand Quality Standards

Sand - rating -		Coliforms (MPN/100g)	<i>Escherichia coli</i> (MPN/100g)
Excellent	Green	Up to 10,000	Up to 40
Good	Light Green	From 10,000 to 20,000	From 40 to 400
Regular	Yellow	From 20,000 to 30,000	From 400 to 3,800
Not recommended	Red	Higher than 30,000	Higher than 3,800

Source: SMAC resolution No.468/2012

## Results

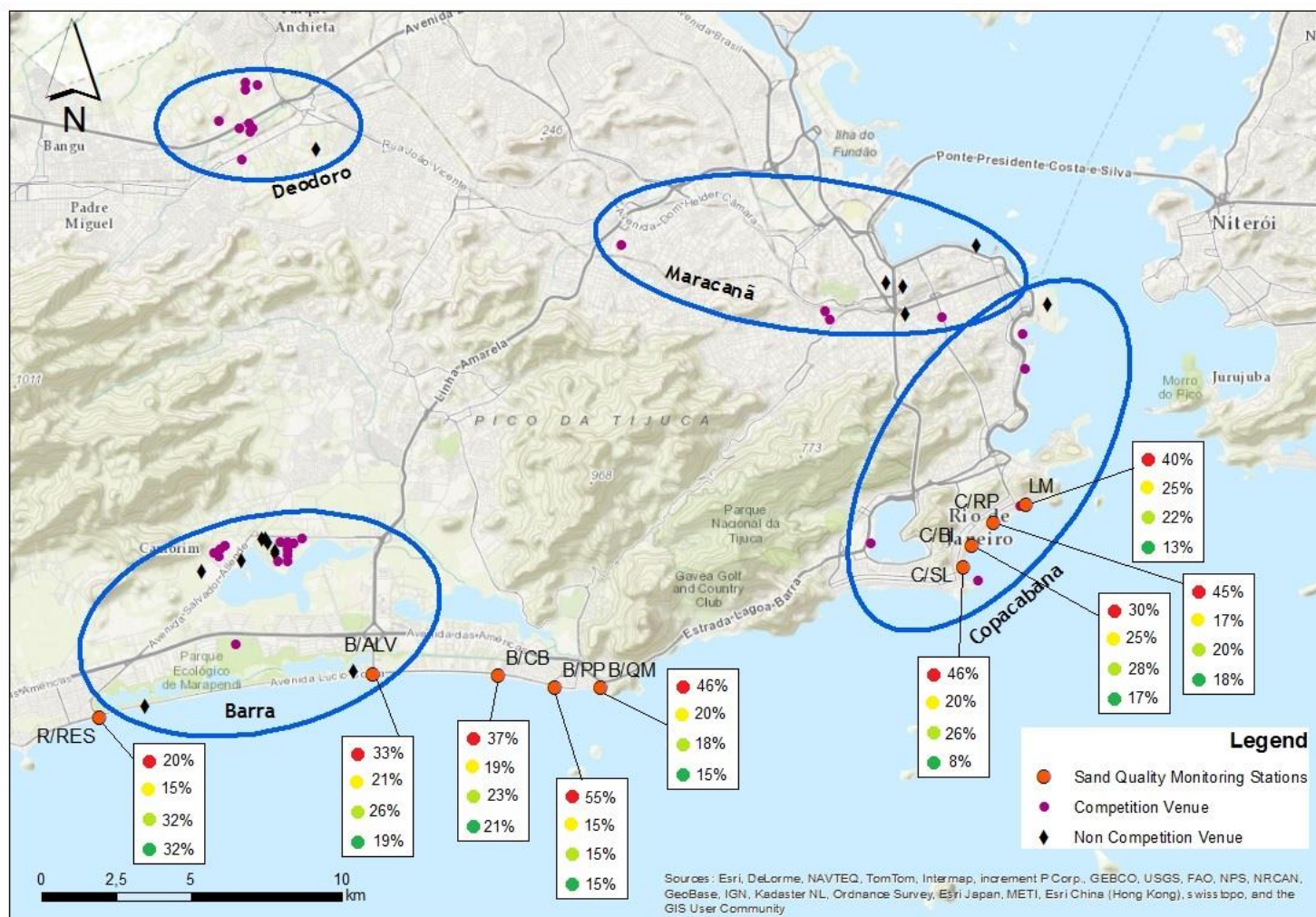
Data were compiled for the two most relevant beaches in the context of the Olympics—the Copacabana and Barra beaches—where athletes will inevitably be in contact with sand. There are three sand collection points on Copacabana beach, named as C/RP, C/BI, C/SL, located respectively in front of the cross streets to the beach: República do Peru, Barão de Ipanema, and Souza Lima. There is also a fourth collection point at Lemebeach, LM. At Barra beach, there are five collection points, B/QM, B/PP, B/CB, B/ALV, R/RES, located at known points of the beach respectively: Quebra Mar, Pepê, Condomínio Barra mares, Avenida Ayrton Senna, and Reserva beach.

A quick analysis of Annex En01.2 is enough to notice the commitment of SMAC in the collection and generation of data. The third column refers to the report number in

which the data was published; each report contemplates a two weeks period, totalling six reports per season (summer, autumn, winter, spring). No direct relationship between the seasons and sand quality could be observed thus far. There was a general decline in the sand quality between the years 2007 and 2009, followed by an improvement since then, despite some records of sand quality of not recommended sand (especially in Barra).

The map showing the location of each station selected for this report can be seen in **Figure 11**. The map shows, for each station, the occurrence of each outcome over five years of measurement, expressed in percentage (between 2007 and 2012), encompassing the results of reports number 27 to 169. It is noticeable that most of the time, the beaches of Copacabana and Barra have acceptable sand quality, except for station B/PP, where sand is ranked as not recommended for contact at 55 percent of the reports.

The first bulletin of 2013, surprisingly, revealed that all the collection points of the two most relevant beaches for the Olympics had become not recommended for direct contact, except in Leme. It will be necessary for the environmental agencies to enforce tighter control, in order to avoid the athlete's risk of infection during the Games. SMAC points out that the main factors for the decline in the sand quality are the presence of domestic dogs on the beaches, which is forbidden, as well as food waste and packaging that are left forgotten on the sand by bathers.



**Figure 11 Sand Quality (measurements between 2007 and 2012)**

Legend: ● Excellent; ● Good; ● Regular; ● Not recommended

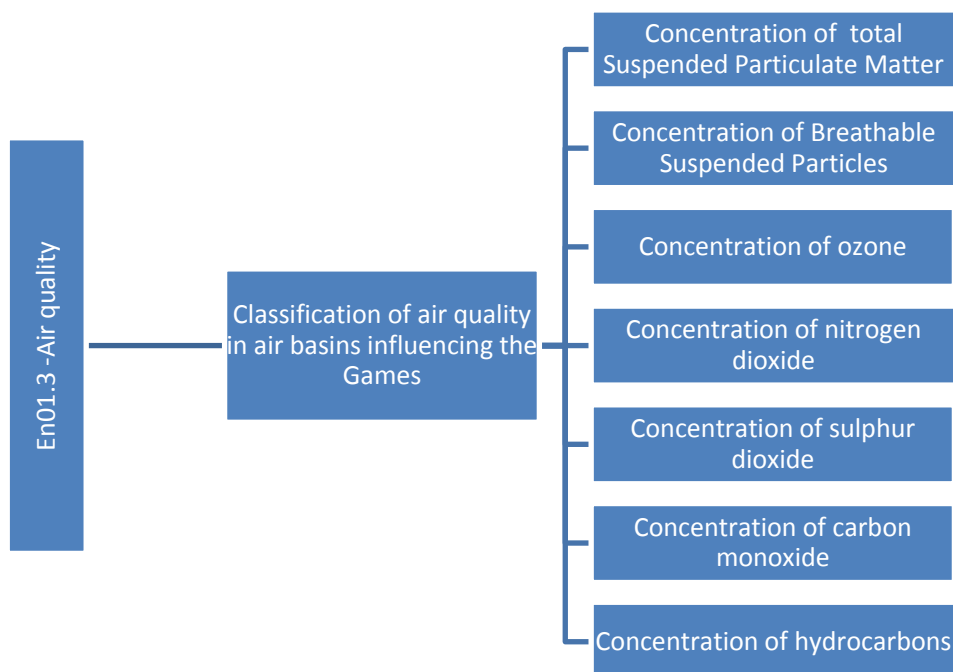
Source: Own elaboration with SMAC data

The Municipal Urban Cleaning Company of Rio de Janeiro (Comlurb) performs a careful cleaning regularly in the sands of the beaches. SMAC calls special attention to cleaning the beaches with sands classified as *not recommended*. Additional steps taken to improve the sandy beaches classified as *not recommended* involve the environmental education campaign, “Rio, Praia Linda” (Rio, beautiful beach), organised by SMAC and the Public Order Agency (SEOP), which seeks to enforce the existing legislation prohibiting the presence of domestic dogs on beaches.

### En01.3 Air Quality

#### Purpose

This focus area aims at assessing the *air quality* near the Games venues.



Indicator	Description
<b>Concentration of total Suspended Particulate Matter (SPM)</b>	Concentration in $\mu\text{g}/\text{m}^3$ of particles of liquid or solid material, which are suspended in the air with size larger than $50\mu\text{m}$ . The main sources are industrial processes, motor vehicles, suspended street dust, biomass burning, etc.
<b>Concentration of Breathable Suspended Particles (RPS)</b>	Concentration in $\mu\text{g}/\text{m}^3$ of particles of liquid or solid material suspended in air with a diameter smaller than $10\mu\text{m}$ ( $\text{PM}_{10}$ ) and smaller than $2.5\mu\text{m}$ ( $\text{PM}_{2.5}$ ), also called fine particles. The main sources are combustion processes (industrial, automotive vehicles), suspended dust, secondary aerosol (formed in the atmosphere).
<b>Concentration of Ozone (<math>\text{O}_3</math>)</b>	Concentration in $\mu\text{g}/\text{m}^3$ ozone gas ( $\text{O}_3$ ). This gas is not emitted directly into the atmosphere. It is produced photochemically by solar radiation on nitrogen oxides and volatile organic compounds.
<b>Concentration of nitrogen dioxide (<math>\text{NO}_2</math>)</b>	Concentration in $\mu\text{g}/\text{m}^3$ of nitrogen dioxide gas ( $\text{NO}_2$ ), which has as main sources: Combustion processes involving motor vehicles, industrial processes, and thermal plants that use oil or gas incineration.
<b>Concentration of sulphur dioxide (<math>\text{SO}_2</math>)</b>	Concentration in $\mu\text{g}/\text{m}^3$ of sulphur dioxide gas ( $\text{SO}_2$ ), mostly from burning processes that use fuel oil, oil refinery, and diesel vehicles.
<b>Concentration of carbon monoxide (CO)</b>	Concentration in $\mu\text{g}/\text{m}^3$ of carbon monoxide gas (CO), derived mainly from incomplete combustion of motor vehicles.
<b>Concentration of hydrocarbons(HC)</b>	Hydrocarbon concentration in $\mu\text{g}/\text{m}^3$ . They are compounds formed primarily by carbon and hydrogen. The most detrimental to health are those of higher molecular weight, which can be released into the air by burning fossil fuels and oil.

The air quality monitoring is carried out in order to determine the pollutant's concentration in the atmosphere. This not only allows systematic monitoring of air quality in the area of interest, but also generates basic data for making diagnoses of air quality on a long-term basis, justifying government action to control emissions when necessary.

The national standards for air quality established by CONAMA Resolution No. 03/1990 are shown in **Table 12** (WHO International standards are presented comparatively). The table defines the concentrations of air pollutants that, when exceeded, may affect the health, safety, and welfare of the population, as well as cause damage to flora and fauna, materials, and the overall environment. The air quality standards can be divided into primary and secondary. The primary standards are understood as the maximum acceptable concentration of air pollutants, thus becoming short-, and medium-term targets. The secondary standards are those related to concentrations below which there is a least adverse effect on the population's health, as well as minimal damage to fauna and flora, materials and environment. They are considered a long-term target for pollutants levels.

**Table 12 Air Quality Standards Established by CONAMA Resolution No. 03/1990**

Pollutant	WHO/UN Standards <sup>25</sup>		CONAMA Standards		
	Sampling period	$\mu\text{g}/\text{m}^3$	Sampling period	Primary Standard $\mu\text{g}/\text{m}^3$	Secondary Standard $\mu\text{g}/\text{m}^3$
Total Suspended Particulate Matter Concentration			24 hours <sup>1</sup>	240	150
			AGM <sup>2</sup>	80	60
Respirable Suspended Particles Concentration (PM10)	24 hours	20	24 hours <sup>1</sup>	150	150
	AAM	50	AAM <sup>3</sup>	50	50
Fine Particles PM2.5	24 hours	10			
	AAM	25			
Ozone Concentration	8 hour	100	1 hour <sup>1</sup>	160	160
Nitrogen Dioxide Concentration	1 hour	200	1 hour	320	190
	AAM	40	AAM <sup>3</sup>	100	100
Sulphur Dioxide Concentration	24 hours	20	24 hours <sup>1</sup>	365	100
	10 minutes	500	AAM <sup>3</sup>	80	40
Carbon Monoxide Concentration	--		1 hour <sup>1</sup>	40.000	40.000
				35 ppm	35 ppm
			8 hours <sup>1</sup>	10.000	10.000
				9 ppm	9 ppm

1. Should not be exceeded more than once a year; 2. Annual geometric mean; 3. Annual arithmetic mean.

Source: own elaboration from OMS and CONAMA.

<sup>25</sup>WHO. Available on [http://whqlibdoc.who.int/hq/2006/WHO\\_SDE\\_PHE\\_OEH\\_06.02\\_eng.pdf](http://whqlibdoc.who.int/hq/2006/WHO_SDE_PHE_OEH_06.02_eng.pdf)



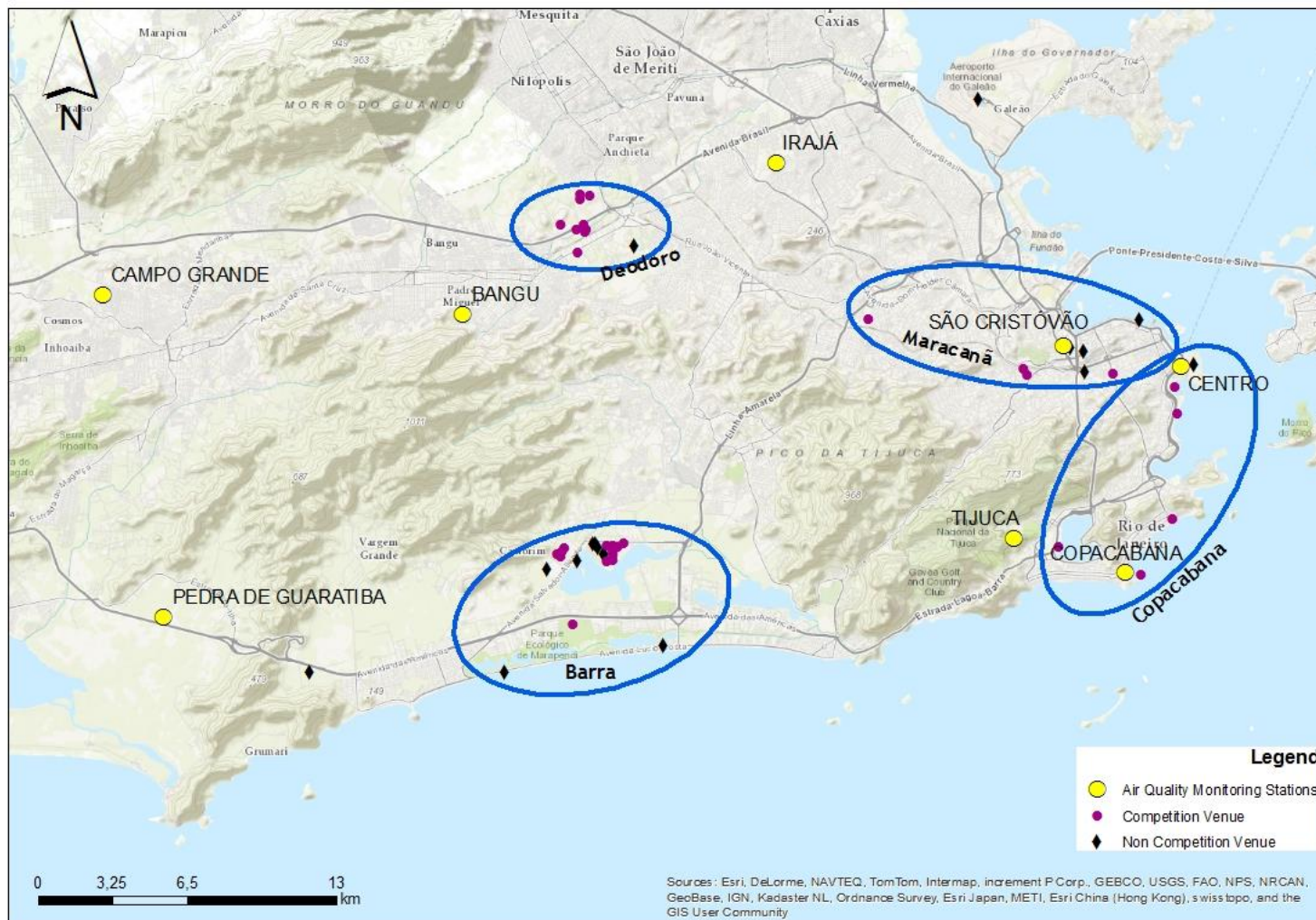
The Metropolitan Region of Rio de Janeiro has the second largest concentration of vehicles, industries, and emitting sources of pollutants in the country, creating problems relating to air pollution. Among the various sources that contribute to the degradation of air quality in the region, vehicles stand out; 77 percent of pollutants come from vehicular traffic, contributing the most significant portion of emissions.

## Results

The monitoring of air quality in the city of Rio de Janeiro is currently held by *MonitorAr-Rio* programme developed by the SMAC<sup>26</sup>. The levels of pollutants and atmospheric conditions are registered daily in eight fixed locations throughout the city (Centro, Copacabana, São Cristóvão, Tijuca, Irajá, Bangu, Campo Grande, and Pedra de Guaratiba), as well as one movable location (Port); the distribution is shown in **Figure 12**.

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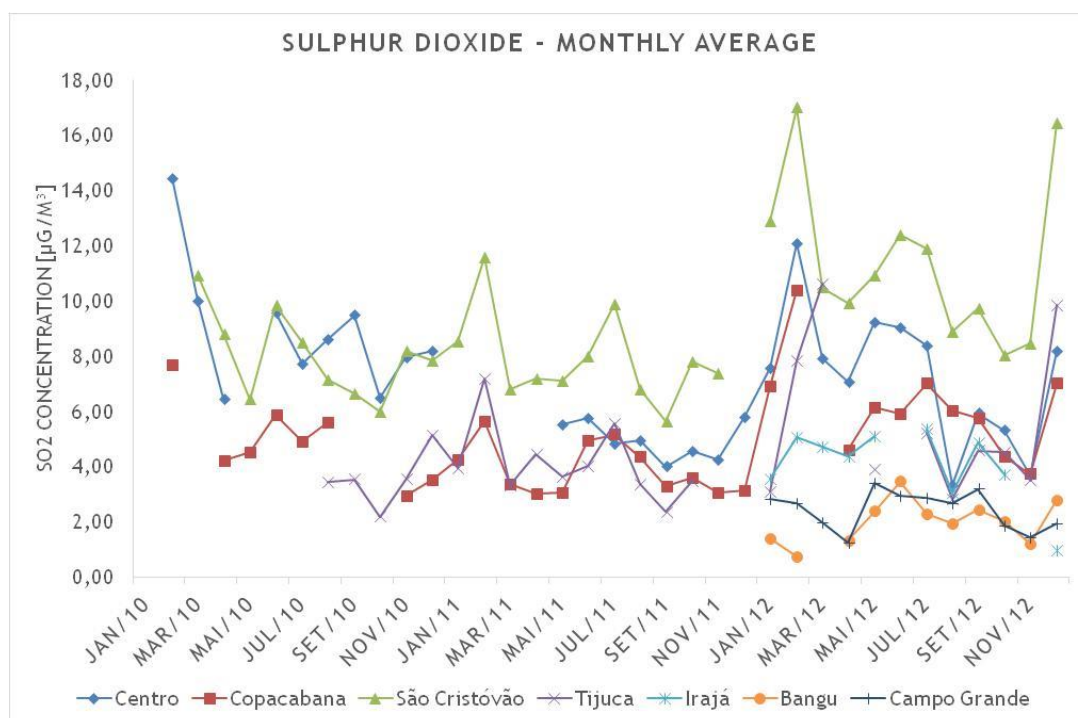
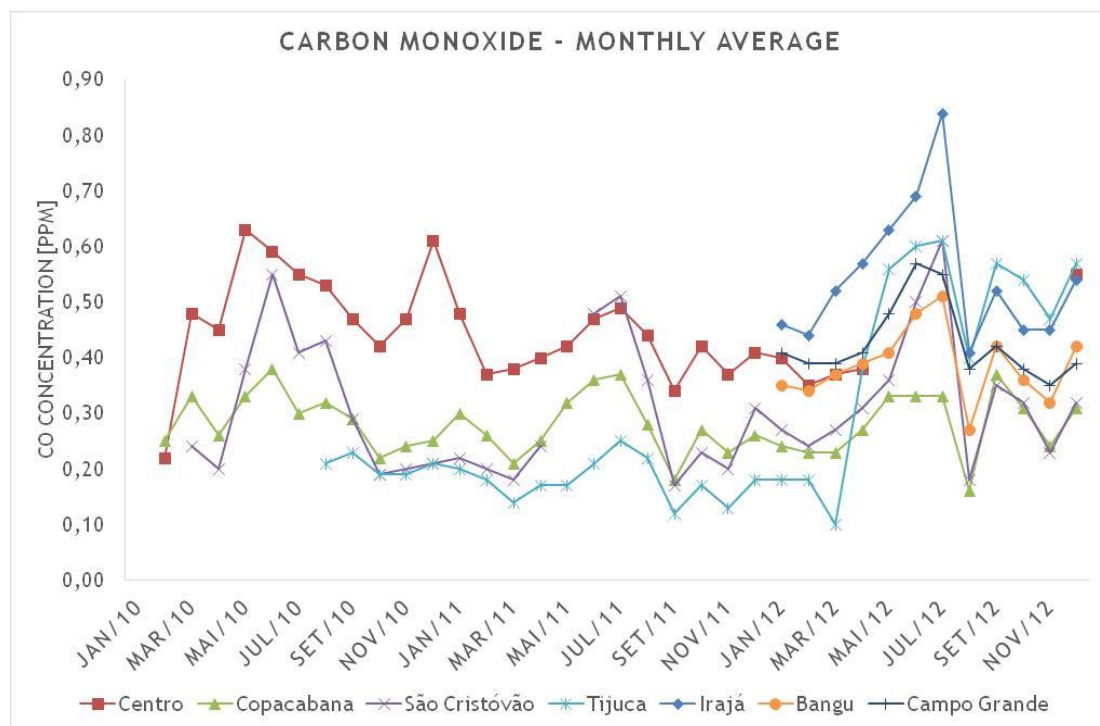
<sup>26</sup>The responsibility for data collection on air quality was that of the State Environmental Institute (INEA), although since the year 2010, it has been delegated to the SMAC.

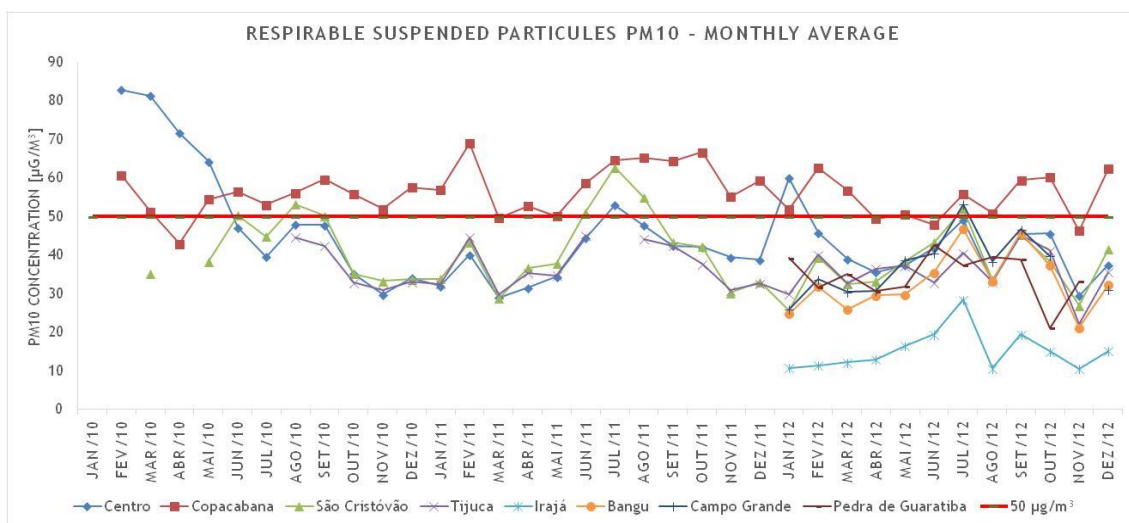
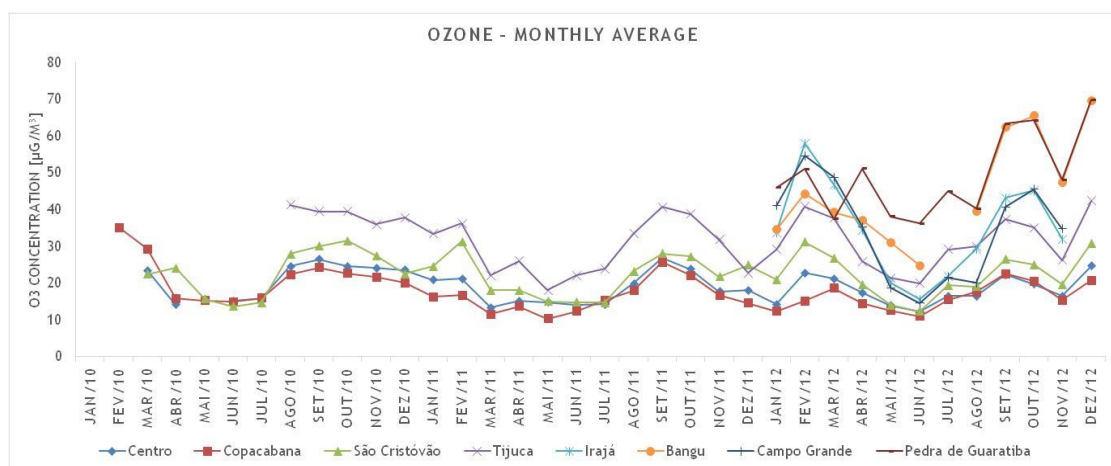
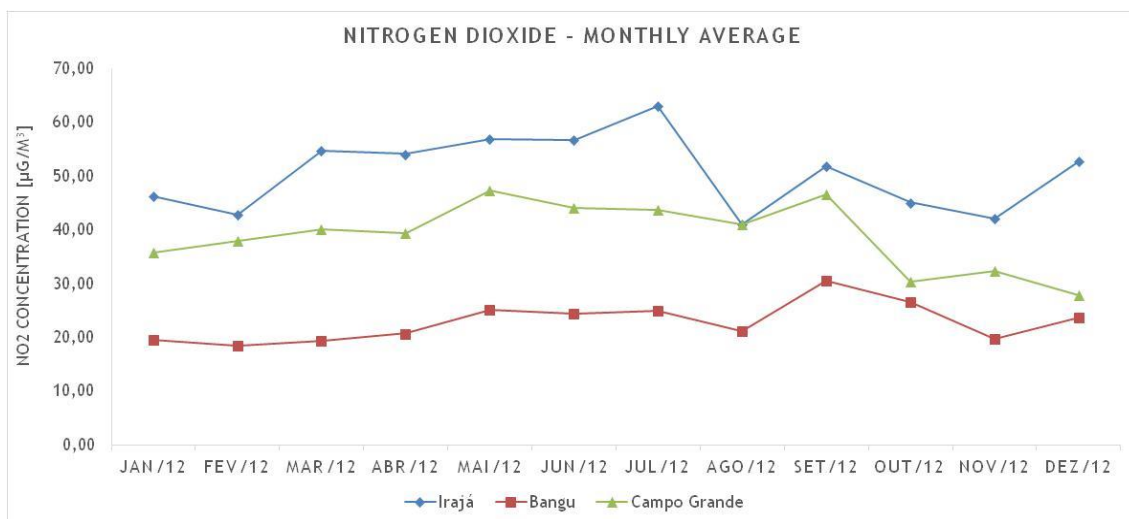


**Figure 12 Monitoring Air Quality Network in the City Of Rio de Janeiro**  
 Source: Own elaboration from SMAC data, 2013

This network monitors the following parameters: particulate matter ( $PM_{10}$  and  $PM_{2.5}$ ), sulphur dioxide, carbon monoxide, ozone, hydrocarbons, and nitrogen oxides, as well as relative humidity, temperature, wind speed and direction, atmospheric pressure, radiation sunlight and precipitation. The monitoring of these parameters at each station in the period 2010 to 2012 can be seen in **Annex En01.3**.

The graphs below show the variation of the parameters chosen from 2010 to 2012.







**Figure 13 Air Quality Parameters**  
Source: Own compilation from SMAC data, 2013

All air parameters are within the standards of CONAMA Resolution nº 03/1990, except the respirable suspended particles.

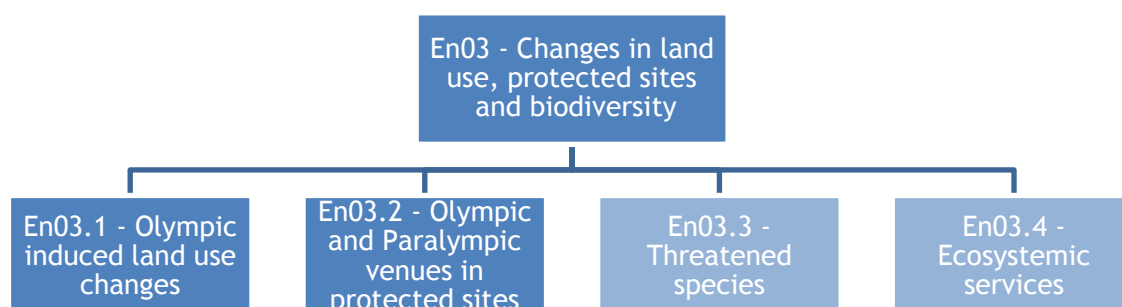
For the other parameters, the concentration level allowed by law was far above the collected values and, therefore, cannot be represented on the graph, due to scale options. It is interesting to note that the city of Rio de Janeiro is a seaside town and bordered by a large bay, allowing considerable ventilation in the monitored areas.



### En03 Changes in Land Use, Protected Sites and Biodiversity

This indicator looks at the effect of land use changes due to the Rio 2016 project in relation to protected sites and biodiversity. Some Olympic and Paralympic venues, or competitions, may be close to protected sites and therefore, to the contiguous buffer areas (areas of contact with the surrounding region to be carefully observed). Nevertheless, there may also be an important contribution to the expansion of protected areas, due to the commitments assumed for the games.

This thematic topic is presented through four focus areas, which are material and present reliable and robust data. This report will address the first two focus areas: *changes in land use induced by the Olympic and Paralympic Games*, and *the Olympic and Paralympic venues in protected sites*.



Hosting of the Games can induce a change in the use and soil occupation of the Host City. The first focus area (**En03.1**) will monitor changes in the entire city of Rio de Janeiro.

One of the main features of the city of Rio de Janeiro is the presence of large green areas near regions with high population density. Many of the Olympic venues will be next to protected sites, as demonstrated in the results of this report. Thus, the second focus area (**En03.2**) will monitor the influence of the Olympic and Paralympic venues on these sites.

Other important aspects are subject to this thematic topic, but that will be addressed in following reports, namely: the impacts on endangered species (**En03.3**) and ecosystem services (**En03.4**) provided by protected areas of the city of Rio de Janeiro.

#### En03.1 - Olympic Induced Land Use Changes

##### Purpose

This focus area aims at monitoring the changes in land use and occupation induced by Olympic and Paralympic Games including compensatory measures, especially those that alter the size of protected areas and compromise the biodiversity.

This focus area will be accompanied by an indicator that gathers information about changes in land use in the city of Rio de Janeiro.



Indicator	Description
<b>Changes in land use induced by the Olympic and Paralympic Games</b>	This indicator measures the changes in land use. Data analysis is performed taking into account the location of the Olympic and Paralympic facilities and their potential influence on the variation of the categories of use and occupation of land.

There are 16 categories of land use and occupation, referring to urbanised or to non-urbanised areas, as shown in **Table 13** (for further details please refer to **Annex En03.1.1**). Land use and occupation changes in the city of Rio de Janeiro are regularly monitored by Instituto Pereira Passos (IPP), through visual interpretation of orthophotos. Only horizontal occupation and expansion is monitored. Trends to vertical expansion and densification are not included.

Table 13 IPP Classification for Land Use and Occupation

Urbanised areas	Non-urbanised areas
<b>Residential areas</b>	Area with trees and shrubs vegetation
<b>Non-built areas</b>	Areas with grassy-woody vegetation (field)
<b>Institutional and public infrastructure areas</b>	Agricultural areas
<b>Areas of trade and services</b>	Rocky outcrops and sedimentary deposits
<b>Slum</b>	Water bodies
<b>Recreational areas</b>	Areas subject to flooding
<b>Areas of education and health</b>	
<b>Industrial areas</b>	
<b>Transport Areas</b>	
<b>Areas of mineral exploitation</b>	

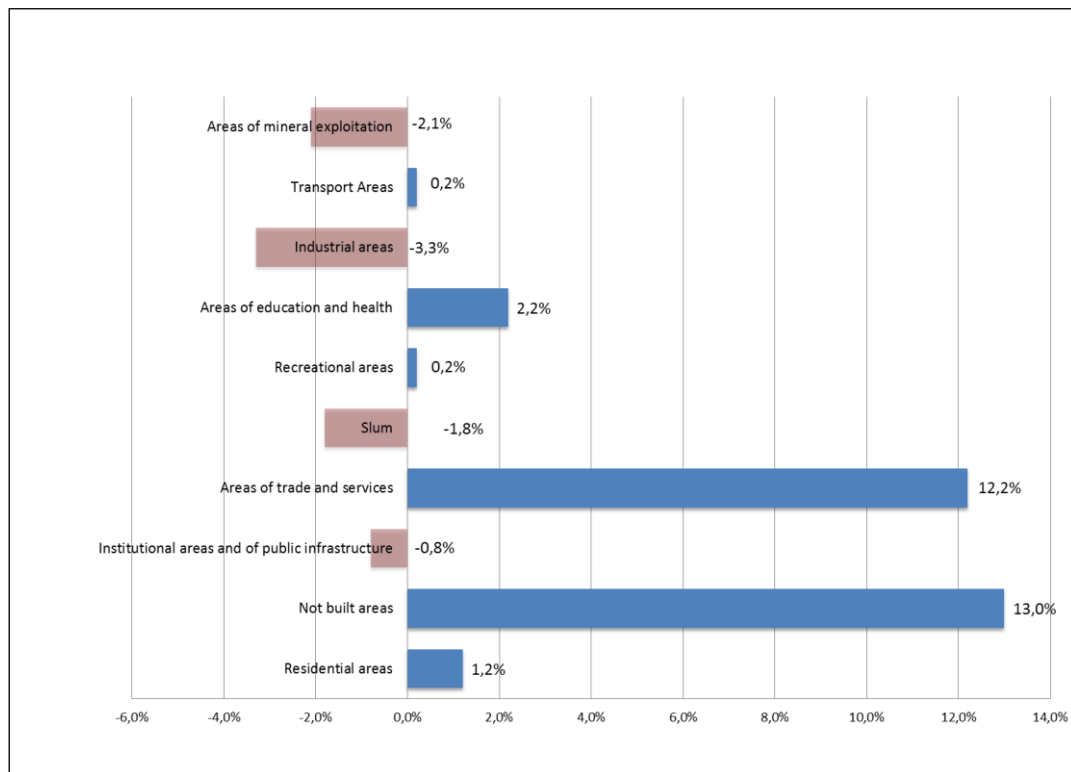
Source: IPP, 2013<sup>27</sup>

This report presents the changes in the period 2009 to 2011. There was no mapping of land use in the previous 2 years (2007 and 2008). For 2012 there is a mapping, but corresponding analysis has not been published yet. Since this focus area will be monitored until 2019, it will be possible to analyse the changes in the period of ten years in future reports.

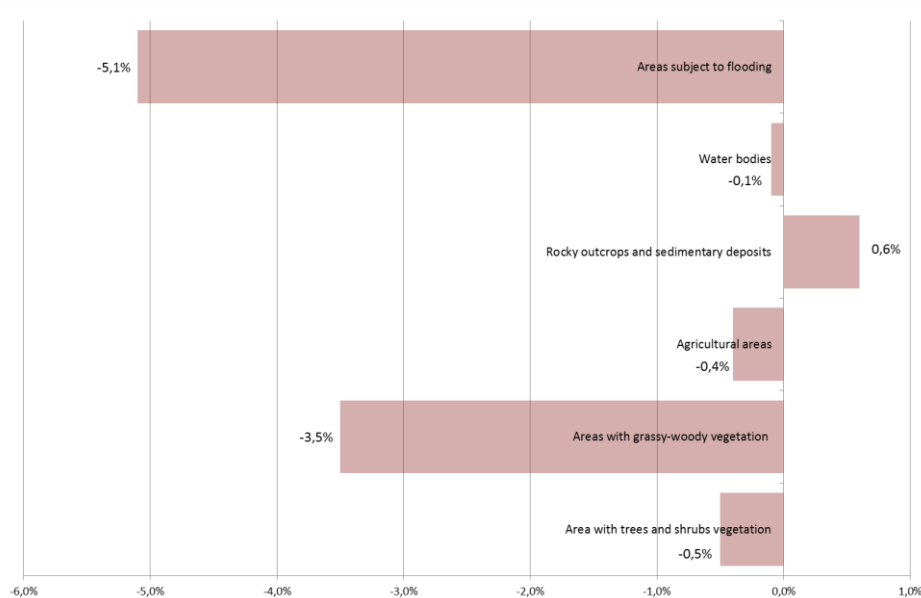
<sup>27</sup>IPP. Technical Notes N°14 – Changes in the occupation of urban soil of the city of Rio de Janeiro, between 2009 and 2011 (*Mudanças na ocupação do solo urbano da cidade do Rio de Janeiro entre os anos de 2009, 2010 e 2011*), January 2013.

## Results

Figure 14 and Figure 15 show the area variation of “urbanised” and “non-urbanised” land use. For further details please refer to Annex En03.1.2.



**Figure 14 Change in Urbanised Areas (In Percentage), 2009-2011**  
Source: IPP, 2013



**Figure 15 Change in Non-Urbanised Areas (in percentage), 2009-2011**  
Source: IPP, 2013

Figure 16 shows the situation of the land use and land occupation in the city of Rio de Janeiro in 2011.



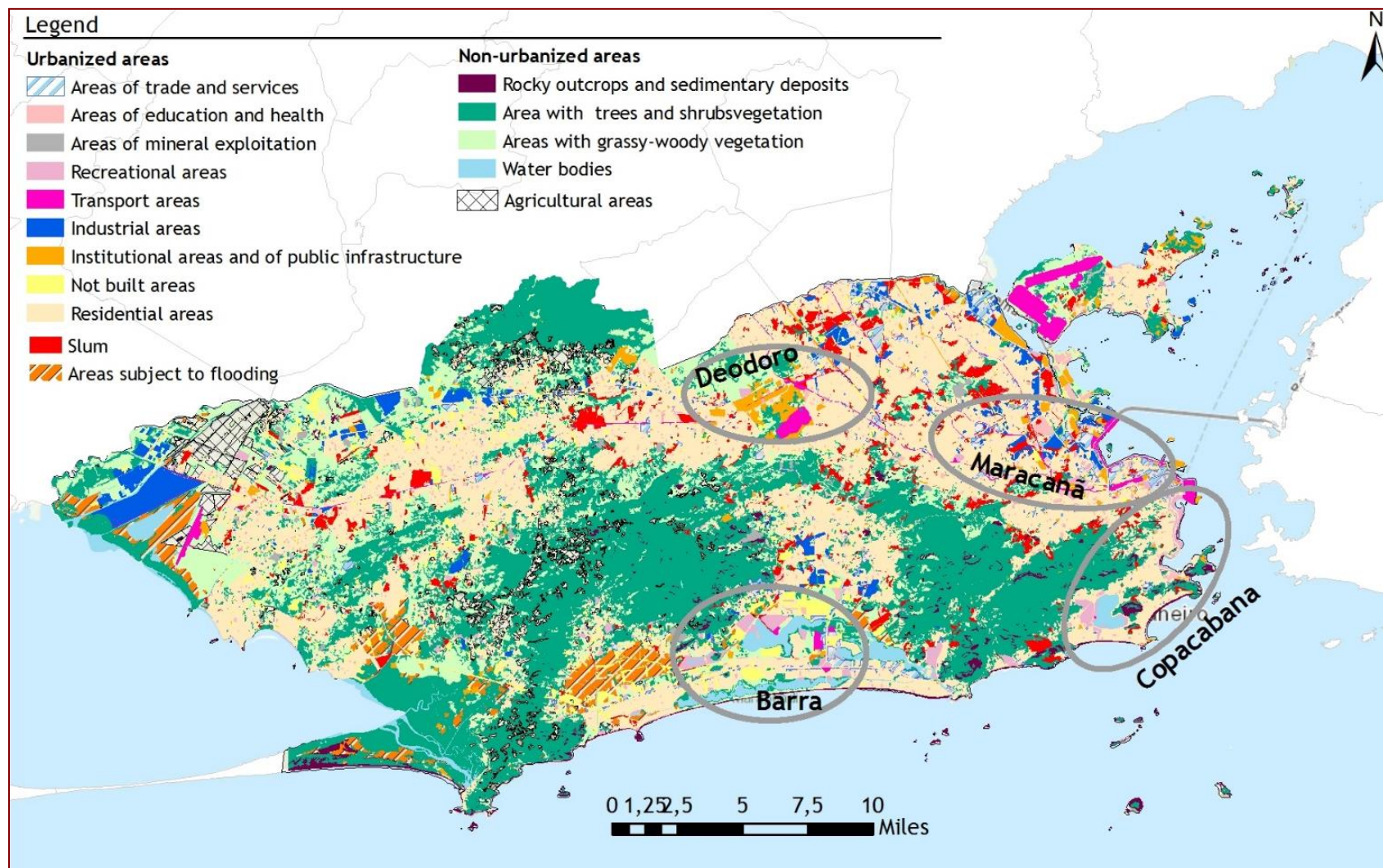


Figure 16 Map of the Land Use and Land Occupation in the City of Rio de Janeiro In 2011  
Source: IPP, 2013

In general, there is an increase in the group “urbanised area” (with a consequent decrease in the group “non-urbanised areas”), especially in its category “non-built areas”, which had a maximum expansion both in absolute (460.3 ha) and relative terms (13 percent). This category does not include protected sites, but only abandoned areas that could eventually be used either for forest recovery or for buildings to provide housing.

There was also an area increase for “residential areas” (413.1 ha) and for “area of trade and services” (236 ha). This expansion in residences and service sectors occurred at the expense of spaces previously classified as “industrial areas”, reduced by 103.2 ha. It is worth noting that there was also a decrease of 1.8 percent in the number of slums in the metropolitan area, reversing the previous process: between 2004 and 2009, this type of urban occupation had increased 2.1 percent, with an increase of 97.1 ha.

Table 14 shows a matrix detailing 2009 and 2011 gains and losses of each land use. Thus, it is possible to find substitutions made in land use (categories that expanded or retracted).

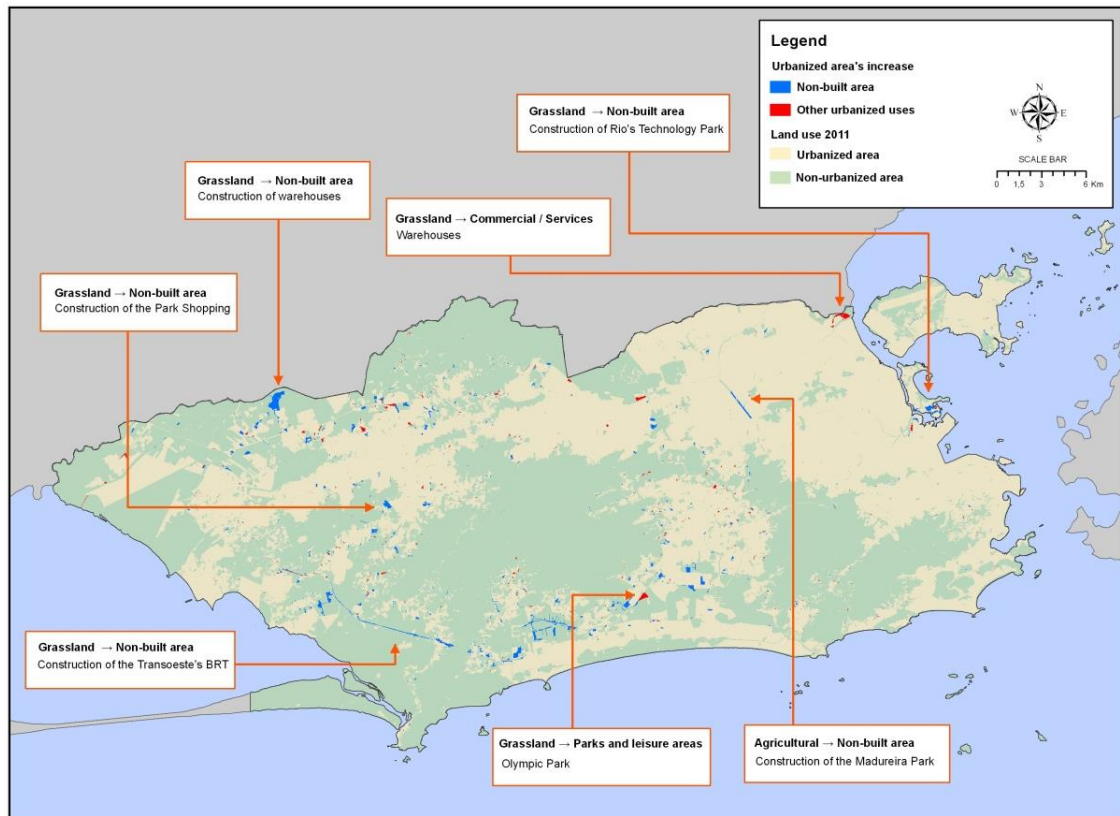
**Table 14 Gains and Losses of Area per Use in the Period 2009 and 2011 (In Hectares)**

USE	Rocky outcrops and sedimentary dep.	Grassy-woody vegetation	Forest	Water body	Slum	Agricultural	Trade and services	Education and health	Mineral exploitation	Recreational	Transport	Industrial	Institutional and public infrastructure	Not built	Residential	Subject to flooding	TOTAL
Rocky outcrops and sedimentary dep.		3.5	1.4	0.2	2.9	-0.1	-	-	-	0.0	0.0	0.0	0.0	-20.9	0.7	0.0	-12.2
Grassy-woody vegetation	-3.5		53.2	-3.7	17.4	-9.3	-10.5	-2.3	-0.2	-2.1	1.5	-9.1	-1.6	-165.2	-71.8	0.5	-206.6
Forest	-1.4	-53.2		0.4	6.1	-26.7	-29	-0.3	-2.2	-26.7	-	-6.8	-2.0	-345.8	-32.4	-0.6	-520.5
Water body	-0.2	3.7	-0.4		0.7	-0.4	-	-	-	-0.4	-0.1	-0.6	0.0	-1.2	-2.6	-0.3	-1.8
Slum	-2.9	-17.4	-6.1	-0.7		0.2	-0.9	0.1	0.0	-0.4	-3.4	-1.2	-0.3	-26.0	-24.0	0.8	-82.3
Agricultural	0.1	9.3	26.7	0.4	-0.2		-1.8	-	-	-0.5	-	-	-0.1	-47.6	-4.5	-	-18.2
Trade and services	-	10.5	29.0	-	0.9	1.8		2.3	-	4.5	-	107.3	2.1	79.6	-2.0	-	236.0
Education and health	-	2.3	0.3	-	-0.1	-	-2.3		-	3.2	0.0	0.7	0.3	15.3	4.4	-	24.2
Mineral exploitation	-	0.2	2.2	-	0.0	-	-	-		-	-	-	-	-12.5	-3.3	0.0	-13.4
Recreational	0.0	2.1	26.7	0.4	0.4	0.5	-4.5	-3.2	-	-0.4	-	-	-1.2	-14.8	-0.9	0.0	4.9
Transport	0.0	-1.5	-	0.1	3.4	-	-	0.0	-	0.4		-	0.0	0.6	0.9	-	3.9
Industrial	0.0	9.1	6.8	0.6	1.2	-	-107.3	-0.7	-	-	-		-	-2.6	-10.3	-	-103.2
Institutional and public infrastructure	0.0	1.6	2.0	0.0	0.3	0.1	-2.1	-0.3	-	1.2	0.0	-		-21.0	1.0	0.3	-16.8
Not built	20.9	165.2	345.8	1.2	26.0	47.6	-79.6	-15.3	12.5	14.8	-0.6	2.6	21.0		-266	164.2	460.3
Residential	-0.7	71.8	32.4	2.6	24.0	4.5	2.0	-4.4	3.3	0.9	-0.9	10.3	-1.0	266		2.5	413.1
Subject to flooding	0.0	-0.5	0.6	0.3	-0.8	-	-	-	0.0	0.0	-	-	-0.3	-164.2	-2.5		-167.3

Source: IPP, 2013

Table 14 shows that “non-built areas” expanded the most, mainly over “forest” areas. Such variations relate to unfinished processes of urban expansion. At the same time, these “non-built areas” suffered a greater loss, which moved into the “residential” lands, increasing the urban section. The table also draws attention that “areas subject to flooding” were substituted for “areas not covered by buildings,” showing that Rio de Janeiro is working against flooding. This trend occurred largely in unoccupied areas in Recreio dos Bandeirantes, mainly due to the opening of new subcategories.

**Figure 17** highlights few cases that explain much of the land use and occupation changes shown in **Table 14**. Projects such as BRT, Transoeste and Park of Athletes have a high correlation with the Rio 2016 Games.

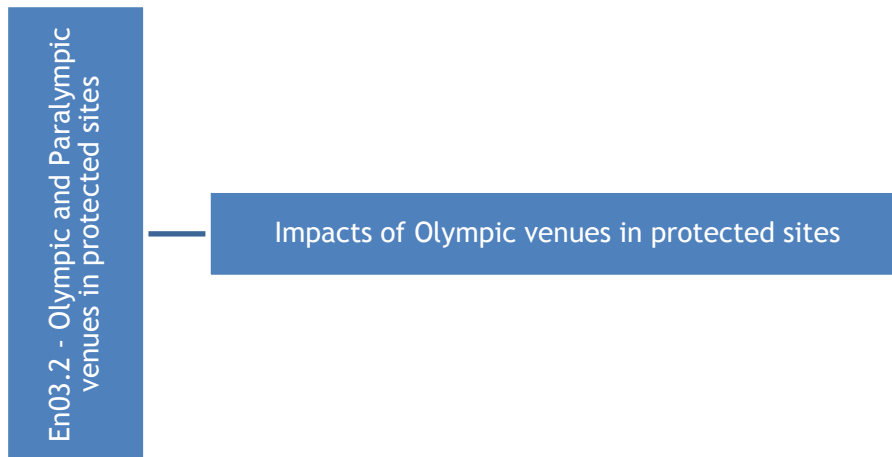


**Figure 17 Increase of Urbanised Areas in 2009-2011**  
Source: IPP, 2013

## En03.2 Olympic and Paralympic Venues in Protected Sites

### Purpose

This focus area aims at assessing the potential impact of the Olympic and Paralympic venues and competitions in protected sites of the city of Rio de Janeiro.



The Brazilian territory is unquestionably favoured by its abundant biodiversity, estimated as the largest on the planet. This fact derives from the diversity of biomes in the country, highlighting the seven biomes according to the Ministry of Environment (MMA) Amazon, Caatinga, Pampa, Atlantic Forest, Pantanal, Cerrado, and Coastal (mangroves, salt marshes, etc.), besides the ecotones Caatinga-Amazonia, Cerrado-Amazonia, and Cerrado-Caatinga.



**Figure 18 Brazilian Biomes**  
Source: ICMBio, 2012

Biomes within the country, such as the Cerrado, Caatinga, Pantanal, and the Amazon are threatened, mainly due to the expansion of the agricultural frontier. The biomes Atlantic Forest, Southern Plains, and Coastal, which concentrate the country's largest urban and industrial centres (having high population density), are targeted

mainly by speculation, unregulated tourism, the opening of new roads and railways, and the expansion of ports and cities.

Biomes of Atlantic Forest and Coastal are the most vulnerable, due to their advanced fragmentation and resulting from the style of colonisation and occupation concentrated in the coastal strip. This fact is reflected in the reduced extent of most conservation units found in these biomes. An aggravating factor of degradation of coastal environments is the destruction of mangroves and estuaries, which directly undermines the marine environment and fishery resources as being important areas for the feeding and reproduction of many species.

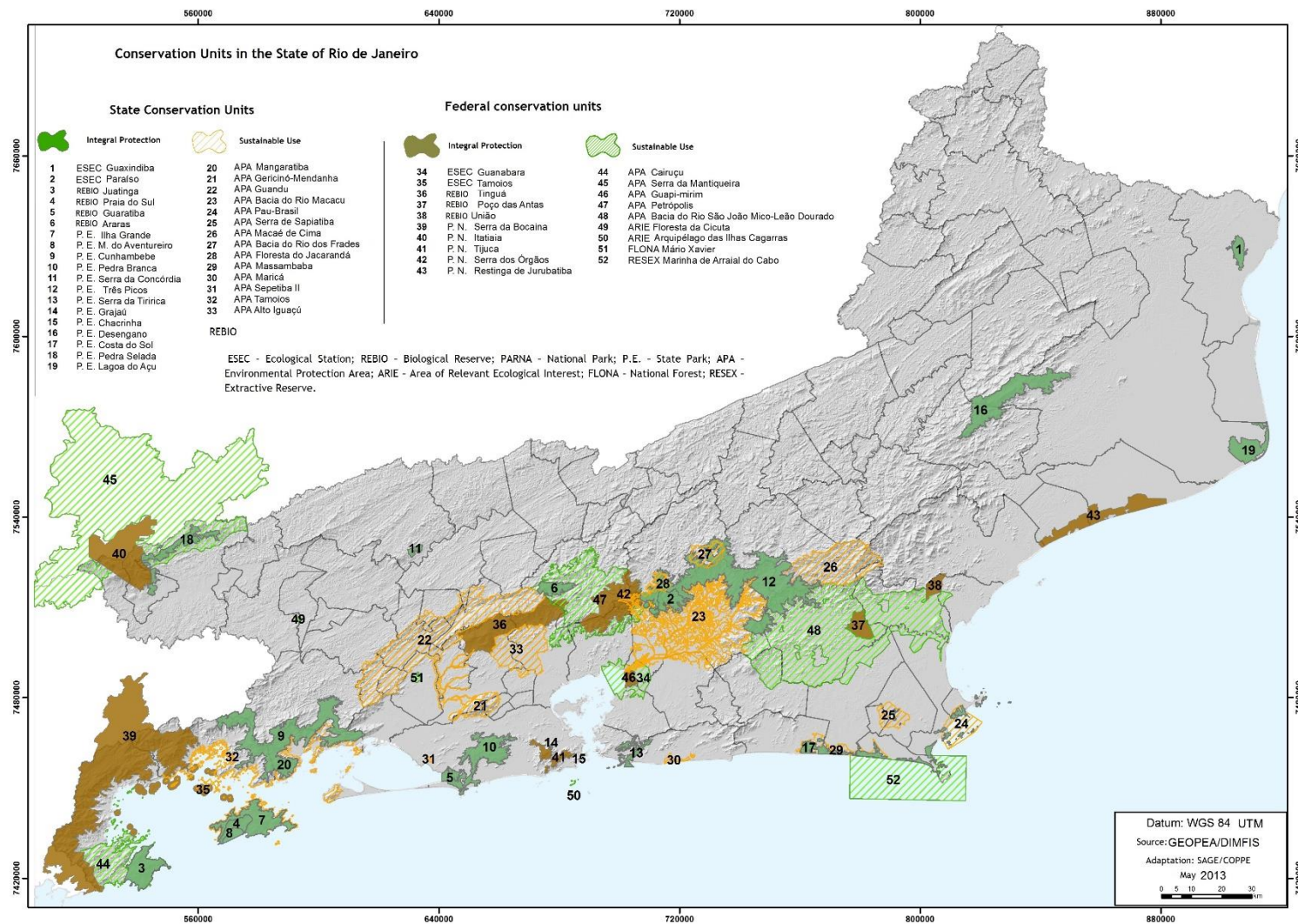
Conservation Units are divided into two major groups: the Integral Protection and Sustainable Use and subdivided into 12 categories, whose details are shown in **Annex En03.2**.

- Integral Protection Group
  - Ecological Station (ESEC);
  - Biological Reserve (REBIO);
  - National Park (PARNA);
  - Natural Monument (MN);
  - Wildlife Refuge (REVIS).
- Sustainable Use Group
  - Environmental Protection Area (APA);
  - Area of Relevant Ecological Interest (ARIE);
  - National Forest (FLONA);
  - Extractive Reserve (RESEX);
  - Fauna Reserve (REFAU);
  - Sustainable Development Reserve (RDS);
  - Private Reserve of Natural Heritage (RPPN)

## Results

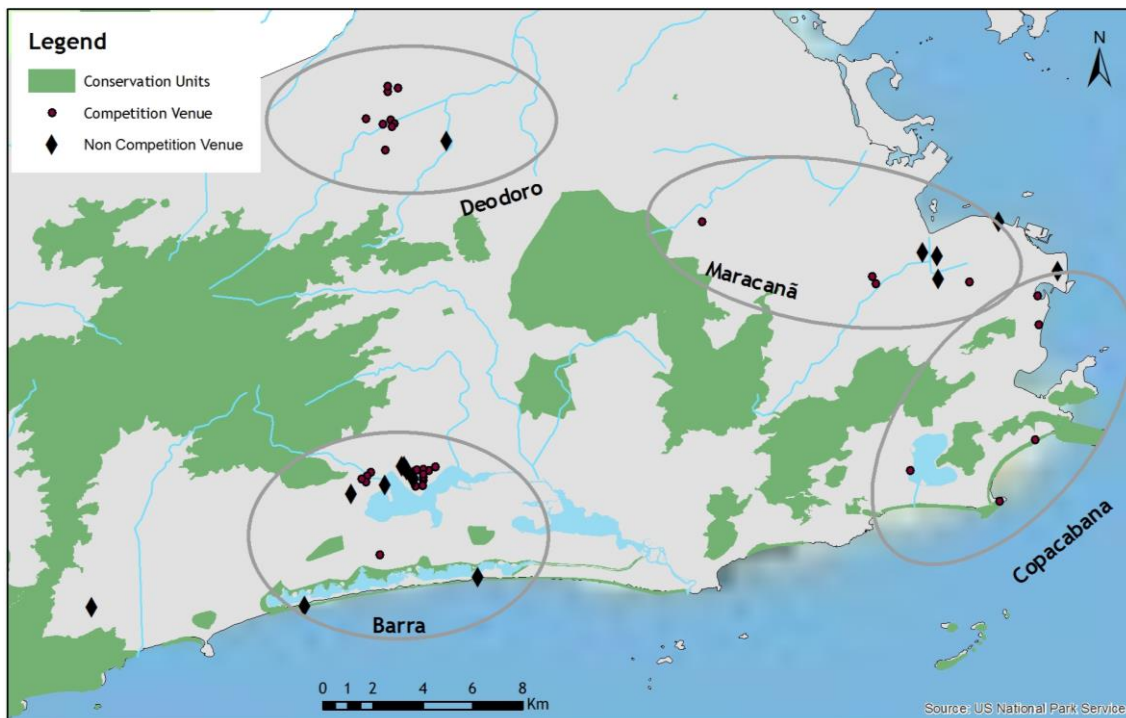
**Figure 19** shows the federal and state Conservation Units of the state of Rio de Janeiro.





**Figure 19 Conservation Units in the State of Rio de Janeiro**  
Source: INEA, 2012

Figure 20 allows viewing the proximity of the Olympic facilities in relation to protected areas of the city of Rio de Janeiro.



**Figure 20 Proximity of Olympic Venues to Preservation Units**

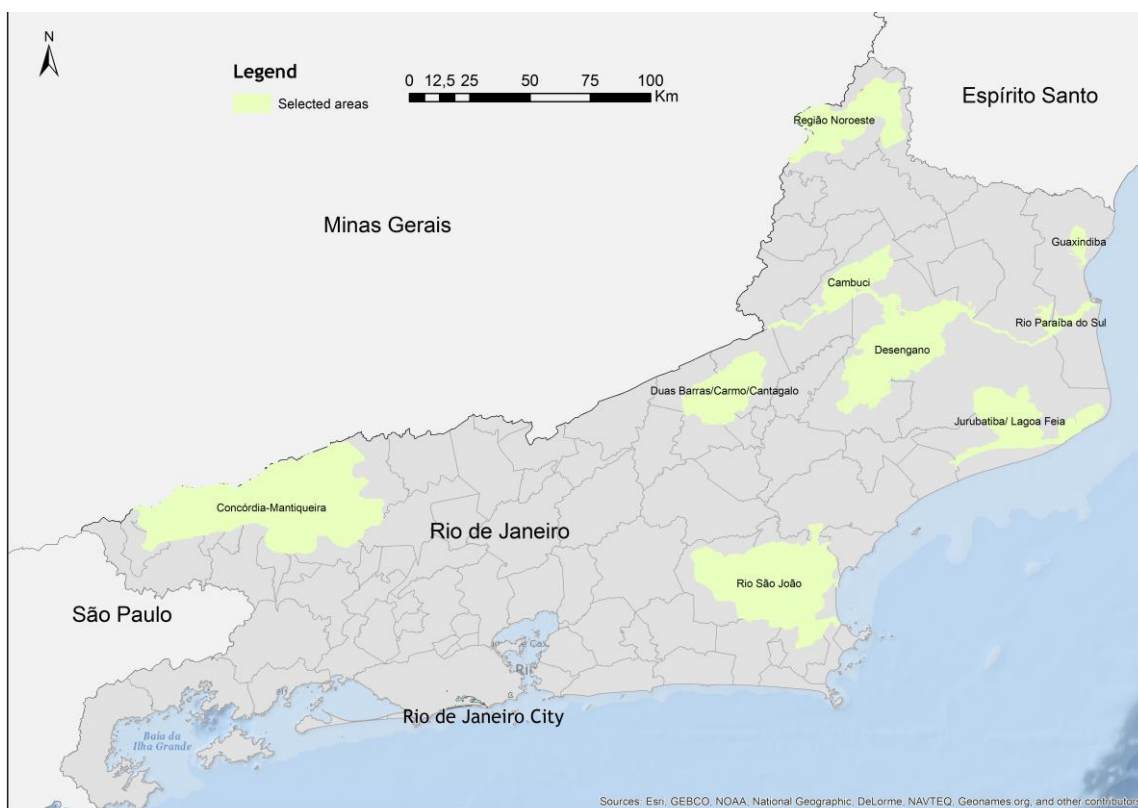
Source: INEA and Rio 2016™, 2012

INEA has identified some areas in the state of Rio de Janeiro that can be used for compensatory measures related to the Project *Jogos Limpos* (Clean Games), currently still under preparation. These areas are those identified by the Pact for Restoration of the Atlantic Forest (signatory to INEA), refined in the report of Potential Areas for Restoration of the state of Rio de Janeiro and in one of the following situations:

- Provide the establishment of ecological corridors.
- Within the boundaries or buffer zones/areas surrounding protected areas.
- Interstitial to mosaic of conservation units.
- Permanent Preservation Areas.
- Rural properties of socio-environmental relevance.

Accordingly, the aims of the restoration programme are to contribute more effectively to the maintenance of environmental services, such as biodiversity conservation, soil stability, minimising sedimentation processes of rivers, and maintenance of areas of springs and groundwater recharge.

Among the eligible areas, an initial selection was made considering information about priority areas for restoration and mosaics of protected areas located within, and surrounding, the state and federal protected areas. The data produced under the plans of management were considered, as well as others areas of interest for the creation of new state conservation units, etc. The map of **Figure 21** represents the available areas that could potentially be used for compensation measures.



**Figure 21 Areas Selected for Compensation Measures**  
Source: INEA, 2013

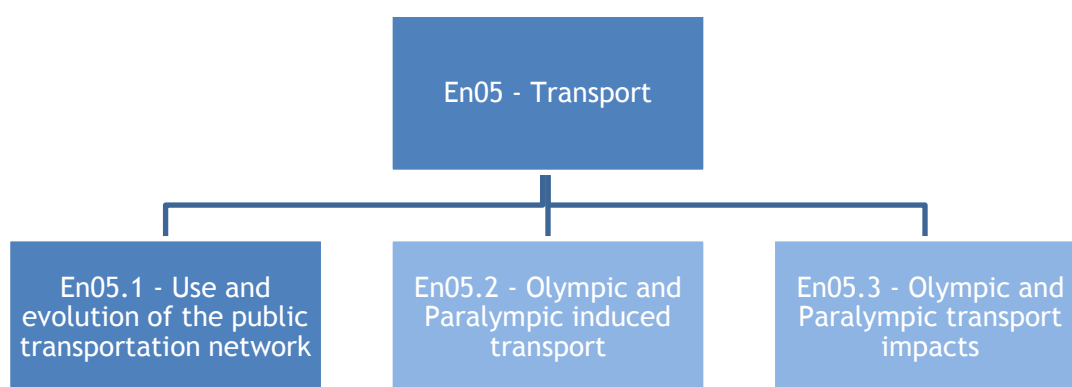


## En05 Transport

The transport system in Rio de Janeiro, as well as in Brazil, is based primarily on the design of the road system. The public transportation in the city is run mainly via buses. The subway is not very developed considering the size of the city, but there are also five train lines connecting the North and West Zones, basically the poorer areas of the city, to the city Centre.

It can be noted that the population, in general, is not satisfied with the public transportation services; as a result, the people, for whom it is possible, prefer to have their own cars, causing a lot of traffic.

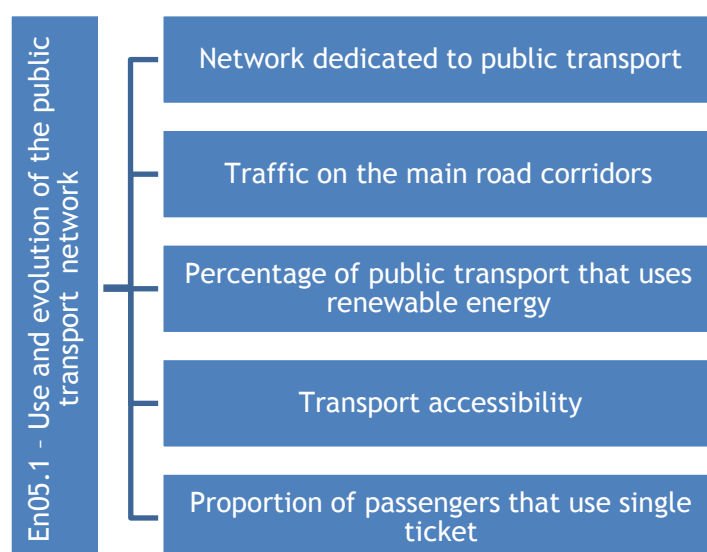
This thematic topic is presented through three focus areas; only the first, *use and development of the public transport network*, will be presented in this report.



### En05.1 Use and Evolution of the Public Transport Network

#### Purpose

This focus area evaluates the public transport network development in the city of Rio de Janeiro, in terms of supply and demand and of physical expansion, and consists of the indicators presented below.



Indicator	Description
<b>Network dedicated to public transport</b>	This indicator will report information on the extension of the public transport network, points of integration between different modes, and passenger traffic.
<b>Traffic on the main road corridors</b>	The evolution of the average speed, average time, and traffic jams on the main road corridors in the city will be monitored.
<b>Percentage of public transport that uses renewable energy</b>	This indicator will show the proportion of renewable energy used by type.
<b>Transport accessibility</b>	Accessibility is a key aspect to transport systems; this will be monitored by this indicator through quantitative vehicles, and done so in an affordable manner.
<b>Proportion of passengers that use single ticket</b>	This indicator will monitor the use of the “single ticket” in the city of Rio de Janeiro.

## Results

The city of Rio de Janeiro has a public transportation network, consisting of buses, ferries, a subway line, trains and cable cars, all of which are linked to a network of bicycle lanes. **Table 15** shows the extent of new ways of transport use, which are being encouraged by public policies, by the end of 2012.

**Table 15 Extension of some encouraged ways of transport, 2012**

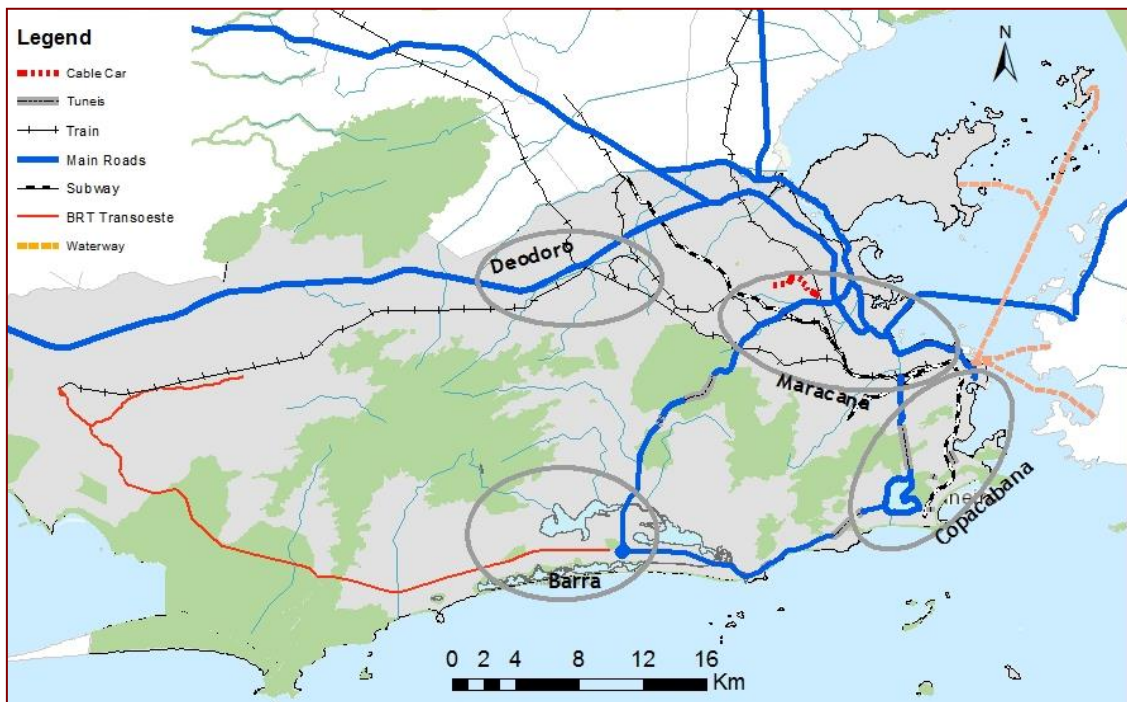
Modal	Extension (km)
Road - Bus Rapid Transport (BRT)	56
Road - Bus Rapid System (BRS)	29
Ferry boat	41 <sup>28</sup>
Subway	46.2
Train	270
Cable car	3.5
Bikeways	300

<sup>1</sup>Approximate value, considering the straight route

Source: own elaboration

The first map below (**Figure 22**) shows the transport network of the city of Rio de Janeiro. **Figure 23** shows the actual extension of cycle lane in the city.

<sup>28</sup> Approximate value, considering the straight route.



**Figure 22 Public Transport Network in the City of Rio de Janeiro**  
Source: Own elaboration from Rio2016™ data



**Figure 23 Cycle lanes in the City of Rio de Janeiro**  
Source: SMAC, 2013

Table 16 shows the evolution of the number of passengers carried by type of transport in absolute terms, in the city of Rio de Janeiro.

**Table 16 Passengers Transported (x 1000) per Year and Percentage Change**

Transport	2007	2008	Variation 2007/2008	2009	Variation 2008/2009	2010	Variation 2009/2010	2011	Variation 2010/2011
<b>Bus</b>	791.322	818.443	3.43%	840.729	2.72 %	860.062	2.30 %	931.299	8.28 %
<b>Subway</b>	150.103	154.013	2.60 %	152.747	-0.82 %	164.241	7.52 %	179.893	9.53 %
<b>Train</b>	118.802	128.182	7.90 %	126.185	-1.56 %	135.751	7.58 %	142.292	4.82 %
<b>Ferry boat</b>	19.607	22.103	12.73 %	22.684	2.63 %	26.530	16.95 %	29.206	10.09 %
<b>Total</b>	1.079.834	1.122.741	3.97 %	1.142.345	1.75 %	1.186.584	3.87 %	1.282.690	8.10 %

Source: IPP, 2012

Unlike the trains and subway, which had a slight usage decrease between 2008 and 2009 (possibly in response to a worsening quality of service), all modals show significant increase. It is noteworthy that the railroads, corresponding to buses, constituted more than 72 percent of passenger traffic in 2011. Despite heavy road traffic, the existence of a good rail network, water transport alternatives, and buses were still, by far, the most popular forms of public transport.

The increase of road usage is confirmed when the index of passengers transported per kilometre is examined. This figure is obtained by dividing the total number of passengers transported, by the range covered by the transport system. The road usage increase is also due to the stagnation of the other modals. There has been no physical expansion of the subway lines, ferries, or trains since 2007.

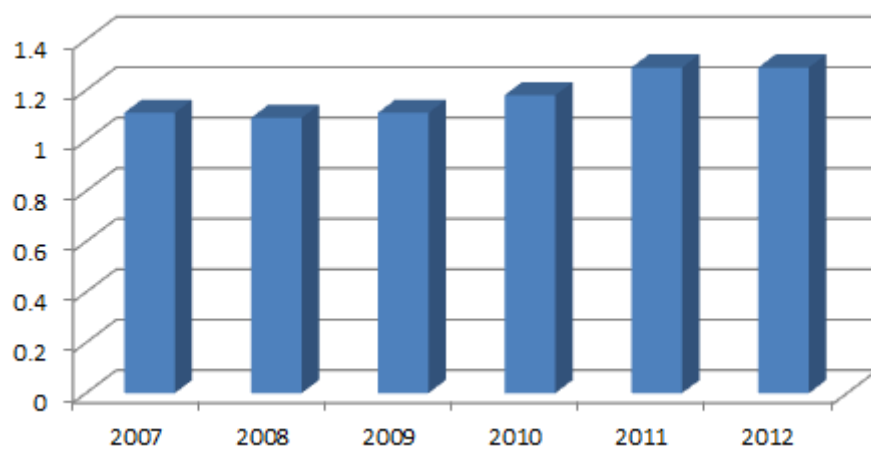


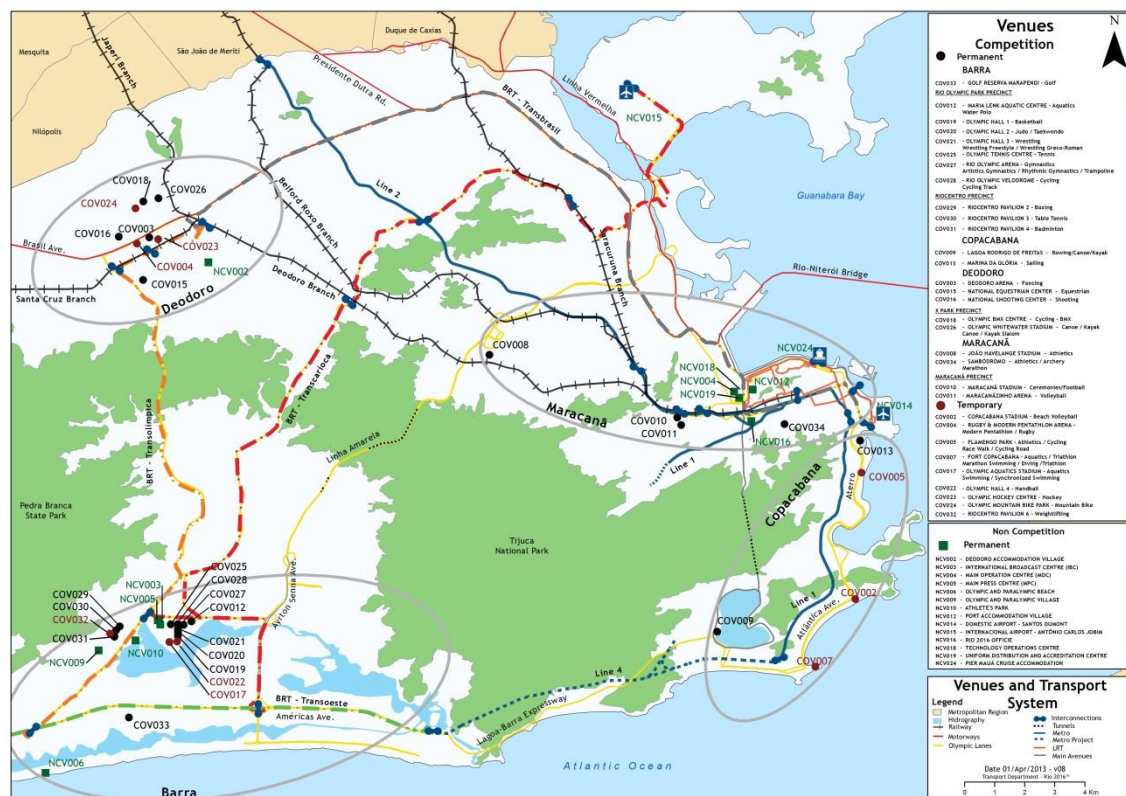
Figure 24 Passengers transported per kilometre by bus  
Source: DATABANK, Fetranspor, and Rio Ônibus, 2013

When analysing the integration of modals, another important fact emerges: there are a lack of connections between the modals, illustrating that the public transport system needs to be made more efficient. For the nearly 1.3 million passengers, there is very little integration between the transport alternatives, as shown in **Table 17**. The barges, for instance, are not physically integrated with the other modals, although passengers are allowed to take their bicycles on board if they pay a fee<sup>29</sup>.

<sup>29</sup>There are no fees for folding bicycles.

	Subway	Train	Bicycles	Cable Car	No connections
	0	2	0	0	42
	9	1	0	0	n/a
	0	0	4	0	1
		3	10	0	22
			7	1	94
			n/a(*)	5	

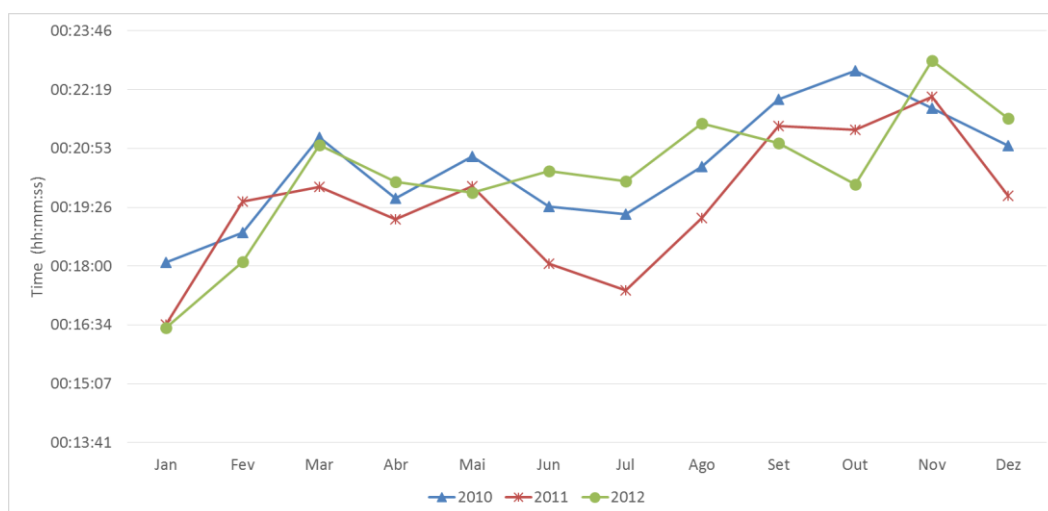
**Figure 25** shows the high-capacity transport network planned for the city, currently under construction.



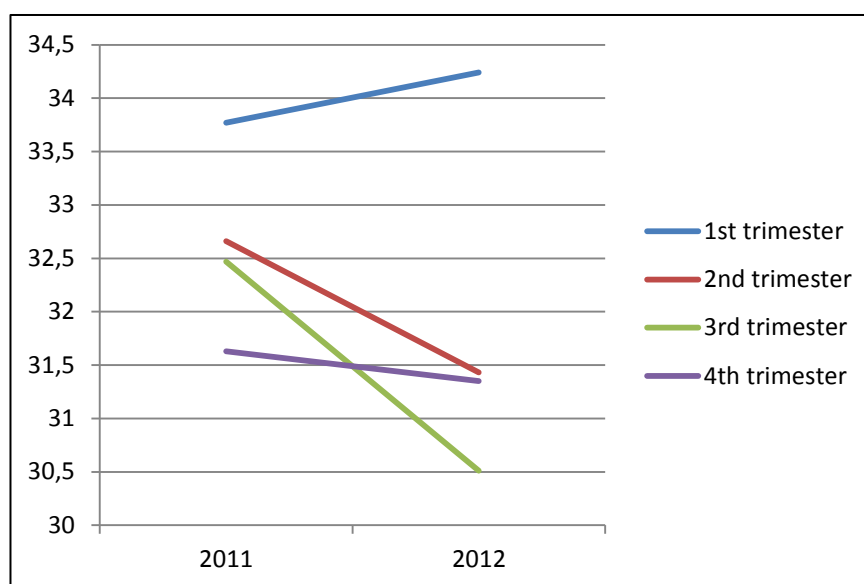
Source: Adapted from Rio 2016™ data, 2013

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**Figure 26 Average travelling time on all major corridors**  
Source: CET-RIO, 2013



**Figure 27 Routes Average Speed By Trimester (km/h)**  
Source: Rio Como Vamos, 2013

The graphs above show that, despite the improvement provoked by the early introduction of corridors or bus lanes (BRS and BRT), these measures are no longer showing effects. The year of 2011, appears to have had the best times, requiring new interventions, such as the new BRT lines, which are being built. The first trimester of 2012 saw an improvement trend, possibly reflecting the decreased use of light vehicles in the summer, during the school holiday period. A significant drop in the average route speed proves the previous assumptions. Certainly, this framework worsens when one takes into account the work being carried out in the city and in the corridors.

Specifically, with regard to the accessibility of the city's bus fleet, there has been an important increase in recent years, as shown in **Table 18**. Despite the largest number of adapted vehicles, the majority of bus-stopping points are not yet accessible.

Table 18 Proportion of adapted buses in the city of Rio de Janeiro

	Aug/12	Jan/13
<b>Total Fleet of Buses</b>	8600	8689
<b>Adapted Vehicles (Accessibility)</b>	4700	6006
<b>Proportion of Adapted Vehicles</b>	55 %	69 %

Source: *Rio Como Vamos*, 2013

In Brazil, approximately 87 percent of passenger commutations were made on public transportation, specifically using buses that run on diesel oil in 2009<sup>30</sup>. In 2007, the state of Rio de Janeiro started a programme to increase the use of biodiesel in its bus fleet. Initially, 3,500 buses were fuelled with biodiesel B5 (5 percent biodiesel added to diesel oil). Thus, the state anticipated the target that was set by Federal Law No. 11.097/2005, calling for the insertion of biodiesel B5 in the Brazilian energy matrix from 2013.

In 2009, a test with Biodiesel B20 was carried out in fourteen buses that circulated throughout the city of Rio de Janeiro for a period of 12 months. Results showed that B20 has a very similar performance to B5; no issues were identified that prevented its use in vehicles. The goal of the Federation of Passenger Transporters Companies in the state of Rio de Janeiro (Fetranspor) is to have 8,500 buses running in the city of Rio de Janeiro with Biodiesel B20 until 2016.

<sup>30</sup>ANTP – National Association of Public Transport, *Information Systems on Urban Mobility – Comparative Report 2003 – 2011 (Sistema de Informações sobre Mobilidade Urbana – Relatório Comparativo 2003 - 2011)*, São Paulo, SP, September 2010.

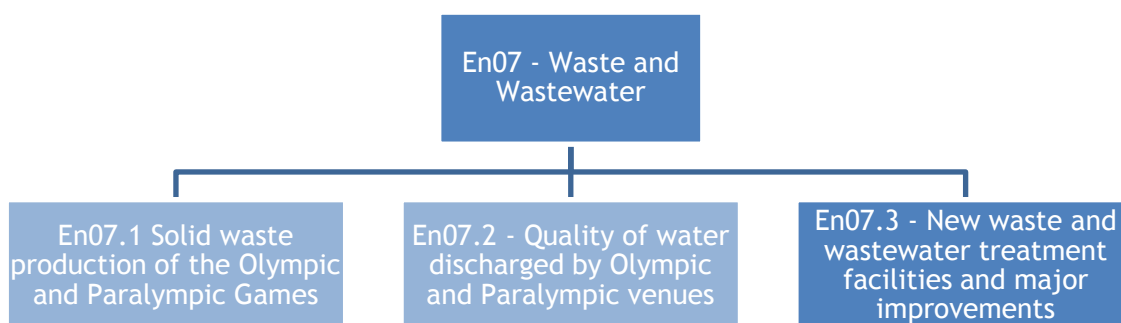


## En07 Waste and Wastewater

Waste represents a huge loss of resources in the form of materials and energy. Reducing the generation of waste, through reuse and recycling—regardless of what is generated—are measures that both preserve natural resources and save energy.

Although the Games are significant in size, most summer Games are held in very large cities and the relative impact of wastewater generated during the games may not be significant, particularly when compared with the city's normal background volumes. However, localised effects may be observed where there is a concentration of Olympic activities. Moreover, the situation may encourage the construction of new facilities for waste treatment and final disposal, required to meet the increased generation during the Games; it may also reflect improvement in the city's management of these components.

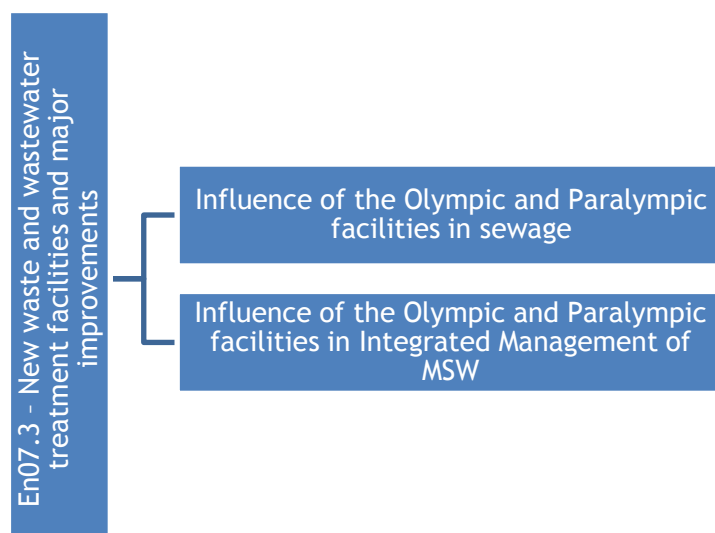
The thematic topic is presented through three focus areas, which present materiality, reliability, and robustness of the data collected. This report presents the results of focus area **En07.3**, the others will be presented in future reports.



### En07.3 New Waste and Wastewater Treatment Facilities and Major Improvements

#### Purpose

This focus area seeks to evaluate the change of sewage systems and wastewater treatment and collection, sorting, treatment, and final disposal of municipal solid waste (MSW) in the Metropolitan Region of Rio de Janeiro.



Indicator	Description
<b>Influence of the Olympic and Paralympic facilities in sewage</b>	This indicator gathers information about the collection and treatment of sewage and influence of the Games on its expansion.
<b>Influence of the Olympic and Paralympic facilities in Integrated Management of MSW</b>	This indicator combines information on the collection, treatment, and disposal of MSW in the city, which allows monitoring the evolution of this management and the Games influence.

## Results

In 2011, the state government of Rio de Janeiro signed the accession to the Pact for Sanitation proposed by the Ministry of Cities, with the goal to universalise the access of sanitation systems, minimising the negative impacts arising from their absence on the population's health, environment, and economic activities.

The Pact for Sanitation involves three programmes: Dumpsite Zero, Cleaner Rio (*Rio+Limpo*), and Clean Guanabara. The Dumpsite Zero aims at eradicating open dumpsites<sup>31</sup> from the implementation of sanitary landfills, in all 92 counties within the state, until 2014. In 2007, the situation of dumpsites was dramatic: among the 92 municipalities in the State of Rio de Janeiro, 76 discarded their waste in dumpsites. At the time, according to the State Department of the Environment, a total of 13,738 tons of garbage was produced daily, by more than 15 million inhabitants of the state, and less than 1 percent of the waste was recycled, 41 percent was disposed in dumpsites, and 45 percent to sanitary landfills. In 2012, all of the dumpsites in the

<sup>31</sup> According to the UN Environmental Programme, an open dumpsite is an uncontrolled area of land on which waste is disposed, either legally or illegally whereas a sanitary landfill is a controlled area of land on which waste is disposed of, in accordance with standards, rules, or orders established by a regulatory body. UNEP: [http://www.unep.org/resourceefficiency/Portals/24147/scp/presme/pdfs/UNEP\\_PRE\\_SME\\_ITH\\_Chapter\\_7.pdf](http://www.unep.org/resourceefficiency/Portals/24147/scp/presme/pdfs/UNEP_PRE_SME_ITH_Chapter_7.pdf)

15 municipalities around the Guanabara Bay were eradicated<sup>32</sup>. The progress of the “dumpsite zero programme”—forecasted for the years 2013 and 2014—are shown in Table 19.

Table 19 Evolution of the programme Zero Waste

Year	No. municipalities with sanitary landfill MSW	Sanitary landfills		Dumpsites	
		(t/day)	%	(t/day)	%
2010	30	1695.71	11.1%	13605	88.9%
2011	43	6010.05	39.3%	9290.66	60.7%
2012	58	14216.73	92.9%	1083.98	7.1%
2013*	82	14626.66	95.6%	674.05	4.4%
2014*	92	15300.71	100%	0	0%

\* Estimated values.

Source: SEA/RJ, 2013

This evolution, however, was a result of the enactment of the Law on the National Policy of Integrated Solid Waste Management in 2010. It proposed a series of sanctions related to transfers of funds by the Federal Government for those municipalities that do not reach the goals proposed in term, as defined in the document. But even with the assurance that the waste gathered by the municipal collection system will be sent to sanitary landfills, there remains the challenge of universalising the MSW collection. It is estimated that approximately 630 tons of MSW are generated daily in the state and not collected by the municipal collection system, as shown in Figure 28.

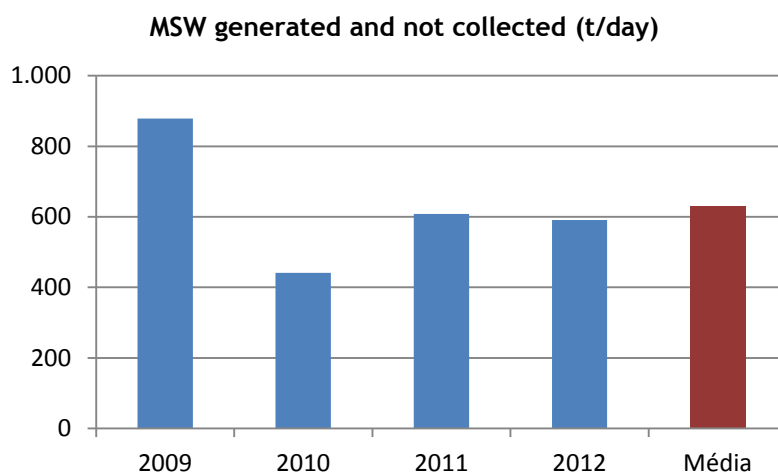


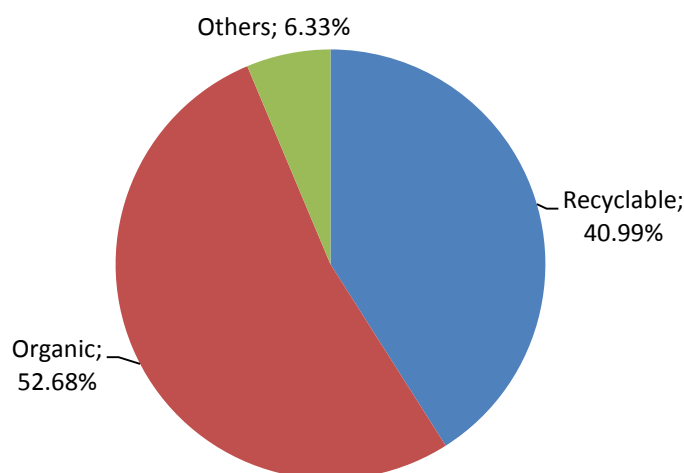
Figure 28 Amount of MSW Generated in the State of Rio de Janeiro that was not Collected  
Source: ABRELPE, 2012<sup>33</sup>.

Regarding the city of Rio de Janeiro, it is worth noting that it was responsible for approximately 40 percent of MSW generated in the state in 2011, generating

<sup>32</sup> SEA: <http://www.rj.gov.br/web/sea/exibeconteudo?article-id=926885>

<sup>33</sup> ABRELPE, *Overview of Solid Waste in Brazil (Panorama dos Resíduos Sólidos no Brasil)*, 2012.

approximately 8.263t/day<sup>34</sup>. **Figure 29** shows the MSW composition generated in the city.



**Figure 29** Composition of MSW collected in the city of Rio de Janeiro  
Source: Comlurb<sup>35</sup>, 2012

In the following table the various types of collection made by public urban cleaning company in the city of Rio de Janeiro are presented.

	2007	2008	2009	2010	2011	2012	
<b>Population</b>	<b>5.909.592</b>	<b>5.940.077</b>	<b>5.955.324</b>	<b>5.970.562</b>	<b>5.993.553</b>	<b>6.016.551</b>	
<b>Collection</b>	<b>ton/year</b>	<b>ton/year</b>	<b>ton/year</b>	<b>ton/year</b>	<b>ton/year</b>	<b>ton/year</b>	<b>%</b>
Domiciliary	1.519.338	1.566.559	1.580.952	1.651.119	1.735.527	1.828.754	44,88%
selective collection		10.377	9.888	10.349	8.029	8.911	0,22%
Public	1.236.926	1.201.834	1.131.753	1.178.805	1.147.624	1.174.326	28,82%
Free removal	78.451	126.467	112.853	140.393	102.581	91.292	2,24%
Construction and demolition waste	234.881	740.558	555.686	653.170	489.391	321.100	7,88%
Others*	369.697	381.136	362.677	430.898	471.038	650.661	15,97%
<b>Lixo total coletado</b>	<b>3.439.292</b>	<b>4.026.931</b>	<b>3.753.809</b>	<b>4.064.734</b>	<b>3.954.190</b>	<b>4.075.044</b>	<b>100,00 %</b>

(\*) From public agencies, private individuals, demolition, snails, tires, hospitals, large generators, tree pruning and emergency

**Waste collection in the city of Rio de Janeiro.**

Source: Comlurb, 2013<sup>36</sup>

The year 2011 marked an historical evolution in the city's MSW disposal; it was the beginning of transferring the final disposal to a new Waste Treatment Centre, located in the neighbouring town of Seropédica. Over the previous 34 years, the

<sup>34</sup> ABRELPE, *Overview of Solid Waste in Brazil (Panorama dos Resíduos Sólidos no Brasil)*, 2011.

<sup>35</sup> COMLURB, *Municipal Plan of Integrated Solid Waste Management for the city of Rio de Janeiro (Plano Municipal de Gestão Integrada de Resíduos Sólidos da cidade do Rio de Janeiro)* – August 2012/August 2016.

<sup>36</sup> COMLURB - Relatório de Caracterização dos Resíduos Sólidos Domiciliares da Cidade

city's final disposal of MSW went to the Metropolitan Dumpsite of Jardim Gramacho, located in the city of Duque de Caxias, a region of mangroves alongside the Guanabara Bay. This dumpsite was permanently disabled in July 2012, but it will continue to operate the leachate treatment systems, as well as environmental and geotechnical monitoring. In addition, the extraction of biogas (for energy purposes) will be forwarded to the Petrobras refinery, located adjacent to this dumpsite.

The door to door selective collection of recyclable materials caters only to 41 districts among the 160 in the municipality. The amount of recyclables recovered by selective collection system and the recycling cooperatives reached 7,797 tons in the whole year of 2011. This equates to only 4 grams per person per day.<sup>37</sup> The system expansion, in partnership with the BNDES (National Bank for Economic and Social Development), is planned to increase the current percentage of selective collection: from about 1 percent of potentially recyclable materials (31,000 tons/year) in 2010 until the end of 2013.

The selective collection in the city, currently insufficient to face the amount of waste generated, caters only to 41 districts among the 160 in the municipality and reaches the main streets of the neighbourhoods only partially.

Construction is planned for six Centres for Screening (CT) sorting units for the city to be properly equipped for the receiving, sorting, temporary storage, and marketing of recyclable materials from household waste. Additionally, there will be training projects implemented for cooperatives of collectors, management and marketing advice on recyclable materials, environmental education, and programme outreach. The first Centre for Screening, for residential selective collection, is located in Irajá and has already been completed. The second Centre for Screening in downtown is under construction. Four more units are planned; Bangu and Campo Grande are the next to be built and then followed by, Penha and Jacarepaguá. Despite the construction of stations, which are not indicators themselves, they are supposed to promote improvement in the percentage of recycled waste and the appreciation of this activity.

In addition to the waste-related elements above, the Pact for Sanitation of the state government of Rio de Janeiro also has goals and initiatives regarding sewers, which are divided into two programmes: Cleaner Rio (*Rio+Limpo*) and Clean Guanabara.

- The Cleaner Rio (*Rio+Limpo*) programme aims at collecting, and treating, 80 percent of the sewage throughout the state of Rio de Janeiro in 2018. Having invested approximately R\$ 500 million, from 2006 to 2010, there has been an increase from 20 to 30 percent of sewage treated.
- The programme Clean Guanabara is subdivided into three initiatives for environmental recovery of the waters in the Guanabara Bay: 1) the PSAM (Sanitation Programme of Municipalities Surrounding the Guanabara Bay), with the goal of advancing the sanitation and environmental recovery of bay waters, 2) the Clean Sena Programme, a partnership with the city of Rio de Janeiro, and 3) CEDAE to clean up six of the city's main beaches, as well as

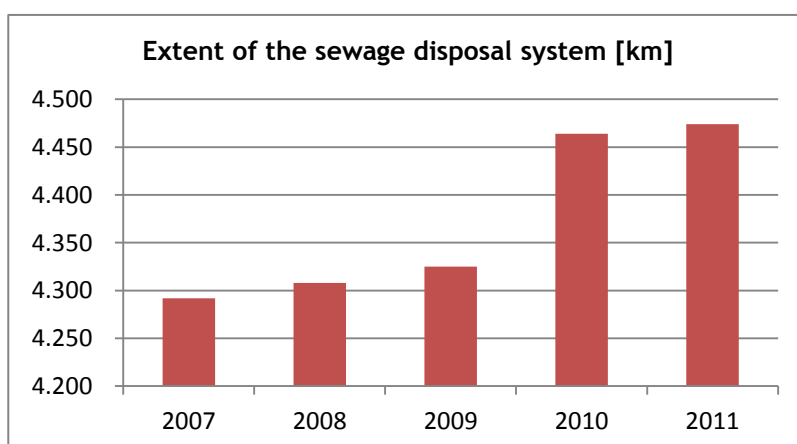
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<sup>37</sup> Diário Oficial do Município do Rio de Janeiro, "PMGIRS da cidade do Rio de Janeiro". 2012. Available at: [http://doweb.rio.rj.gov.br/visualizar\\_pdf.php?edi\\_id=2202&page=1](http://doweb.rio.rj.gov.br/visualizar_pdf.php?edi_id=2202&page=1)

the increased use of Wastewater Treatment Plant (WWTP) of Alegria with the construction of new sewer collector trunks.

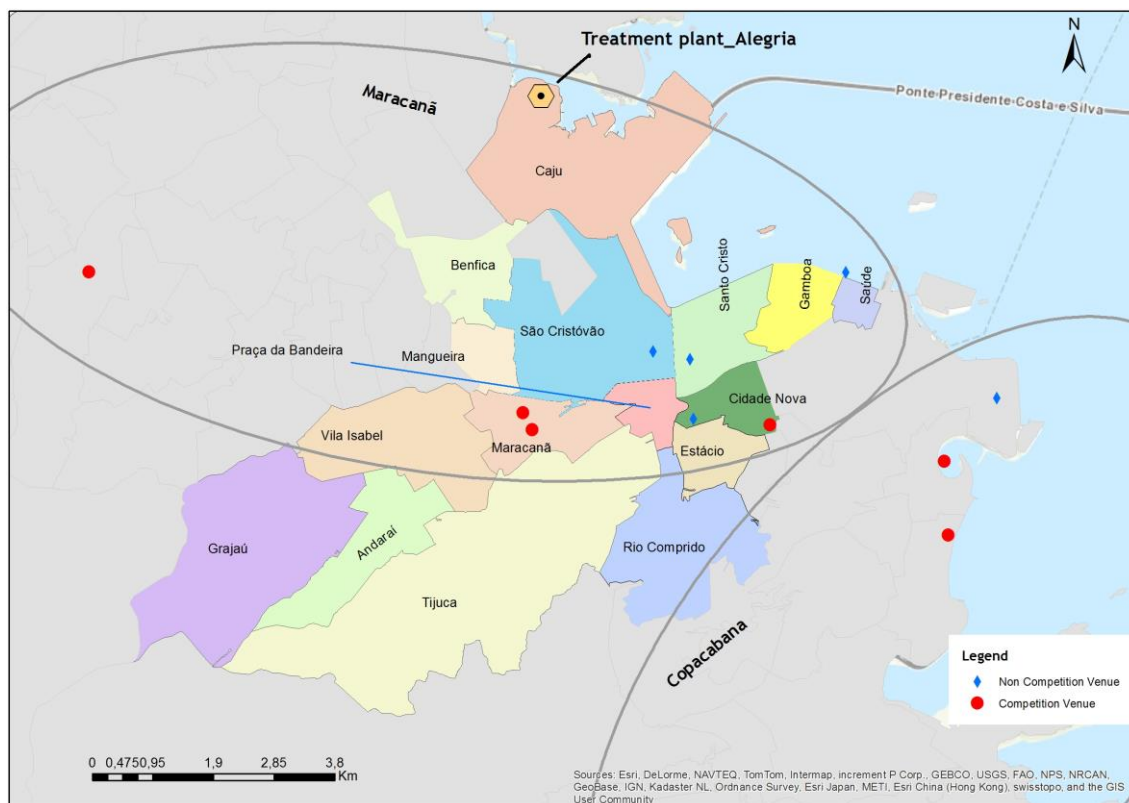
In the state of Rio de Janeiro, most municipalities that have sewage treatment use a secondary system, which consists of removing the organic matter using biological processes. Also noteworthy is the use of ocean outfalls, which are responsible for the sewage discharge at open sea. The city of Rio de Janeiro, for example, treated 21.2 percent of wastewater generated by the population through the secondary system and discharged 34.9 percent into the open sea. **Annex En07.01** presents the data for each city in the state of Rio de Janeiro for the year 2010.

A significant growth in the sewer system has been observed in the city of Rio de Janeiro, as shown in **Figure 30**.



**Figure 30** Evolution of the extent of the sewage disposal system in the city of Rio de Janeiro  
Source: SNIS, 2012

The Wastewater Treatment Station of Alegria is the city's largest and serves one of the regions that discharges the most sewage into the bay on a daily basis; it treats wastewater for the following areas: the centre of Rio and the neighbourhoods of São Cristóvão, Benfica, Caju, Mangueira, Maracanã, Tijuca, Grajaú, Vila Isabel, Andaraí, Rio Comprido, Estácio, Cidade Nova, Santo Cristo, Saúde, and Gamboa.



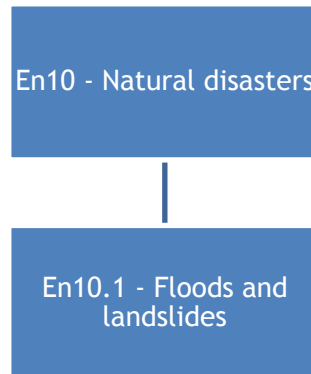
**Figure 31 Areas served by Alegria treatment station**  
Source: Own elaboration from INEA data, 2013

The station's primary system was built in 2001, with flow rate of 460 l of wastewater. In 2009, a secondary treatment system was built, which increased the flow to 2,500 l, and improved the quality of sewage discharged, with a 95 percent reduction of water pollution.

Currently, the station receives 1,800 l/s to 2000 l/s, according to data provided by the directors of the Wastewater Treatment Station of Alegria. The primary system is ready to receive 5 thousand litres of volume, but the secondary phase has a capacity of only 2,500 l. The necessary infrastructure has already been purchased, but not yet installed because there is no structure (collector trunks) established in the city to take more than 2,500 l to Alegria WRS. The expansion of collector trunks in Cidade Nova, FariaTimbo, and Manguinhos is required to transport the volume of sewage in accordance with the total capacity of 5 thousand l/s. The onset of this station with full capacity is planned for addressing the needs of 2.5 million inhabitants. Therefore, the main challenge at the moment is finalising the sewage system in order for the station to operate at full capacity.

## En10 Natural Disasters

Depending upon which region of the planet the city is located that hosts the Olympic Games, accomplishing the project is subject to the occurrence of natural disasters, such as floods, landslides, earthquakes, hurricanes, and tsunamis. This thematic topic aims at monitoring the occurrence of these disasters, and the measures taken to avoid, or minimise them. It has only one focus area, which includes two types of major natural disasters in the context of the city of Rio de Janeiro.



Flood disasters are often associated with a lack of proper drainage of rain or river water, aggravated by inadequate urban settlement with excessive waterproofing. Landslides are also associated with excessive rains and are exacerbated by sprawl. Both are common problems in large cities, but deserve special attention because they are recurrent in the state and in the city of Rio de Janeiro. This focus area includes an analysis of civil defence systems in the city, for example, the warning and response mechanisms to protect the population in case of extreme weather events.

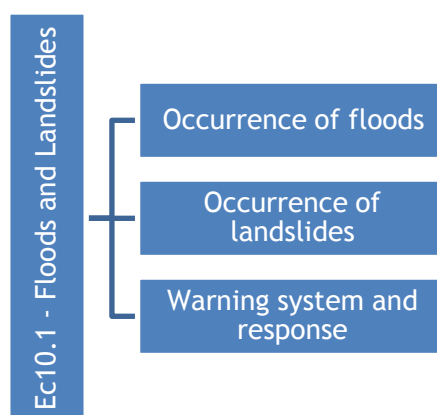
### En10.1 Flooding and Landslides

#### Purpose

This focus area aims:

- At tracking the number of occurrences of flooding and landslides in the city of Rio de Janeiro, and the identification of the impact of the Olympic and Paralympic Games to expand control systems for such events, as the consequences of public policies related to urban infrastructure.
- To note instances where Olympic activities have caused, or have exacerbated, natural disasters, such as landslips caused by venue construction or hydrological changes that lead to flooding in new areas.
- To note the occurrence of natural disasters that may impact Olympic activities or alter the context of other indicators.





Indicator	Description
<b>Occurrence of floods</b>	Number of floods in the city of Rio de Janeiro, relating to measures to reduce the number of occurrences.
<b>Occurrence of landslides</b>	Number of occurrences of landslides in the city of Rio de Janeiro, relating to measures to reduce the number of occurrences.
<b>Warning system and response</b>	Describes the situation and development of early warning systems and response adopted by the city to deal with natural disasters.

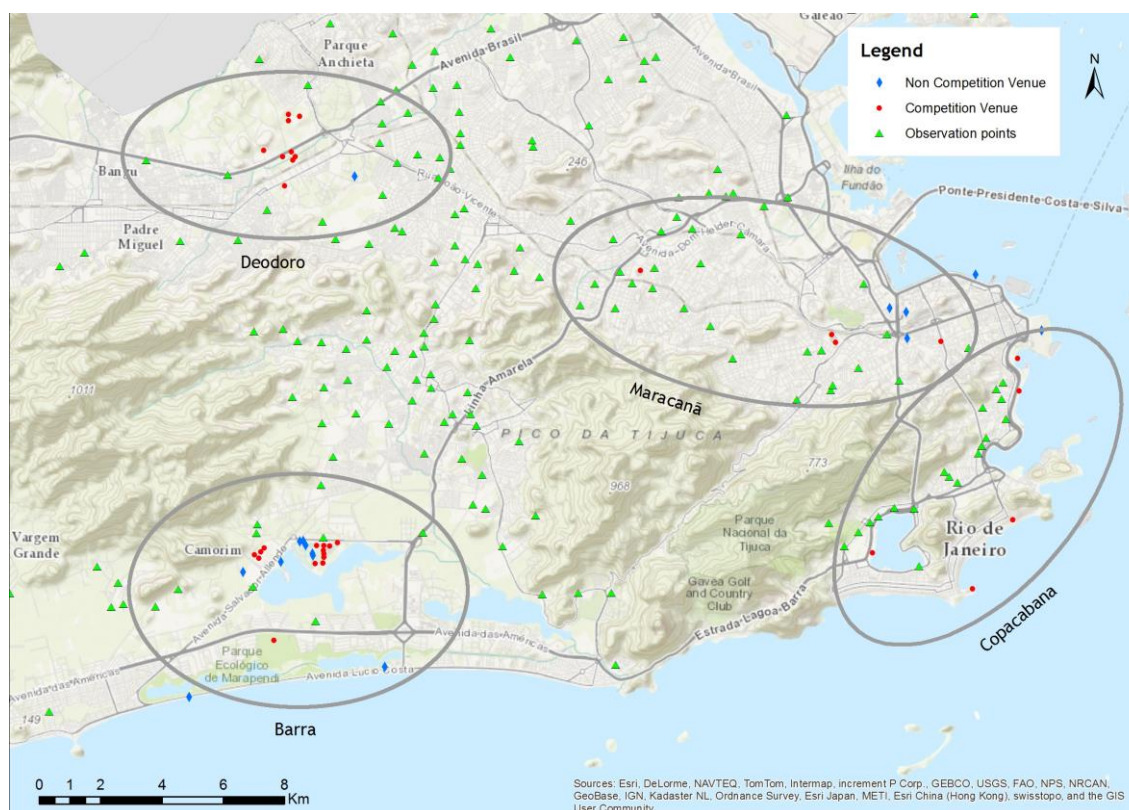
According to the *Brazilian Atlas of Natural Disasters*, the state of Rio de Janeiro was hit by droughts, sea erosion, cyclones and/or gales, hail, fire, flash floods and floods, gradual floods, and mass movement (landslides) during the period from 1991 to 2010<sup>1</sup>. In the city of Rio de Janeiro, landslides and floods are natural disasters that cause significant impact, due to the topographic and climatic characteristics of the region and the urbanised sprawl, especially in areas unsuitable for building.

Flooding in the city is usually caused by heavy, and concentrated, rains, on sites of very tough relief, or even in flat areas, and can occur suddenly or gradually. The floods are characterised by water accumulated in the bed of streets and urban perimeters, due to heavy rainfall, which may or may not relate to river processes<sup>38</sup>. No distinction will be made between these two phenomena. Landslides are caused by slip of solids (soil, vegetation, etc.) on slopes. They are characterised by fast mass movements, which rupture surface that is well defined by lateral and deep boundaries. For this reason, landslides are clearly seasonal in the city of Rio de Janeiro and are related to periods of heavy and concentrated rainfall, for example, the period from October to April.

<sup>38</sup> Ministry of National Integration. National Department of Civil Defense. National Centre of Risks, and Disaster Management. *Brazilian Annual Journal of Natural Disasters, 2011*/National Centre of Risks and Disaster Management. — Brasília: CENAD, 2012.

## Results

The map in **Figure 32** shows the *observation points* where there were records of floods and interventions to solve this problem. These points are being observed to ensure the effectiveness of interventions.

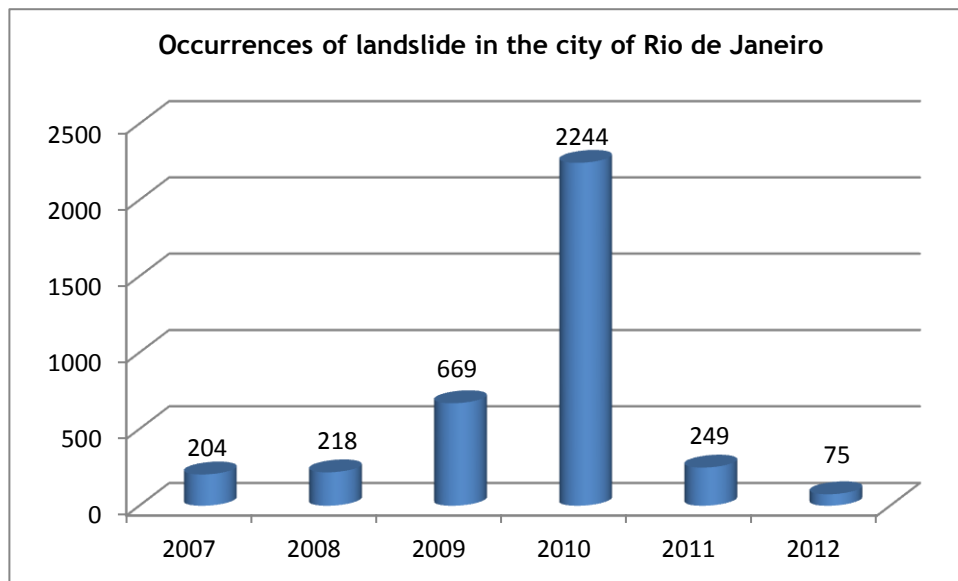


**Figure 32** Observation points regarding the occurrence of floods  
Source: Rio-Águas, 2013

At the moment, monitoring data about flooding occurrences are not available for the city. Programmes are being developed, including the Olympic areas (Maracanã e Deodoro)<sup>39</sup>.

The city of Rio de Janeiro recorded 3,659 incidents of landslides in the period 2007-2012 (Figure 33), especially for the year 2010. The high intensity of rainfall in April 2010 led to the city government of Rio de Janeiro to prepare a landslide susceptibility map of the city—the susceptible areas are classified as low, medium, and high (Figure 34). From this map, we represent the Olympic facilities with a circumference of a kilometre radius, allowing one to see that some facilities have areas susceptible to landslides inside this radius, especially in the region of Deodoro.

<sup>39</sup>The city is developing the Environmental Recovery Programme in the Basin of Jacarepaguá, benefiting around 350,000 residents. The intervention aims at controlling urban flooding and improving environmental conditions in the region. The works were started simultaneously in the rivers Itanhangá, Cachoeira, Amendoeira, Muzema, Retiro, Papagaio, São Francisco, Sangrador, and Córrego da Panela. Moreover, works to control flooding points are taking place near access roads to Maracanã Stadium.



**Figure 33 Occurrences of Landslide in the City of Rio de Janeiro**  
Source: Municipal Civil Defence, 2013

Landslides and floods are directly associated with rainfall. The city of Rio de Janeiro currently has 33 monitoring stations strategically distributed; they are part of the Alerta Rio System. These stations are able to send records every 15 minutes to the Rio Operations Centre (ROC). The location of these stations is available in **Annex En10.1**.

The data are processed to indicate extreme rainfall events that meet the criteria listed in **Annex 10.1**.

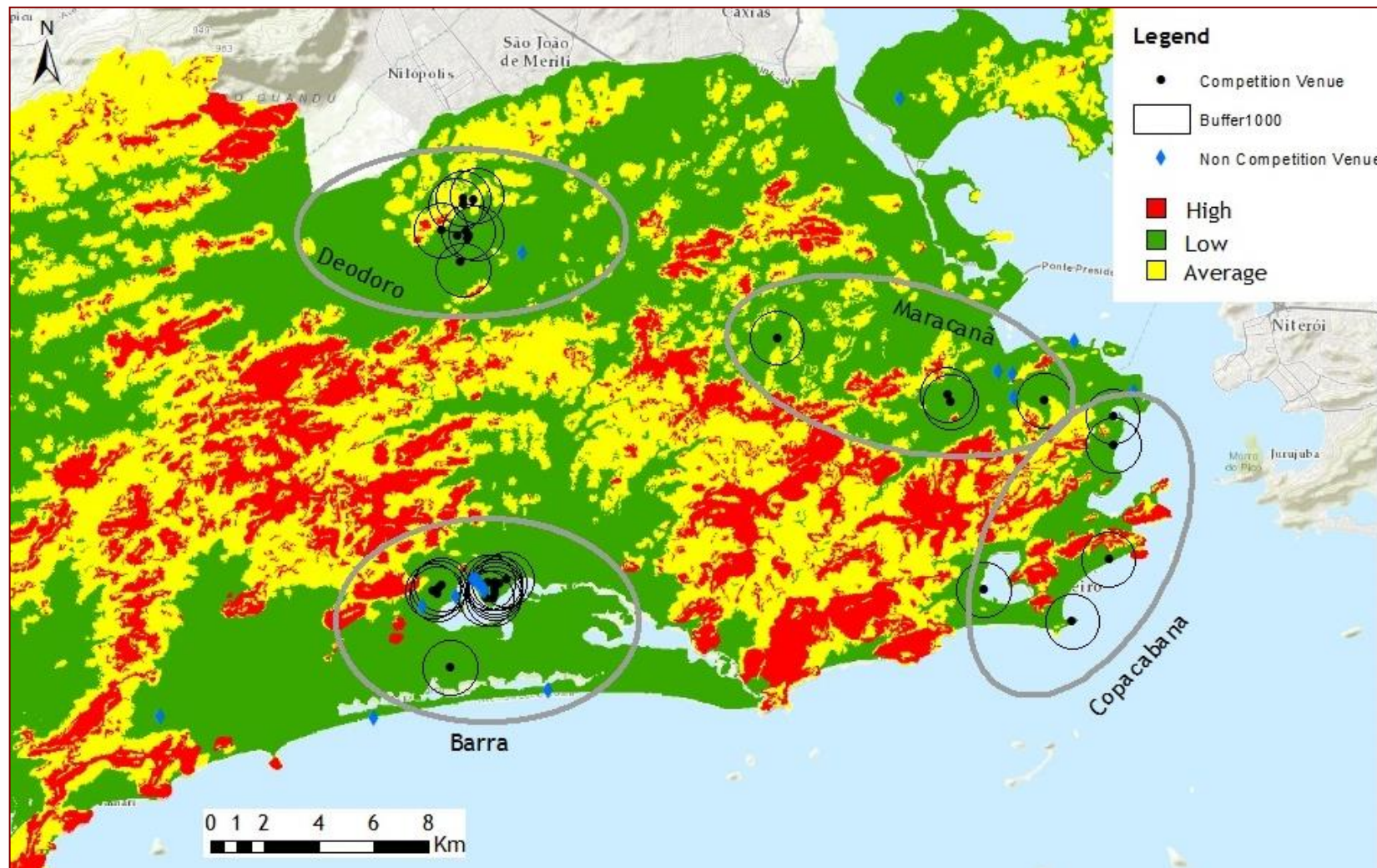


Figure 34 Susceptibility to Landslide in the City of Rio de Janeiro  
Source: IPP, 2013

In 2010, 300 extreme rainfall events were recorded—a much higher number than was documented during the years 2011 and 2012, when 69 and 40 events, respectively, were reported<sup>40</sup>.

The Alerta Rio is a warning system for heavy rainfall and landslides on the city slopes. It was created in 1996 with the purpose of issuing warning bulletins to the population whenever there is a forecast of heavy rains that may cause flooding of roads and/or landslides.

The Alerta Rio team is composed of meteorologists, engineers, geologists, and technicians that perform monitoring of weather conditions and maintenance of the network infrastructure 24 hours a day, seven days a week. In situations where there is heavy rain forecast for the city of Rio de Janeiro, warnings are issued to the city agencies involved in the mitigation of damages. The population is advised through the channels of the Alerta Rio, on the Internet, and in the press.

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<sup>40</sup>Geo-Rio — Geotechnical Institute of the city of Rio de Janeiro. *Report of the correlation between rainfall and landslides in the city of Rio de Janeiro in 2012*. (Report GEO-RIO/DEP/GPE nº05/2013.

## 5.2 Socio-Cultural Outcomes



Table 20 Summary Table of the Socio-Cultural Sphere Data

Socio-Cultural TT	Socio-Cultural FA	Relevance	R1 Data Available			Data Sources	DMSC	Quant.	Qual.	Methodology Limitations	
			Y	Part	N					Temporal discontinuity	Diff. of data source
So01 Political, Social and Legal Apparatus	So01.1 Legislative Activities Related to the Olympic and Paralympic Games	H	X			Legislative chambers					
	So01.2 Development of Public Policies	H			X	Local gov.					X
	So01.3 Pressure Groups	H	X			Media					
So02 Accessibility of Public Buildings and Venues	So2.1 Accessibility of Places where Public Services are Offered	VH		X		Nat Sec. of Mobility / IBDD/Infraero /Fetranspor/Rio Ônibus /CNES / ISP	X		X	X	X
So03 Public Opinion and Consultation	So03.1 Population Perception Regarding the Olympic and Paralympic Games	H	X			Rio 2016™	X				
So04 Promotion and Participation of Minority Groups	So04.3 Perception of People with Disabilities about Life Conditions	H		X		Senate	X			X	
So05 Human Development	So05.1 Poverty and Social Exclusion	H	X			IBGE/MEC	X	X			
	So05.2 Education	H	X			IBGE/MEC	X	X			
	So05.3 Crime Rates and Public Safety	VH		X		ISP	X	X			
	So05.4 Health	H	X			MS/IBGE	X	X			
	So05.5 Nutrition	H	X			IBGE	X	X			

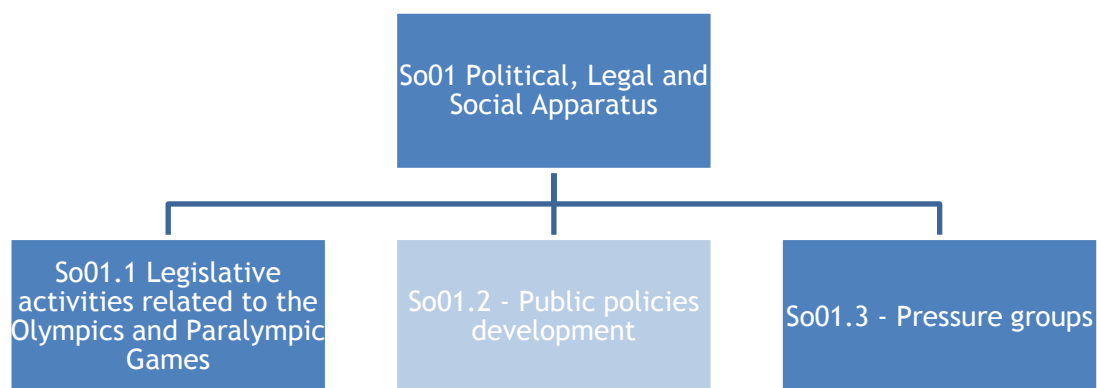
Socio-Cultural TT	Socio-Cultural FA	Relevance	R1 Data Available			Data Sources	DMSC	Quant	Qual.	Methodology Limitations	
			Y	Part	N					Temporal discontinuity	Data source
So06 Culture	So06.1 Host City Cultural Activities	VH		X		MinC					X
	So06.3 Olympic and Paralympic Educational Activities	VH		X		RIO 2016™					
So07 Sport Development	So07.1 Sport Practices	VH		X		MS		X		X	
	So07.2 Physical Education and School Sport	VH		X		SME; RIO 2016™		X		X	X
	So07.3 Sport Facilities	VH		X		MS; IBGE		X		X	X
	So07.4 Top Level Athletes	VH		X		Internet; (ME; COB)		X			X
	So07.5 Major Sporting Events Hosted	VH		X		Internet; (ME; COB)		X			X
So09 Olympic-Induced Housing	So09.1 Olympic-Induced Housing	VH		X		SMH					X
So10 Host City and Country Media Image	So10.1 Host City and Country Media Image	VH			X	SECOM; Press office of Rio 2016™		X	X		X
So11 Professional Sports Education for People with Disabilities	So11.1 Professional Sport Education for People with Disabilities	H		X		MEC	X	X		X	X
So12 Health and Safety at Work	So12.1 Health and Safety Practices at Work	VH	X			Rio 2016™	X	X			



## So01 Political, Legal and Social Apparatus

The Olympic and Paralympic Games require many changes within the Host City, so that it can adapt to the requirements of accessibility, safety and facilities, as a few examples. Many of these changes result in adaptations to the law, regulations and infrastructure.

This thematic topic is presented through the following focus areas: *legislative activities related to the Olympic and Paralympic Games, public policy development, and lobbying*. The scope of this report includes the first and last of these focus areas, as shown in the diagram below.

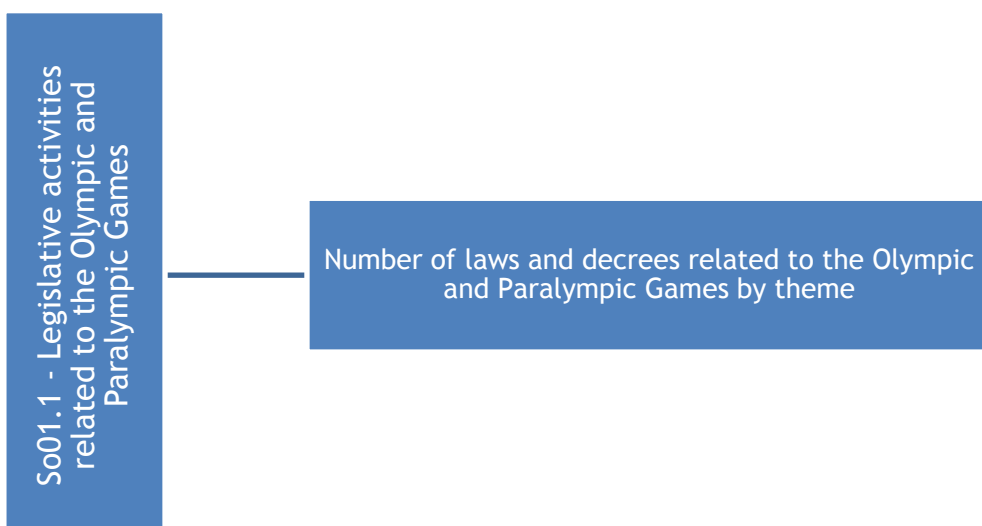


### So01.1 Legislative Activities Related to the Olympic and Paralympic Games

#### Purpose

Changes in federal and local laws related to the Rio 2016 Olympic Games have been based on the need for a truly meaningful legacy for the city of Rio de Janeiro. Some of these laws provide the necessary standards to ensure the transparency of works and actions taken, and the fulfilment of the promises made in the city's Candidature File; others aim at ensuring safety and order during the period of the Games, as well as facilitating the execution of works and actions required to mount such an event.

As a way to gauge interest and mobilisation of these political forces, this study tracks the number of laws and decrees that have been approved at both the municipal and federal levels, after the acceptance of the candidacy of Rio de Janeiro as the Host City, and which are directly related to the Games.



Indicator	Description
<b>Number of laws and decrees related to the Olympic and Paralympic Games by theme.</b>	This indicator aims at quantifying and classifying the laws (common and complementary)—federal and municipal—decrees created according to the Olympic and Paralympic Games by theme.

Ordinary laws are those that relate to general rules. Complementary laws are used to explain or supplement the Constitution. Decrees are acts of administrative competence made by the heads of the executive branch, to determine compliance with a resolution, or used to make appointments and regulatory laws.

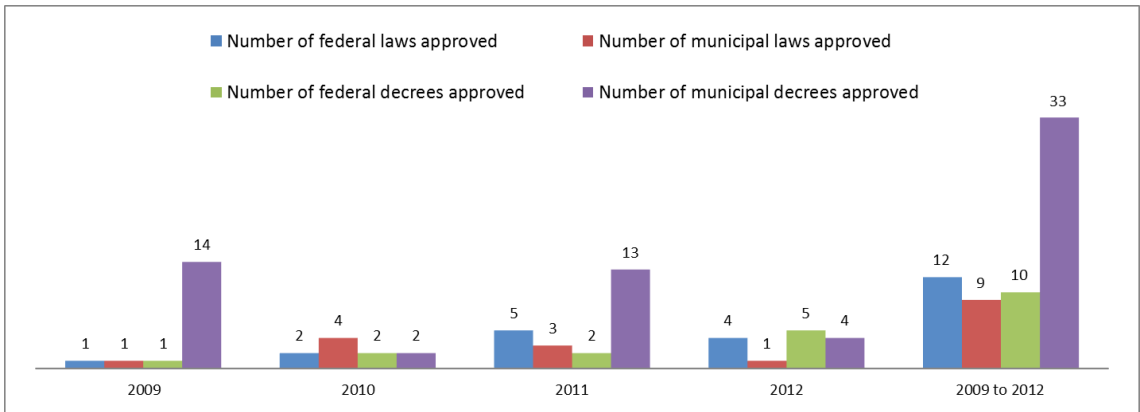
In this focus area, laws and decrees are those that make direct reference to the Olympic and Paralympic Games in the body of their text. Thus, the method used for data collection was the search of keywords “Olympics”, “Olympic”, “Rio 2016”, “games”, and “major sporting events” in electronic portals and database from the General Attorney of the Municipality of Rio de Janeiro, the Attorney Library of the Chamber of Rio de Janeiro, and the House of Representatives.

The laws and decrees considered within the scope of this focus area were classified according to the themes addressed in the *Sustainability Management Plan of Rio 2016 Organising Committee* (PGS, from its acronym in Portuguese). They are: transport and logistics, conservation and environmental restoration, waste management, universal accessibility, diversity and inclusion, sustainable supply chain, and management and transparency, which are strategic themes of the Sustainability Management Plan of the Rio 2016™ (see item 3 of this report: “The sustainability in the management cycle of Rio 2016 Games”).

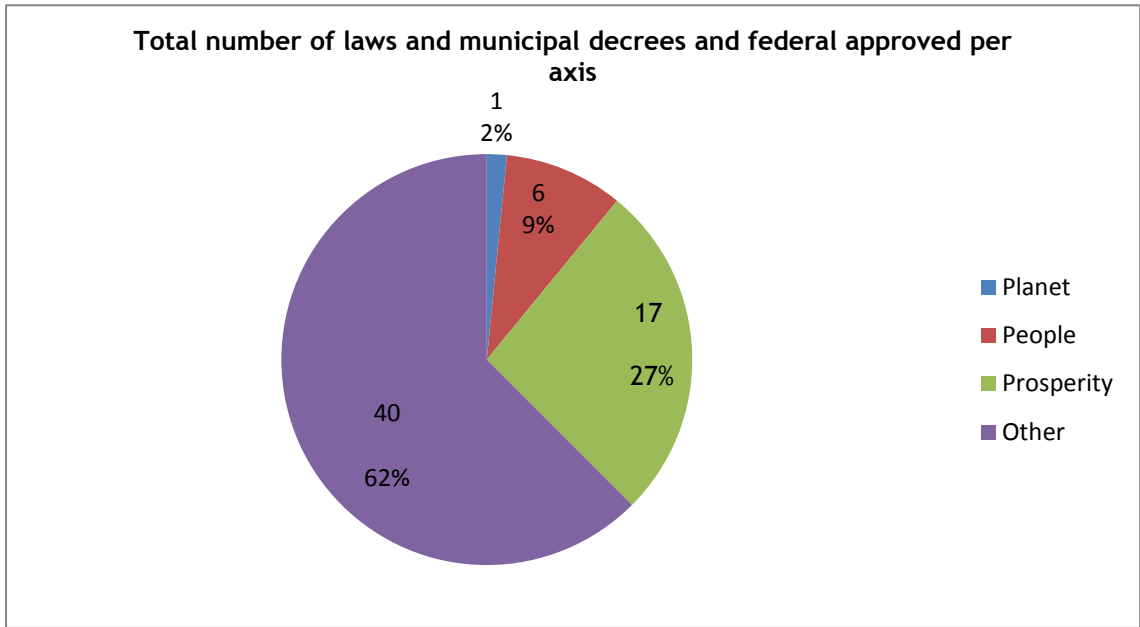
## Results

After approval of the candidacy of Rio de Janeiro as the Host City of the Olympic and Paralympic Games, 12 federal laws, 9 municipal laws, 10 federal decrees, and 33

municipal decrees were accepted, totalling 64 standards. In 2009 and 2011, there was a high approval rate of municipal decrees.



**Figure 35 Federal and Municipal Laws and Decrees Approved due to the Olympic and Paralympic Games from 2009 to 2012**  
Source: Legislative chambers, 2013



**Figure 36 Number and Percentage of Federal and Municipal Laws and Decrees Accepted due to the Olympic and Paralympic Games in the Period 2009 to 2012, (detailed by topic)**  
Source: Legislative chambers, 2013

Most of the laws and decrees that were approved have no direct relation to the topics covered in the PGS. These laws and decrees are related more to public administration; for example, laws for budget guidelines, multiyear plan laws, laws on urban restructuring, decrees dealing with the visual identification of official documents, and the decree establishing the 2<sup>nd</sup> day of October as an optional holiday (the day that the city’s application for hosting the Games was accepted). Several themes in the PGS were not subject to legislative changes directly related to the Games (conservation and environmental recovery, waste management, involvement, raising awareness, and

sustainable supply chain). Despite there being laws and decrees approved on the above-mentioned topics, during this period, they had no direct relationship with the Games.

Laws and decrees focusing on transparency can be found in **Annex So01.1.1**. They aim at facilitating the necessary changes that must be made to host the Games, while also ensuring a meaningful legacy for the city of Rio de Janeiro.

Among the laws and decrees considered in this study, some have received a veto notice from a judiciary, or were deemed unconstitutional. This occurs when a law or decree contains articles considered contrary to the Brazilian Constitution, or when such items are not thought to be a public interest issue. A list of these cases is included in **Annex So01.1.2**.

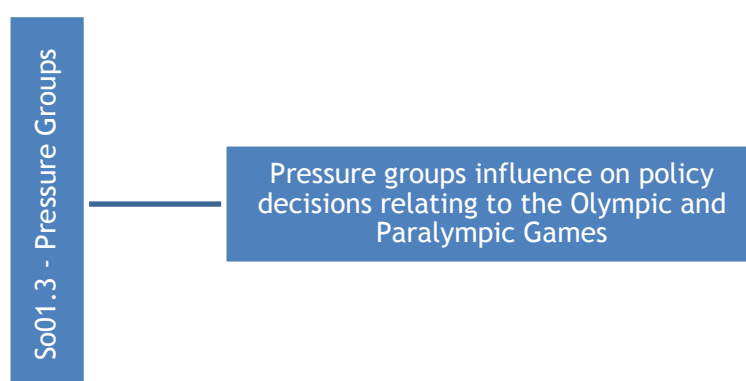
### So01.3 Pressure groups

#### Purpose

This focus area aims at identifying the main pressure groups in the country, state, and the city of Rio de Janeiro that seek to interfere with the Olympic and Paralympic Games in any way, as well as the topics these groups seek to further and their degree of influence.

Civil society can influence political decisions in several ways. A fairly common one is through the organisation of pressure groups to challenge elected representatives, including those who are not on the frontlines of the political scene. Immediately after Rio de Janeiro was selected to host the 2016 Olympic and Paralympic Games, various organisations were formed to assess the impact and legacy of the Games, and to ensure the event's transparency.

It is important to acknowledge that the events, which occurred in June 2013, soon became known in Brazil as the month of popular discontent. The agenda behind many of the protests' were issues directly, or indirectly, linked to Rio 2016 Olympic Games.



Indicator	Description
Pressure groups influence on policy decisions relating to the Olympic and Paralympic Games.	This qualitative indicator aims at identifying and describing the main pressure groups, as well as its focus and the meaning of their demands.

## Results

In the last two years, several pressure groups were organised in Brazil with the aim of monitoring, and closely examining, the upcoming major events. Currently, four of them make explicit reference to the Olympic Games.

**Table 21 Pressure Groups Relating to the Olympic Games and their Means Of Action**

Pressure group	Focus/thematic	Means of pressure/communication
<b>Project Clean Games inside and outside of the stadium Project</b>	Financial transparency	Online tool to monitor investments.
<b>Popular committee Rio World Cup and Olympics</b>	Arbitrary actions of the municipality or state or federal governments	Published Documents: <ul style="list-style-type: none"> <li>• “Mega-events and human rights violations in Rio de Janeiro” (2011).</li> <li>• “Mega-events and violation of human rights in Brazil” (2013).</li> </ul>
<b>Metropolis Observatory</b>	Impacts of the World Cup and the Olympic Games	Publication of documents: national reports on each of the 12 host cities for both the World Cup and the Olympic host cities.
<b>NGO Athletes for Brazil</b>	Improvement and transparency of the national sports system	Dialogue with Ministries. Publication of a “Manifesto” (2013).

Source: own elaboration, 2013

The “Clean Games Inside and Outside the Stadium Project” was created by Ethos, an institute dealing with social corporate responsibility, and is funded by large- and medium-sized enterprises. It intends to invest US\$ 3.1 million in “actions to increase levels of transparency, integrity and social control over the investments that are made in the country on infrastructure projects for the 2014 World Cup and for the 2016 Olympic Games”.<sup>41</sup> An online tool has been created for the monitoring and social control over the investments for the World Cup in 2014 and Rio 2016 Games through a transparency index. However, so far, the transparency index refers only to the World Cup event.<sup>42</sup> The project seeks to create agreements with involved companies and governmental transparency commitments, while keeping the door open for collaborative discussions with the Organising Committee.

The “Popular Committee Rio World Cup and Olympics” seeks to bring together social movements, NGOs, academic institutions, social leaders, and people affected by what the group calls the “arbitrary actions of the City.” This group is mobilising to resist the construction of what they call a “city of exception”<sup>43</sup>, and are pressing to establish a

<sup>41</sup> Available on <http://www.jogoslimpos.org.br/conheca-o-projeto/o-que-e/>, Accessed in August, 2013.

<sup>42</sup> The document *Rejoinder EOM - RJ* (available in: <http://www.jogoslimpos.org.br/transparencias/>) enables an analysis of the responses from Municipal Olympic Company to Ethos Institute.

<sup>43</sup> In the document *Megaeventos e violações dos direitos humanos no Rio de Janeiro*, the group describes “exception city” as follows: “Decrees, provisional measures, laws voted off the legal system and away from the eyes of citizens, as well as a tangle of ordinances and resolutions, build an institutional exception. Imposition of this standard to each particular case, openly violate the principles of impartiality, universality and advertising of law and acts of public administration. Available on < <http://www.apublica.org/wp->

broad and democratic process of discussion about the real legacy of mega-events (World Military Games 2011, 2013, Confederations CupWorld Cup 2014, and Olympic and Paralympic Games in 2016)<sup>44</sup>. This committee has published two documents with allegations of human rights violations due to the changes made, in general, in Rio de Janeiro and Brazil, in order to accomplish these mega-events. The themes addressed in both documents are: housing, mobility, work, sports, public information and participation, budget and finance, initiatives of resistance in the Popular Committee Rio World Cup and Olympics, and proposals from the Popular Committee.

“Metropolis Observatory” is a virtual organisation funded by public research funds that gathers 159 researchers, and 59 governmental and non-governmental institutions, to work on a disclosure of the impacts of the Games, through the research project: “Metropolitanisation and mega-events: the impacts of the 2014 World Cup and 2016 Olympics”.<sup>45</sup> Through this project, national reports are elaborated on for each of the 12 World Cup host cities and the Olympic Host City, in this case, Rio de Janeiro. The discussion agenda resembles the themes advocated by the “Popular Committee Rio World Cup and Olympics”, as well as the project’s research results.

The NGO “Athletes for Brazil” emphasises the positive values of sport and its impact on the development of the country, claiming that public interest and transparency should prevail in the preparation of both the World Cup and the Olympic Games. The NGO suggests that the resources generated by the events should contribute to the social and economic development of the country and warns against the allocation of public resources for the benefit of a few. According to “Athletes for Brazil”, urban removals that violate human rights, corruption, and a lack of transparency in decisions and bills passed are opposed to the values of sport.

The role of pressure groups (including many others, which are not targeted at the Olympic Games) gained momentum in June 2013, when Brazil experienced a shift in its political culture. An increase in bus fares in the city of São Paulo motivated a series of protests, with young people representing a high percentage of those participating and spreading rapidly to other Brazilian cities, becoming the most important street protests in Brazil since 1992.<sup>46</sup> The original focus on transportation problems expanded to embrace a diverse set of other social issues, such as health, education, public safety, and public transparency about the World Cup budget.<sup>47</sup> A quantitative measure of the

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[content/uploads/2012/09/dossic3aa-megaeventos-e-violac3a7c3b5es-dos-direitos-humanos-no-rio-de-janeiro.pdf](http://content/uploads/2012/09/dossic3aa-megaeventos-e-violac3a7c3b5es-dos-direitos-humanos-no-rio-de-janeiro.pdf), Accessed in August, 2013.

<sup>44</sup> Available on <http://comitepopulario.wordpress.com/apresentacao/>, Accessed in August, 2013.

<sup>45</sup> Available on <http://www.observatoriodasmetroplites.net/>, Accessed in November 2013.

<sup>46</sup> In 1992, due to corruption problems and the unpopular economic measures of the Collor government, a demonstration of the “painted faces” occurred, characterised by the presence of young people who demanded the impeachment of President Fernando Collor. This was the most important protest since 1984, when the “Direct Elections Now” demanded direct presidential elections in the country, although it had been suffering from a military dictatorship since 1964. The main differences between the previous and current protests are the absence of leadership – the protests were not directly associated with a particular political party but directly promoted and organised through social media network – and the heterogeneity of the demands.

<sup>47</sup> The onset of popular demonstrations during the Confederations Cup was triggered by an increase of public transport tickets in several states. The main organizer of such events was the “Free Pass Movement” (for example, towards zero tariff or public transport tickets), that summoned protestors through social media networks on the internet. However, other groups actively participated, as did the above-mentioned organizations, in addition to other NGOs, and small popular movements. Protests occurred daily in more than ten states. On 11 July 2013, the union movement came to add to the protests, including one that

demonstrators' topics of interest has been offered on the website "Causa Brasil", which provided a platform to monitor protest themes conveyed by social media networks<sup>48</sup>. On 1 November 2013, this tool pointed out that the problem of public transport was the cause triggering the protests, but that public safety has become the most important issue, appearing in 19.75 percent out of a total of 36,119 entries. Also on the list was health, in second place, having been mentioned 9.20 percent of the time; the role of political parties was ranked third with 7.95 percent; and education was fourth with 6.48 percent. Complaints about the World Cup appear in only 0.04 percent of the entries (referring to the works cost and the proposal of boycott); there is no record of complaints about the Olympic and Paralympic Games. The political nature of the demonstrations was confirmed by the reaction of Brazilian President Dilma Rousseff. At the end of June, she responded to the protests by gathering together twenty-seven governors and twenty-six mayors to form a national network, and proposed five "pacts" focused on transportation, health, education, fiscal responsibility, political reform, and an end to corruption.

There seems to be a consensus among analysts that the street protests were primarily expressing the crisis of the whole Brazilian political system, provoking a lack of credibility in its representatives. This could explain why the protests were not directly associated with a particular political party. There is, indeed, evidence of higher awareness, on the part of Brazilians, regarding the responsibility of their political representatives as well as public spending. Some commentators argue that we are witnessing the birth of a more pluralistic world, in which individuals increasingly demand more autonomy in their choices. The Brazilian protests show, on the one hand, a possible process of political maturation and on the other hand, paradoxically, the crisis of a young society that is trying to build a political identity at the margins of its institutions.

Given that the moment of this shift in political culture coincided with the realization of FIFA's Confederations Cup in Brazil, the connection was inevitable. Some pressure groups have succeeded to include the preparation of major sporting events on the agenda of the street demonstrations. The large sums of money related to these events have provided an opportunity for widening the claims for transparency in public spending. The budget and the governance of the future World Cup was the target of direct and heavy criticism. The organization of the Olympics was very much less in the limelight, but the distinction between the preparations of the two events was still not very clear to the population. The simultaneous preparation of the two major events may have allowed misleading first impressions of the Games' potential impacts. For instance: an important protest claim during the June demonstrations was related to the impacts of the renovation works of the Maracanã stadium, which was to include the demolition of two other sport facilities, namely Julio Delamare Aquatic Park and Athletics Stadium Célio de Barros. Both facilities were listed by IPHAN<sup>49</sup> in 2002, and had received investments to meet the requirements of the 2007 Pan American Games.

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called for a national strike. However, at this time, protests were occurring less frequently and had fewer participants.

<sup>48</sup> The themes, or causes, are identified from the content of web postings – on Facebook, Twitter, Instagram, YouTube, and Google – which have at least one of the main hashtags related to the demonstrations. Accessible on: <http://www.causabrasil.com.br/>, accessed on 2/11/2014.

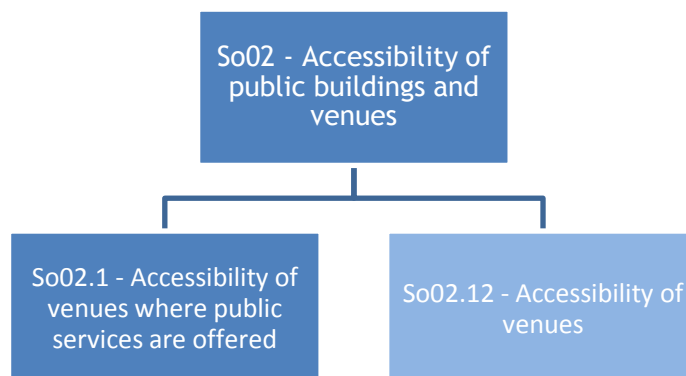
<sup>49</sup>IPHAN – The National Institute of Historic and Artistic Heritage.

Moreover, two other non-sports facilities in the surrounding area would also be demolished: the Friedenreich School (with more than 300 students with disabilities) and an old building, which houses about 50 aborigines from various ethnicities (Village Maracanã). Once all of this vast renovation work was completed, the government of Rio de Janeiro intended to privatise the stadium. The protesters replied that the stadium and the four facilities were part of the city cultural heritage and that public money should not be used to support private profits. But few of the protesters seemed to know that, although the Olympic Games will indeed use the stadium, the renovation work itself would be done to meet the requirements of the World Cup, conforming to the FIFA standard, and not of the Olympics. Most of the pressure groups involved have ignored this fact. The outcome of the protests reached its peak when protesters targeted their claims to the Governor of the state of Rio de Janeiro, who later had to reconsider his decision of demolishing the four facilities.



## So02 Accessibility of Public Buildings and Venues

This thematic topic addresses the *accessibility* from the perspective of *public infrastructure* and *venues*. Providing universal accessibility is a key factor to integration and self-sufficiency of people with disabilities or reduced mobility in the community<sup>50</sup>.



This report will portray the accessibility of public buildings in the Host City, in an attempt to assess whether the most relevant public areas and public buildings will provide full accessibility. Accessibility analysis of venues will be addressed in the OGI 2017 report (after the construction and use of the venues during the Games).

The Brazilian Association of Technical Standards<sup>51</sup> considers accessibility to be the condition of perceiving, and understanding, the use of buildings, space, furniture, and urban infrastructure. It is noteworthy that the Municipality of Rio de Janeiro adopted the federal legislation<sup>52</sup> on accessibility, which is considered one of the most comprehensive in the world, as reference for the United Nations in the areas of mobility and special needs.

The urban environment of Rio de Janeiro is made up of both historic areas and modern regions, which coexist harmoniously. However, this creates different levels of difficulty in the building of streets and public service buildings with an accessibility infrastructure for people with disabilities or reduced mobility.

### So02.1 Accessibility of Venues where Public Services are Offered

#### Purpose

According to the IOC *Technical Manual*, the Games will be able to help mobilise appropriate care for the needs of individuals with disabilities or reduced mobility. The Candidature Dossier also highlights the importance of complying with the principle of “accessibility for all”.<sup>53</sup>

<sup>50</sup> *Technical Manual on Olympic Games Impact Study – 5<sup>th</sup> Edition – Post-Vancouver 2010 Winter Games*.

<sup>51</sup> ABNT NBR 9050:2004.

<sup>52</sup> Law N° 10.098 / 2000: Establishes general standards and criteria for the promotion of accessibility for people with disabilities or reduced mobility.

<sup>53</sup> Rio 2016<sup>M</sup>, Rio Candidature File.

This focus area focuses on portraying the extent to which public services are satisfying the criteria of Brazilian laws and technical standards for people with disabilities or reduced mobility. It will also focus on the long-term physical legacy generated for the city.

**Table 22 Sample of Public Places to the Accessibility Analysis**

Service	Type of Venue	Venue Considered in the Analysis	Accessibility Data Source
<b>Administration</b>	Notary Offices	Those located in the city of Rio de Janeiro	--
	Government Offices	Those located in the city and in the state of Rio de Janeiro	IBDD
<b>Education</b>	Public Schools	Those located in the city and in the state of Rio de Janeiro	IBDD
<b>Health</b>	Health Posts	Those located in the city of Rio de Janeiro	IBDD
	Public Hospitals		
<b>Security</b>	Precincts	Those located in the city of Rio de Janeiro	--
<b>Transport</b>	Airports	International Airport of Rio de Janeiro (Galeão - Antônio Carlos Jobim)*	Infraero
		Rio de Janeiro Airport (Santos Dumont)*	Infraero
	Bus Stations	Novo Rio Bus Station*	TRANSPORTAL
		Campo Grande Bus Station	--
		Américo Fontenelle Bus Station	--
		Alvorada Bus Station	--
	Subway	Line 1 (19 stations) and Line 2 (16 stations)*	METRÔRIO
<b>Tourism</b>	Sights	Sugar Loaf*	SETUR
		Christ the Redeemer*	SETUR
		Orla Oceânica*	SETUR
		Maracanã Stadium*	SETUR

\*Private companies administrate these venues; their sources exposed the adaptation for people with disabilities or reduced mobility.

Source: elaboração própria, 2013

The Municipal Department for People with Disabilities is initiating a city mapping, aimed at inspecting 250 tourist attractions and museums (by the end of 2013, 41 of them had already been inspected), as well as the boarding areas within the transport network.

## Results

At the moment, there is no systematic evaluation of all the places listed above. The available data were the review of public services facilities reported by CREA-RJ and IBDD at the municipality and at the state level (based on the official data of 2010), and a qualitative observation of the touristic and transport venues.

The physical observations of the places, presented in Table 23 and Table 24, result from an analysis done by the IBDD.<sup>54</sup>

**Table 23 Accessibility of public municipal venues in the city of Rio de Janeiro, 2010**

City Public Service	Assessed	Adapted or on Adaptation Process	Partially Adapted	Non-Adapted
<b>Education - municipal schools (1)</b>	1058	30	333	695
<b>Health unities (2)</b>	101	24	40	37
<b>Other municipal government offices</b>	147	51	55	113

(1) the evaluation criterion considers as partially adapted buildings those that only have one accessibility item (for instance a lift, toilets or ramp) or two items, but that do not mention the accessibility technical norms.

(2) on the health units, the accessibility evaluation criterion is supposed to be more detailed and based on fully integrated items.

Source: IBDD, 2013

**Table 24 Accessibility of public state venues in the state of Rio de Janeiro, 2010**

State Public Service	Assessed	Adapted	Partially Adapted	Non-Adapted
<b>Education - State Schools</b>	12	--	3 (25%)	9 (75%)
<b>Police and Delegacies</b>	129	118 (91%)	--	11 (9%)
<b>Tribunals and Justice</b>	34	3 (9%)	16 (47%)	15 (44%)
<b>State Government Offices</b>	16	2 (13%)	7 (43%)	7 (44%)

(1) Some places were assessed as partially adapted, due to the lack of one or more accessibility items, such as access ramps, adapted toilets, or non-adapted toilets which can be used.

Source: IBDD, 2013

For the other locations, such as touristic sights or transport system items, a qualitative observation is presented in Table 25 Public places accessibility status below.

<sup>54</sup>The analysis of IBDD was based on documents received from the Federal Public Ministry and sent to the Federal Justice. In 2010, the IBDD demanded effectiveness regarding compliance of the criteria in the public venue.

**Table 25 Public places accessibility status em 2012**

Transport System	Airports	<ul style="list-style-type: none"> <li>– According to Infraero, Galeão, and Santos Dumont, airports are undergoing reforms that will provide adequate infrastructure for people with disabilities or reduced mobility. In addition, other initiatives are being implemented to guarantee appropriate service, such as listing the rights of passengers with disabilities or reduced mobility while travelling (<b>Annex2.1</b>).<sup>55</sup></li> <li>– A study from São Paulo University measured the accessibility index in six Brazilian airports and several deficiencies were found. On a scale ranging from zero to one, Rio's International Airport (Galeão) received the punctuation 0.51 corresponding with the third worst score. On the other hand, Santos Dumont had the highest value, 0.63, though the study emphasises that this figure is still considered insufficient in terms of accessibility.<sup>56</sup></li> </ul>
	Novo Rio Bus Station <sup>57</sup>	<ul style="list-style-type: none"> <li>– Provides lifts, reserved seats, directional tactile floors, and warning,</li> <li>– Ramps and stairs with tracks signalling steps and handrails are also displayed.</li> </ul>
	Rio Metro <sup>58</sup>	<ul style="list-style-type: none"> <li>– Rio's metro has elevators and tactile flooring.</li> <li>– Marking and maps in Braille are available.</li> <li>– Handrail rings, wheelchair marking, totem cases, priority seats, and vertical signposts are also offered in the metro network.</li> </ul>
Sights and Sports <sup>59</sup>	Sugar Loaf	<ul style="list-style-type: none"> <li>– Offers enough ramps and lifts for people with disabilities or reduced mobility.</li> <li>– Staff assistance is available</li> </ul>
	Christ the Redeemer	<ul style="list-style-type: none"> <li>– The departure station of the train is accessible and has trained staff.</li> <li>– The base of the monument has lifts and ramps and adapted toilets.</li> <li>– There are escalators on the last stretch to the baseboard of the monument.</li> </ul>
	Seaside from Copacabana to Recreio dos Bandeirantes	<ul style="list-style-type: none"> <li>– There are ramps to the boardwalk and from the boardwalk to the sand.</li> <li>– There are adapted toilets and professional support in the lifeguard stations and in some kiosks.</li> <li>– No infrastructure in the sand.</li> </ul>
	Maracanã Stadium <sup>60</sup>	<ul style="list-style-type: none"> <li>– There is level access with ramps and elevators<sup>61</sup>.</li> <li>– Placeholders for wheelchairs in the stands.</li> </ul>

Source: own elaboration, 2013

<sup>55</sup> Brazilian Infrastructure Airport company.

<sup>56</sup>Coelho, Ligia. G., "Accessibility index in airports, which incorporates people with different mobility constraints, 2012", Masters' Dissertation, School of Engineering of São Carlos, São Paulo University.

<sup>57</sup>[www.transportal.com.br](http://www.transportal.com.br)

<sup>58</sup>[www.metrorio.com.br](http://www.metrorio.com.br)

<sup>59</sup>SETUR, Tourism State Office.

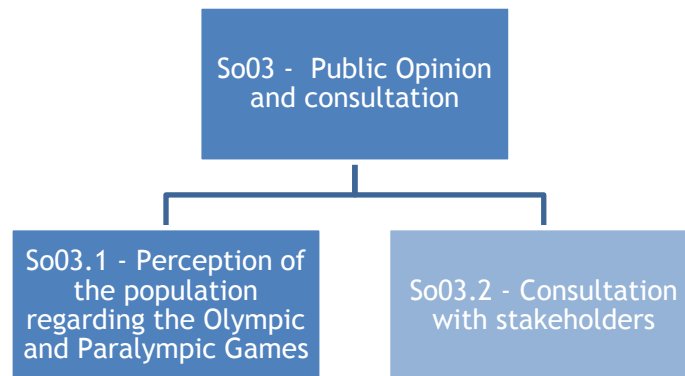
<sup>60</sup> RIOTUR, *Roteiros Turísticos Acessíveis*, on: <http://www.rio.rj.gov.br/web/riotur/exibeconteudo?article-id=1137568>

<sup>61</sup> After the work of renovation ended in April 2014, the Maracanã is more accessible with 4 new ramps, elevators, new ladders, spaces for people in wheelchair, accessible bathrooms, etc. - attending to the Brazilian legislation.

The City plans to meet the accessibility requirements for the Olympic and Paralympic Games Rio 2016, including the installation of adapted public telephones, the building of over 1,000 ramps, and launching the programme, “Accessibility in the Neighbourhoods”, which is aimed at transforming some important communities. In addition, some sights have already been renovated to meet accessibility standards (among them, Christ the Redeemer). By 2016, the city's public transport system must comply with federal laws that establish the regulatory framework of accessibility for people with disabilities or reduced mobility (Federal Decree 5296 of 2004).

### So03 Public Opinion and Consultation

This thematic topic is presented through the following focus areas: *Public perception about the Olympic and Paralympic Games*, and *Stakeholder consultation*. In this report, only the former will be contemplated.



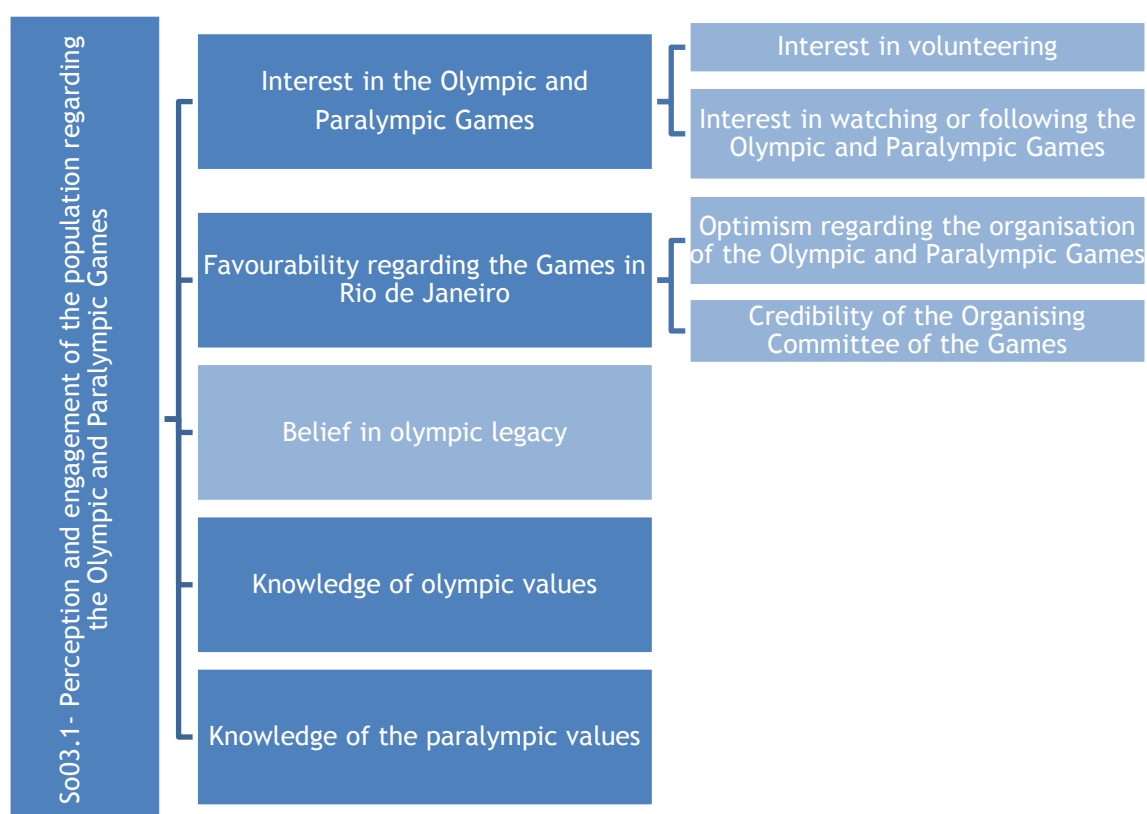
The Olympic and Paralympic Games cause profound changes in the socio-cultural and economic life of the Host City, and can be evaluated either favourably or not by its inhabitants. A positive perception by the population can contribute greatly to the success of the Games, as well as to their legacy.

Mobilising a high percentage of the population, including those working as volunteers, or being spectators, can demonstrate a positive image of the Games.

#### So03.1 Perception of the Population of the Olympic and Paralympic Games

##### Purpose

This focus area aims at measuring the degree of support for, and the population's general perception of, the Olympic and Paralympic Games in Rio de Janeiro, including their intentions to work as volunteers, or to watch the Games as spectators.



Indicator	Description
<b>Interest in the Olympic and Paralympic Games</b>	Percentage of population interest in the Olympic and Paralympic Games.
<b>Favourability regarding the Games in Rio de Janeiro</b>	Percentage of population favourable to the Olympic and Paralympic Games in the city of Rio de Janeiro.
<b>Knowledge of olympic values</b>	Percentage of population that associates Olympic values to the Olympic Games.
<b>Knowledge of the paralympic values</b>	Percentage of population that associates Paralympic values to the Paralympic Games.

For this study, surveys were commissioned by the Organising Committee of the Olympic and Paralympic Games Rio 2016 and conducted in 2007, 2008, 2009, and 2012.

In 2007, the Ipsos Research Institute conducted a nationwide household survey. The sample was probabilistic with representative quota of the electorate regarding gender, age, education, economically active population, and region, based on data from the National Survey by Household Sampling (PNAD) in 2002, and the Superior Electoral Court in 2004. A total of 70 cities and 9 metropolitan areas were selected. The margin of sampling error is about 3 percentage points and the estimated confidence interval is 95 percent.

In 2008 and 2009, the survey was conducted by IBOPE in 141 and 143 municipalities, respectively, based every year on 2002 interviews of people aged 16 years or older. The

data source for preparing the sample was the 2000 Census and National Household Survey 2005. The margin of sampling error is about 2 percentage points and the estimated confidence interval is 95 percent.

In 2012, the survey was conducted by the Ipsos Research Institute in 70 cities from 5 metropolitan areas (1000 interviews), defined through the same sample selection process, and with the same margin of error, as the 2007 survey.

## Results

The percentage of people interested in the Olympic and Paralympic Games has been growing. The results show that the level of acceptance for the Olympic Games in 2012 had already significantly exceeded the threshold of about 50 percent that had been in place until 2009.

**Table 26 Results of the Population's Opinion Polls, per year**

Indicator	2007	2008	2009	2012
Interest in the Olympic Games	53%	51%	57%	67%
Interest in the Paralympic Games		45%	55%	
Favourability regarding the Games in Rio de Janeiro (1)	NA	NA	NA	57%
Knowledge of Olympic Values (2)	NA	NA	NA	89%
Knowledge of the Paralympic Values (2)	NA	NA	NA	91%

NA: Not applied

(1) The question was asked, "How favourable are you toward having the Games realised in the city of Rio de Janeiro?" – options for answering: very favourable; favourable; neither in favour or not; not favourable.

(2) This item has been asked through an stimulated question: "Do you agree, or disagree, that the following value represents the Olympic Game?". The values, or feelings, proposed were: Excellence, Celebration, Friendship, Respect, Happiness, Union, Diversity, Transformation, Participation, and Passion.

Source: Rio 2016™, 2013

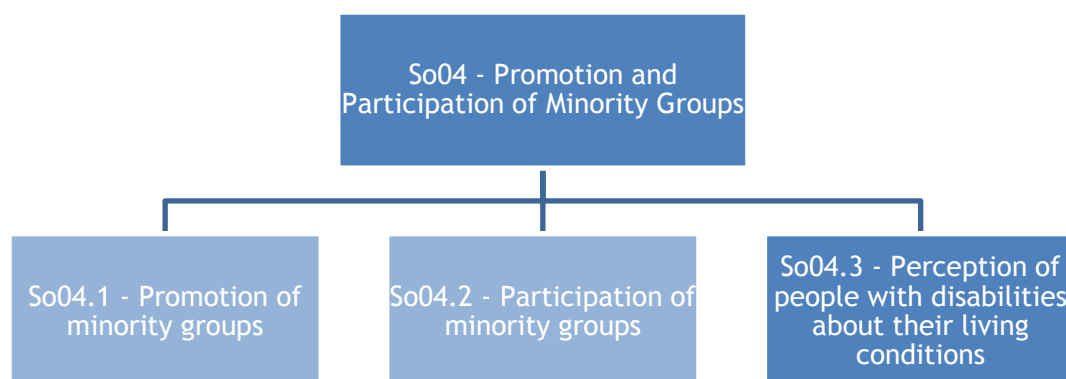


#### So04 Promotion and Participation of Minority Groups

The values expressed by the Olympic Games (friendship, respect, and excellence) and the Paralympics (determination, courage, equality, and inspiration) stimulate a change in behaviours and attitudes. An important part of this change concerns the valorization and inclusion of minority groups. It is expected, for instance, that the Organising Committee of the Host City create employment opportunities and specific activities for the promotion of minority groups.

According to the document “National Conferences and Public Policy for Minority Groups”, published by the Institute of Applied Economic Research (IPEA) in 2012, minority groups are “[...] groups that historically did not have their interests represented in the Brazilian political process. This would be particularly true in the case of minority social groups organised around the sharing of a cultural identity, whether guided by definitions of gender, race, sexual orientation, or other shared a way of life that imposes demands on specific policies, such as people with disabilities and the elderly.”<sup>62</sup> Thus, this thematic topic considers gender, age, disability, ethnicity, and sexual orientation as minority groups.

This thematic topic of *Promotion and participation of minority groups* is presented through three focus areas: the *promotion of minority groups*, the *participation of minority groups*, and the *perception of people with disabilities about their living conditions*, as shown below. The report's focus area will be on the *perception of people with disabilities about their living conditions*.



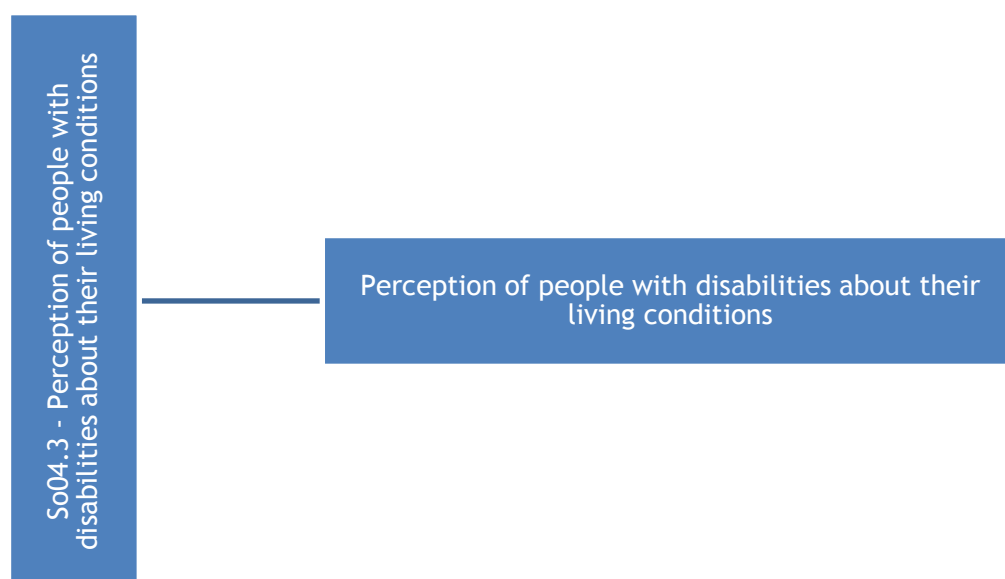
In general, the results demonstrate that changes are still needed to improve the living conditions of people with disabilities, especially in the areas of employment, health and education, and accessibility. A particularly significant challenge for Rio 2016 Olympic Games will be to lower the number of people who say they do not play sports due to the lack of accessibility resources.

<sup>62</sup> IPEA. “Conferências nacionais e políticas públicas para grupos minoritários: texto para discussão”. 2012. Available at <[http://www.ipea.gov.br/participacao/images/pdfs/td\\_1741.pdf](http://www.ipea.gov.br/participacao/images/pdfs/td_1741.pdf)>

### So04.3 Perception of People with Disabilities about their Living Conditions

#### Purpose

This focus area aims at determining the impact of the Paralympic Games on the perception of people with disabilities regarding possible changes in their living conditions.



Indicator	Description
<b>Perception of people with disabilities about their living conditions</b>	This indicator aims to measure whether there is any change in the perception of people with disabilities about their quality of life. Parameters, such as development of prejudice towards people with disabilities and the perception of the respect due to people with disabilities will be evaluated, among others.

This focus area is based upon the survey, “Conditions of life of people with disabilities in Brazil”, produced by Datasenado, a research institute of the Senate focused on identifying the opinion of the population about certain issues and draft laws.<sup>63</sup> The survey was conducted with a total of 1,165 people with disabilities. Among these, 759 had physical disabilities; 170 were visually impaired, and 236 people were hearing impaired, according to the registry data of the IBDD regarding data by type of disability (with a reliability level of 95 percent and a margin of error of three percent).

<sup>63</sup> DATASENADO. “Condições de vida das pessoas com deficiência no Brasil”. 2010. Available at <[http://www.senado.gov.br/noticias/datasenado/pdf/datasenado/DataSenado-Pesquisa-Condicao\\_de\\_vida\\_das\\_pessoas\\_com\\_deficiencia\\_no\\_Brasil.pdf](http://www.senado.gov.br/noticias/datasenado/pdf/datasenado/DataSenado-Pesquisa-Condicao_de_vida_das_pessoas_com_deficiencia_no_Brasil.pdf)> Accessed in 14/05/2013.

## Results

According to the above research, the factors that most affect a student with disabilities are the lack of adapted physical facilities and the fact that teachers have no special training. In fact, 19 percent of respondents said that education is one of the areas where more attention needs to be paid to improve the living conditions of people with disabilities, ranking just behind gaining access to better health services (22 percent) and employment (39 percent). Obtaining employment is considered to be the most critical area, according to 56 percent of the hearing impaired, 42 percent of the visually impaired, and 33 percent of physically disabled people. However, these results do not take into account individuals who give up seeking for jobs because of their limitations to perform in usual workplaces.

Regarding legislation about the access to information for people with disabilities, important data include that 30 percent of respondents said they did not know about it, and 54 percent have judged it insufficient, which is corroborated by the fact that 78 percent considered that these laws are unenforced in most cases, especially in the North (92 percent of respondents). Other data confirm this perception, since 76 percent of the respondents believe that the rights of people with disabilities are not respected in Brazil.

Regarding the improvement of living conditions of the disabled population, 57 percent of people feel that there have been improvements in recent years, and only ten percent said that these conditions have worsened. It is important to note that the percentage of people who consider that there have been improvements in recent years decreases with the increase of the degree of disability. Thus, while 63 percent of those who consider their disability mild have said that there have been improvements, only 50 percent of those who consider their disabilities severe answered the same.

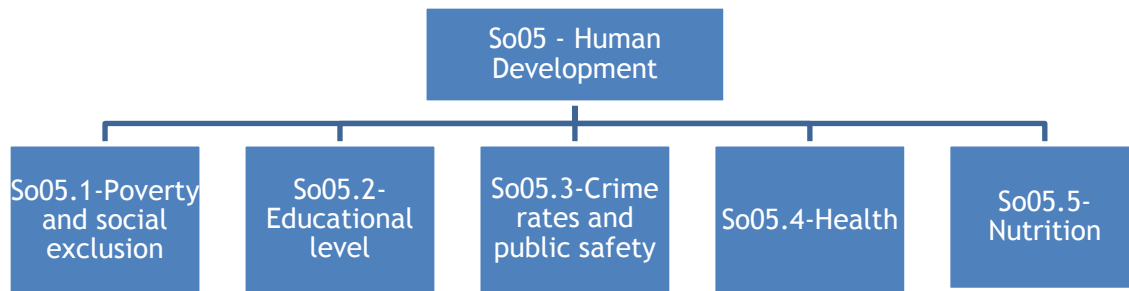
When it comes to improving leisure activity options, the importance of adapting the spaces is once again highlighted (35 percent), along with the need to increase the options for leisure (31 percent) activities. In this regard, the response of hearing impaired respondents is most notable, because for them, unlike those who had other types of disabilities, increasing recreation options (40 percent) is more important than adapting the spaces (26 percent). Also, with respect to leisure activities, important results of this study include that 52 percent responded that they would play sports, but they do not do so because of the lack of accessibility resources. Going to the theatre is the second most popular activity they cited that they would like to participate in, but for the same reason of accessibility, do not (19 percent). Again, the hearing impaired have a different perception, because a large part of them (31 percent) stated that there is no activity that they cannot do, and for this reason, only 15 percent said they would like to play sports.

Disabled people believe that prejudice is declining, as affirmed by 79 percent respondents from Midwest region. With regard to the hearing impaired, 47 percent believe that prejudice is the same, and 41 percent believe that it has declined. Again, it is possible to identify this perception of decline as mitigated, depending on the severity of the disability: while 65 percent of people with mild deficiency state that prejudice has decreased, only 48 percent of those with severe disabilities say the same.

Priority should be given to improving the living conditions of people with disabilities. According to the data presented, changes should be carried out especially in the areas of employment, health, and education. Furthermore, concerning the accessibility of buildings and roads, the study also indicates the need for change (see thematic topic **So02**). The expansion of the accessibility features, favouring the inclusion of all people could be one of the most significant legacies of the 2016 Olympic Games.

## So05 Human Development

The thematic topic of *human development* aims at monitoring, at the state and/or municipal scope, how the government of Rio de Janeiro has created an environment in which people can develop their full potential and lead productive, creative lives in accordance with their needs and interests<sup>64</sup>. It will be addressed, as shown below, in five focus areas regarded as essential to human development: poverty and social exclusion, educational level, crime rates and public safety, health, and nutrition.



### So05.1 Poverty and Social Exclusion

#### Purpose

The concept inherent to social exclusion refers to a set of processes, which reduce both the participation and integration of individuals into society, which can occur in the economic, political, legal, and social spheres. Factors such as race, gender, age, and socioeconomic aspects are related to this subject<sup>65</sup>.

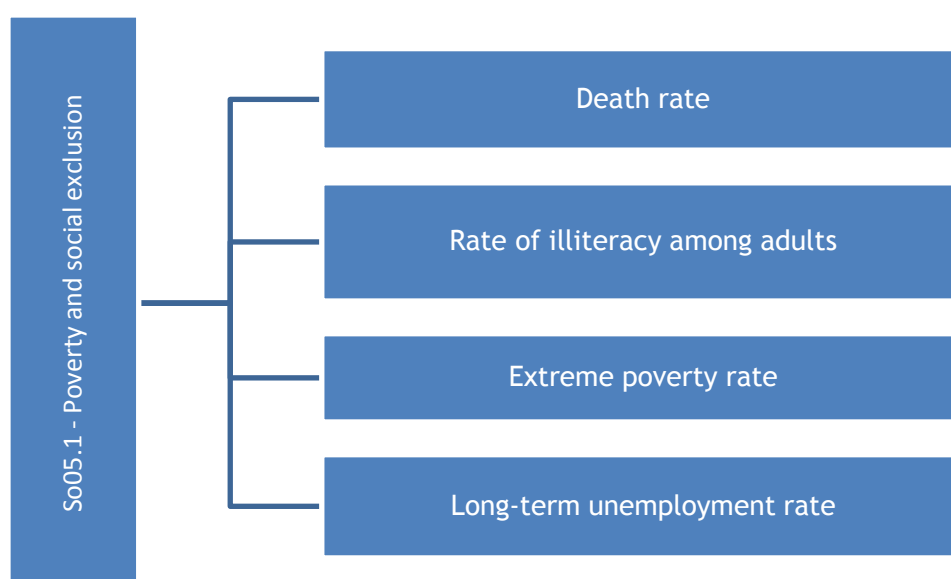
Extreme poverty in the Brazilian context refers to the percentage of people in the overall population with a per capita household income below the extreme poverty (or indigence, or misery) line. The extreme poverty line considered in this indicator is an estimate of the value of a basic food package with the minimum calories required to adequately supply a person, based on recommendations from FAO and WHO.<sup>66</sup>

Poverty and social exclusion are dynamic social factors that when marginalised, conflict with the fundamental rights of human beings and, therefore, should be monitored. In this study, such an area focus will be monitored by four indicators: mortality rate, rate of illiteracy among adults, rate of individuals living below the poverty line, and long-term unemployment rate.

<sup>64</sup>IOC. *Technical Manual on Olympic Games Impact Study – 5<sup>th</sup> Edition – Post-Vancouver 2010 Winter Games*, 2012.

<sup>65</sup>IBGE (Instituto Brasileiro de Geografia e Estatística), PME (Pesquisa Mensal de Emprego) - [www.ibge.gov.br/home/estatistica/indicadores/trabalhoerendimento/pme\\_nova/defaulttab2.shtml](http://www.ibge.gov.br/home/estatistica/indicadores/trabalhoerendimento/pme_nova/defaulttab2.shtml)

<sup>66</sup> Instituto de Pesquisa Econômica Aplicada (IPEA) - <http://www.ipeadata.gov.br/>



Indicator	Description
<b>Death rate</b>	This indicator aims to measure the number of deaths per thousand inhabitants.
<b>Rate of illiteracy among adults</b>	This indicator aims to measure the rate of adults who cannot read and write a simple note in the language they know, in relation to the total number of people in the same age group.
<b>Extreme poverty rate</b>	This indicator aims to measure the rate of people in the overall population with per capita household income below the poverty line.
<b>Long-term unemployment rate</b>	This indicator aims to measure the rate of people unemployed for a long period, in relation to economically active persons.

## Results

In 2010, the mortality rate was 7.9 percent per thousand live births in the state of Rio de Janeiro. Among the population considered adult, 15 years or older, 4.3 percent was considered illiterate, for example, with no skills to read or write a simple note in Portuguese. During the same period, 25.9 percent of families in the state had no income exceeding half the minimum wage per person.

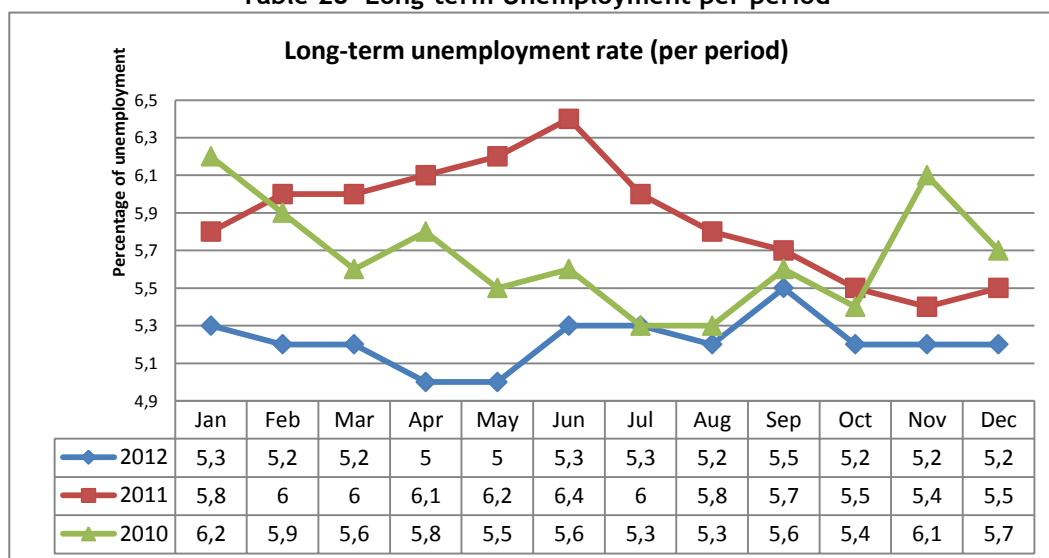
The percentage of people in the overall population with a per capita household income below the extreme poverty line is falling: 4.25 percent in 2007, 4.01 percent in 2008, and 3.72 percent in 2009.

Table 27 Poverty and Social Exclusion

Indicator	Period							Source
	2007	2008	2009	2010	2011	2012	2013	
Mortality Rate	-	-	-	7,9%	-	-	-	Ministry of Health
Rate of Illiteracy Among Adults	-	-	-	4,3%	3,7%	-	-	Ministry of Education
Rate of Individuals Living Below the Poverty Line	4,25%	4,01%	3,72%		-	-	-	IPEA

The unemployment rate changed little in 2010, staying between five and six percent, and was reduced during the months in which the Carnival, Easter, and Christmas holidays took place, due to an increased absorption of the temporary labour market<sup>67</sup>.

Table 28 Long-term Unemployment per period



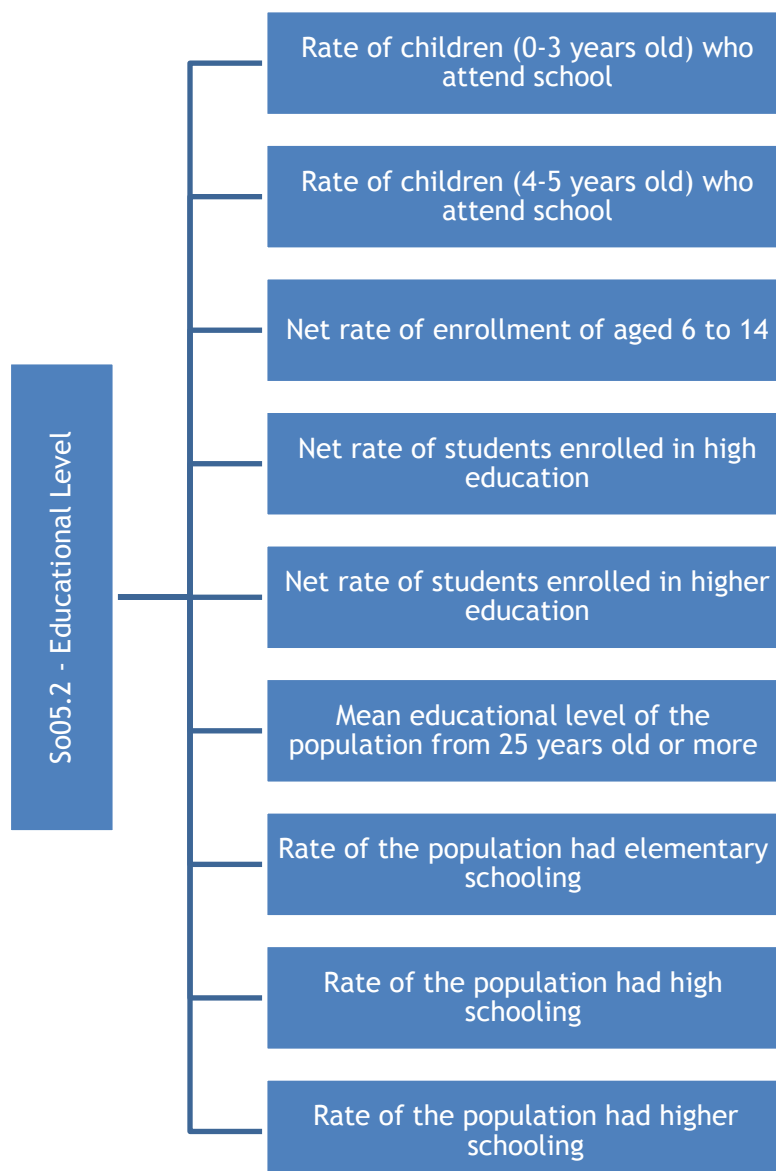
Source: PME (Pesquisa Mensal de Emprego), IBGE, 2013

<sup>67</sup>IBGE.

## So05.2 Educational Level

### Purpose

The purpose of this focus area is to analyse the educational framework in both the state of Rio de Janeiro and Brazil's Southeast region. The analysis will be carried out by monitoring nine different indicators. The first and second indicators will monitor the percentage level relating to early childhood education. The third, fourth, and fifth indicators will monitor the enrolment rates in elementary, high, and higher education levels, respectively. The sixth will monitor the average education of the population above 25 years of age. The last three indicators will present data from the Southeast region only, showing the percentage of the population with elementary, high, and higher education levels.





Indicator	Description
<b>Rate of children (0-3 years old) who attend school</b>	This indicator aims to measure the rate of children (0-3 years old) enrolled in schools.
<b>Rate of children (4-5 years old) who attend school</b>	This indicator aims to measure the rate of children (4-5 years old) enrolled in schools.
<b>Net rate of enrolment of children aged 6 to 14</b>	This indicator aims to measure the rate of children (6-14 years old) enrolled in schools.
<b>Net rate of students enrolled in high education</b>	This indicator aims to measure the ratio of the total enrolment of students at the age expected to be attending a certain level, and the total general population of the same age.
<b>Net rate of students enrolled in higher education</b>	This indicator aims to measure the ratio of the total enrolment of students at the age expected to be attending a certain level and the total population of the same age.
<b>Mean educational level of the population from 25 years old or more</b>	This indicator aims to measure the average years of schooling in the population 25 years or more.
<b>Rate of the population that have had elementary schooling</b>	This indicator aims to measure the ratio of the population (6-14 years old) who has had elementary schooling.
<b>Rate of the population with high schooling</b>	This indicator aims to measure the ratio of the population who have had high schooling (end level of basic education regular, lasting at least three years).
<b>Rate of the population with higher schooling</b>	This indicator aims to measure the ratio of the population had higher schooling.

In Brazil, children should be guaranteed free basic education from ages 4 to 17 years, sub-categorised into pre-school, elementary and high school, and including free, specialised schooling attendance for students with disabilities.<sup>68</sup>

## Results

The source for this indicator was the *Education Yearbook of the Ministry of Education*; available data relates to 2011.

During that period, 28.29 percent of children aged 0 to 3 years, and 85.16 percent aged 4 to 5 years, were attending school. The net rate of enrolment between 6 and 14 years was 91 percent; in high school it was 50.91 percent and, for higher education, it was 16.4 percent. However, the average schooling statistics of the population aged 25 years or older is presented in an 8.5-year study.<sup>69</sup>

The expansion of education policies at the national level provided the Southeast region with 55 percent of its population having an elementary school education in 2011; 17.1 percent had a high school education and 13.2 percent had a higher education<sup>70</sup>.

<sup>68</sup> Law N° 12.796 / 2013: Amends Law n. 9394 of 20 December 1996 laying down guidelines and bases for national education, to provide for the training of education professionals and other measures; Lei N° 11.700 / 2008: Adds item X to the chapeau of Art. 4 of Law 9,394, December 20, 1996, to secure vacancy in the kindergarden, public school, or elementary school nearest the residence to every child from the age of four.

<sup>69</sup>Ministry of Education.

<sup>70</sup>IBGE.

**Table 29 Education indicators, from 2007 to 2011**

Indicator	Period				
	2007	2008	2009	2010	2011
Rate of children (0 to 3 years old) who attend school (1)	24.76%	23.68%	23.32%	-	28.30%
Rate of children (4 to 5 years old) who attend school (1)	78.39%	82.10%	82.68%	-	85.20%
Net rate of enrolment of aged 6 to 14 (1)	88.67%	88.16%	90.44%	-	91,90%
Net rate of students enrolled in high education (1)	55.48%	54.81%	51.90%	-	50,90%
Net rate of students enrolled in higher education (1)	17.40%	18%	18.50%	-	16,40%
Mean educational level of the population from 25 years of age or older (1)	8.1	8.2	8.3	-	8,5
Rate of the population that had elementary schooling (2)	NA	NA-	NA	NA	55%
Rate of the population that had high schooling (2)	NA	NA-	NA	NA	17,10%
Rate of the population that had higher schooling (2)	NA	NA-	NA	NA	13,20%

NA: not available.

Source: (1) *Ministry of Education (MEC), Education Yearbook.*

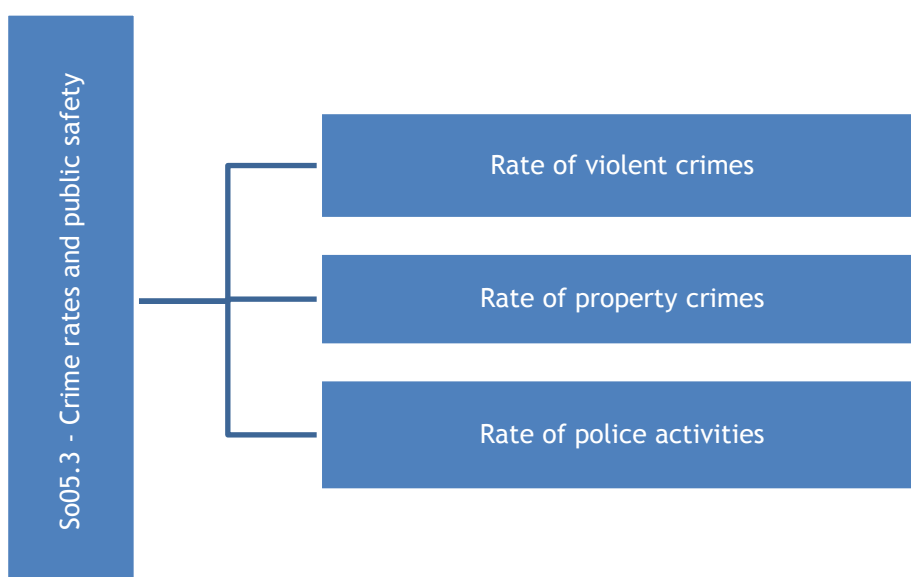
(2) IBGE, 2013

### So05.3 Crime Rates and Public Safety

#### Purpose

The purpose of this focus area is to monitor the incidence of crime in the state of Rio de Janeiro. Data source is the Public Safety Institute (ISP) that since 1999, “helps the Security Department of the state in the implementation of public policies, through research projects and informative analysis, and ensures democratic participation of society in the construction of these policies”<sup>71</sup>. The statistics of crime and public safety presented by the ISP seek to analyse the problems that affect the population the most, and to evaluate the performance of security actions in the state.

<sup>71</sup> ISP.



Indicator	Description
<b>Rate of violent crimes</b>	This indicator aims to measure the percentage of violent crimes, which includes murder, bodily harm followed by death, robbery, attempted murder, aggravated assault, and rape.
<b>Rate of property crimes</b>	This indicator aims to measure the percentage of property crimes, which includes burglary to a commercial establishment, residence burglary, vehicle theft, cargo theft, passer by robbery, collective robbery, bank robbery, theft of ATM, mobile device theft, burglary by driving the victim to serve in a financial institution, vehicle theft, extortion through kidnapping, extortion, robbery with momentary deprivation of liberty and embezzlement.
<b>Rate of police activities</b>	This indicator aims to measure the percentage of police activities encompassing seizure of drugs, weapons seized, arrest of a child/adolescent, vehicle recovery and comply with an arrest warrant.

## Results

Table 30 Shows the results for the *crime rates and public safety* focus area

Table 30 Crime rates and public safety indicators, from 2007to 2012

Crime Rates and Public Safety	Period					
	2007	2008	2009	2010	2011	2012
<b>Rate of violent crimes</b>	4,4%	5,1%	5,7%	6,8%	7,0%	7,3%
<b>Rate of property crimes</b>	59,9%	75,7%	75,1%	75,1%	73,1%	70,6%
<b>Rate of police activities</b>	17,9%	19,2%	19,1%	18,2%	19,9%	22,0%

Source: Own elaboration based on data from ISP, 2013

The percentage of violent crimes rose in the state of Rio de Janeiro between 2007 and 2012. This was due principally to the rise in the reported cases of rape, as well as increases in cases of bodily harm and murder. According to the information source, the increase in rape reports for 2012 is due to a greater willingness of victims to report attacks. There were significant fluctuations in the percentage of property crimes between 2007 and 2012. It increased considerably between 2007 and 2008, remained stable between 2008 and 2010, and decreased in the interval of 2010 and 2012. In the first interval, this increase could be a result of the growing number of the following: passer by robberies, and bank, cell phone, and driving the victim's to financial institutions robberies, vehicles theft, extortion through kidnapping and with momentary deprivation of liberty, and larceny. In the second interval there was a slight drop in all indicators included in the analysis of crime and police activities explaining a relative stability. In the third, the significant growth of robbery of commercial establishment and ATMs, extortion through kidnapping and momentary deprivation of liberty, and racketeering were offset by significant declines in the number of pedestrian robbery, burglary in buses and theft of mobile devices, in addition to vehicle thefts.

The high percentage of police activities, which occurred between 2007 and 2009 refer to the growing number of drug seizures, vehicle recovery and seizure of children/adolescents. The decrease between 2009 and 2010 is related to the decreased seizures of drugs and weapons, and vehicle recovery. The growth between 2010 and 2012 was due to the optimisation of police activities in the seizure of drugs and vehicle recovery.

The Pacifying Police Units (UPPs) are public safety police and a result from a set of government strategies, begun in 2008, to "consolidate the state control over communities, under the strong influence of openly armed crime, and return to the local population the necessary conditions for the exercise of full citizenship".<sup>72</sup> Currently, there are 33 UPPs working in 57 communities. However, more studies are needed to establish a consistent correlation between the action of the UPPs and crime rates.

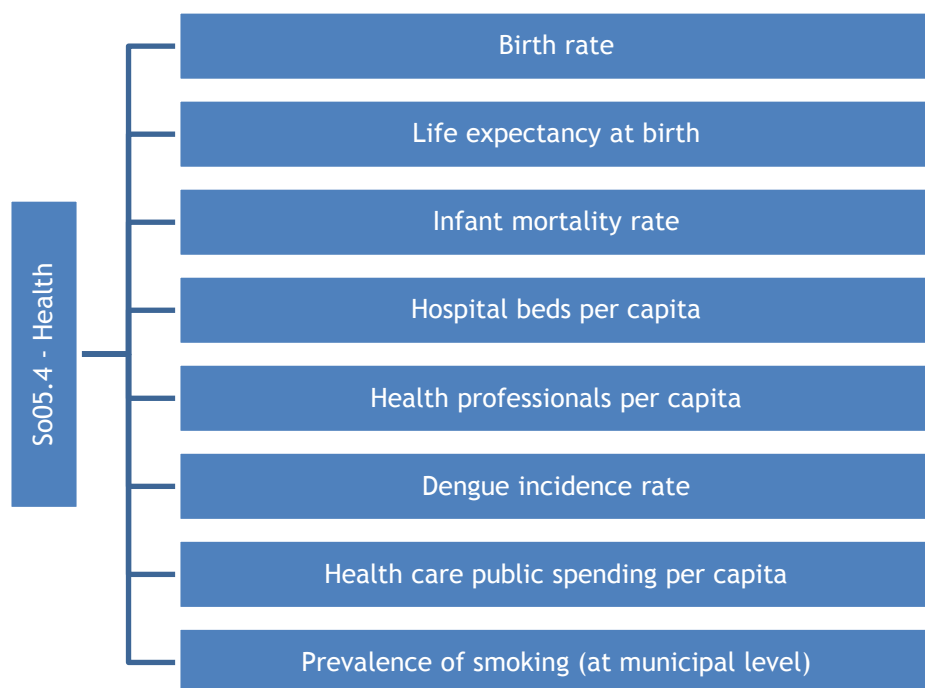
## **So05.4 Health**

### **Purpose**

The purpose of this focus area is to monitor the health quality in the state and municipality of Rio de Janeiro, and the federal sphere. This process will be conducted from eight indicators that are best suited to the Brazilian context. Namely: birth rate, life expectancy at birth, the infant mortality rate, percentage of hospital beds per capita, percentage of health professionals per capita and the dengue fever incidence rate in the state of Rio de Janeiro; the expenditure of the Ministry of Health with health care per capita at the federal level; and the prevalence of smoking at the municipal level. Analyses occur at different levels due to data availability from the competent agencies.

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<sup>72</sup>ISP.



Indicator	Description
<b>Birth rate</b>	Number of live births per 1 thousand inhabitants, at state level.
<b>Life expectancy at birth</b>	Number of years of age expected, at state level.
<b>Infant mortality rate</b>	Number of child deaths (under 1 year old) per 1.000 born alive, at state level.
<b>Hospital beds per capita</b>	Amount of hospital beds per 1 thousand inhabitants, at state level.
<b>Health professionals per capita</b>	Number of health professionals per 1 thousand inhabitants, at state level.
<b>Dengue incidence rate</b>	Number of dengue cases diagnosed per 100.000 inhabitants, at state level.
<b>Public spending in health actions and services, per capita</b>	Spending of the federal, state, and municipal government in actions and services of health care per capita (in BRL R\$).
<b>Prevalence of smoking (at municipal level)</b>	Percentage of adults (18 years or older) smokers, at municipal level.

## Results

Table 31 Health indicators, from 2007 to 2012

Indicator	Period					
	2007	2008	2009	2010	2011	2012
Birth rate (p/1,000)	14.3	13.9-	13.7%	13.7%	13,8	NA-
Life expectancy at birth	73.1	73.5	73.8	74.2	NA	NA-
Infant mortality rate (p/1,000)	15.2	14.8	14.5	14.3	14.1	NA
Hospital beds per capita (p/1,000)	3.23	3.20	3.17	3.09	3.01-	2.93-
Health professionals per capita (p/1,000)	3.37	3.40	2.71	3.52	NA	NA
Dengue incidence rate (p/100,000)		1,242.40	44.81	177.11 168.97	981.74	1,100.65-
Health care government spending, per capita	R\$ 495.45	555.76	R\$ 639.35	R\$ 703.43	R\$ 805.63	R\$ 856.61
Prevalence of smoking	NA	NA	13.5%	13.3%	14.1%-	NA

NA: not available on the moment of the data gathering.

Source: Ministry of Health, 2013<sup>73</sup>

In Brazil, the Ministry of Health (MS) has the function of providing conditions for the promotion, protection and recovery of population health, reducing diseases, controlling endemic and parasitic diseases, and improving health surveillance. The health care public spending per capita has nearly doubled between 2007 and 2012.<sup>74</sup>

The state of Rio de Janeiro suffered a significant peak of dengue incidence rate in 2008, in 2011 and 2012, out of every 100,000 inhabitants, approximately 1,000 of them were infected by *Aedes aegypti*, and it was considered an epidemic case. In order to reduce these rates, the state government launched the *Rio Contra Dengue* aiming at educating the public about ways to prevent infection, what the disease symptoms are, and the medical attention needed in cases of suspected infection.

Considering the actions and preventive programmes performed by the public sphere, it is worth noting a critical health care issue, which is the prevalence of smokers in the city of Rio de Janeiro. Both the state and the city are mobilising to expand services for the control and prevention of smoking. At a state level, for example, Act No. 5517 was enacted in 2009, aimed at protecting the society from the dangers of passive smoking, and preserving citizens' health<sup>75</sup>.

<sup>73</sup> Ministry of Health, available on <<http://www2.datasus.gov.br/>>, accessed on Dec.203

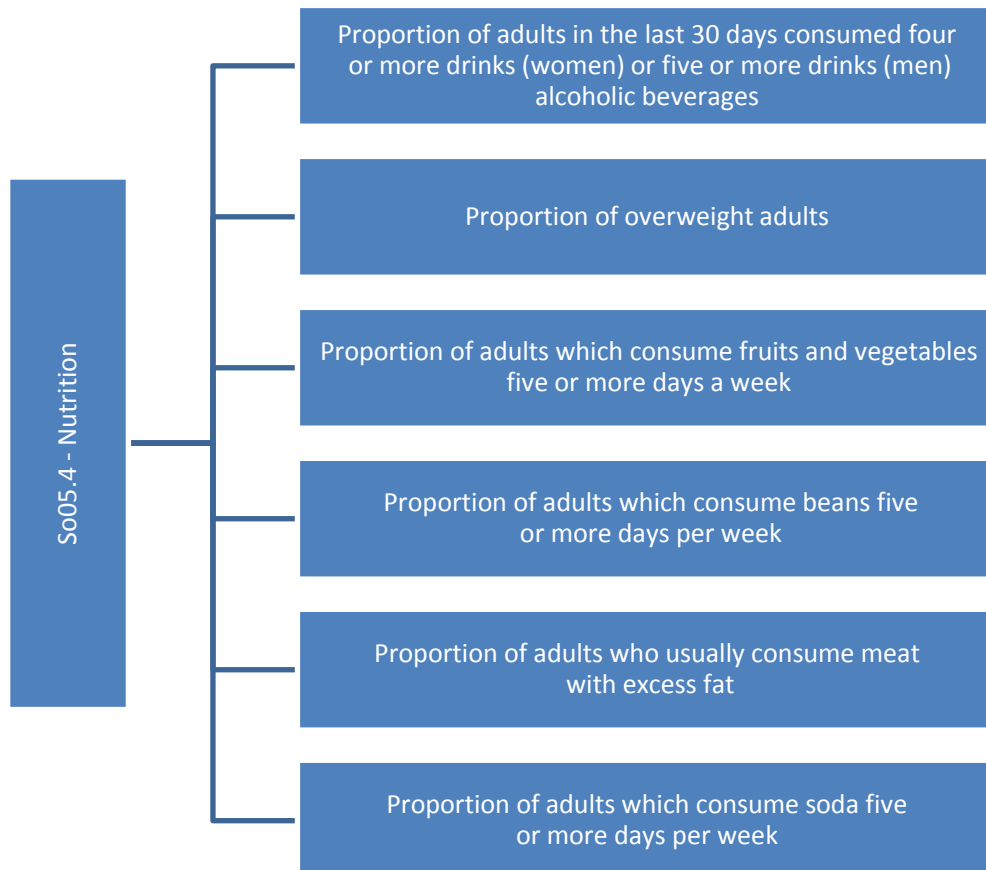
<sup>74</sup> Ministry of Health.

<sup>75</sup>State Department of Health.

## So05.5 Nutrition

### Purpose

The purpose of this focus area is to evaluate the intake of food and nutrients and quality of food provided by the Municipality of Rio de Janeiro. It will be analysed based on six indicators, namely: percentage of adults with excessive alcohol consumption, percentage of overweight adults, daily per capita proportion of calories from fruits and vegetables in the total calories of the diet, and daily proportion per capita of calories from proteins, carbohydrates, and lipids in the total calories of the diet.



Indicator	Description
Proportion of adults in the last 30 days who consumed four or more drinks (women) or five or more drinks (men), alcoholic beverages	This indicator aims to measure the proportion of adults (18 years of age or older) in the last 30 days who consumed four or more drinks (women) or five or more drinks (men) alcoholic beverages.
Proportion of overweight adults	This indicator aims to measure the proportion of overweight (body mass index greater than, or equal to, 25 kg/m <sup>2</sup> ) adults (18 years of age or older).
Proportion of adults which consume fruits and vegetables five or more days a week	This indicator aims to measure the proportion of adults (18 years of age or older), which consume fruits and vegetables five or more days a week.
Proportion of adults which consume beans five or more days per week	This indicator aims to measure the proportion of adults (18 years of age or older), which consume beans five or more days per week.

<b>Proportion of adults who usually consume meat with excess fat</b>	This indicator aims to measure the proportion of adults (18 years of age or older) who usually consume meat with excess fat.
<b>Proportion of adults which consume soda five or more days per week</b>	This indicator aims to measure the proportion of adults (18 years of age or older), which consume soda five or more days per week.

The Organic Law on Food and Nutritional Security<sup>76</sup> establishes the right of everyone to have regular, and permanent, access to quality food in sufficient quantity, without compromising access to other essential needs, based on health promoting food practices that respect cultural diversity and, which are environmentally, culturally, economically, and socially sustainable.<sup>77</sup>

In the Municipality of Rio de Janeiro, the Institute for Nutrition Annes Dias (INAD) is the agency responsible for issues related to food and nutrition. It advances technical supervision and human resources support, the development and implementation of educational materials and various health promotion actions, promotes healthy eating, monitors the nutritional status and dietary profile of the population, and executes the design and evaluation of nutritional interventions<sup>78</sup>.

## Results

**Table 32 Nutrition indicators**

Indicator	Period					
	2007	2008	2009	2010	2011	2012
Proportion of adults in the last 30 days which consumed four or more drinks (women) or five or more drinks (men) alcoholic beverages	-	-	21%	18,6%	18,2%	18,9
Proportion of overweight adults	-	-	50,4%	52,70%	49,6%	52,4%
Proportion of adults which consume fruits and vegetables five or more days a week	-	-	31,9%	29,30%	30,3%	32,5%
Proportion of adults which consume beans five or more days per week	-	-	71,7%	73,6%	73,5%	72,0%
Proportion of adults who usually consume meat with excess fat	-	-	26,7%	27,5%	31,5%	28,8%
Proportion of adults which consume soda five or more days per week	-	-	29,2%	32,2%	35,1%	28,8%

Source: Ministry of Health, 2013

We observe that the proportion of adults who consumed alcoholic drinks decreased in the city of Rio de Janeiro during the considered period. Actions like the implementation of “Lei Seca”<sup>79</sup>, which was implemented in 2008 (prohibiting alcohol consumption among drivers) could have influenced the fluctuation of the data.

<sup>76</sup> Federal Law 11.346 / 2006

<sup>77</sup> Chmielewska, Danuta; Souza, Darana *Food Security Policy Context in Brazil*. International Policy Centre for Inclusive Growth. Brasília, 2011. Available on: [www.ipc-undp.org](http://www.ipc-undp.org). Accessed on 09/08/2013.

<sup>78</sup> Municipal Health Department of Rio de Janeiro.

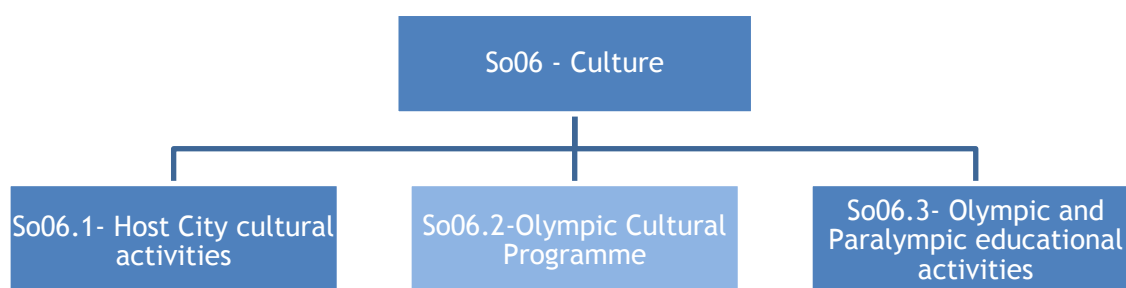
<sup>79</sup> Federal Law nº 11.705, which modifies the Brazilian Transit Code.



## So06 Culture

Culture is one of the three pillars of the Olympic movement as stated in the Fundamental Principles of Olympism in the Olympic Charter<sup>80</sup>: "Olympism is a philosophy of life, exalting and combining in a balanced whole the qualities of body, will and mind. Blending sport with culture and education, Olympism seeks to create a way of life based on the joy of effort, the educational value of good example, social responsibility and respect for universal fundamental ethical principles."

By organising the Olympic and Paralympic Games, the Host City accepts the responsibility to stage sporting events and also to promote art and culture. The results of this thematic topic show the evolution of the exchange between the world of sports and cultural activities, from the analysis of three focus areas: Host City Cultural Activities, Olympic Cultural Programme and Olympic, and Paralympic Educational Activities.



In recent years, the Brazilian Federal Government has actively developed culture through a series of public policies, which democratise the use of cultural property, as well as access to public resources devoted to culture. In this sense, the federal government through the Ministry of Culture has adopted structuring long-term cultural policies, overlapping the government leaders' period in office. Some examples are: the National Culture System (SNC), Cultural Information and Indicators System (SNIIC), and the National Culture Plan (PNC). The PNC represents the largest instrument of the SNC and its purpose is the planning and implementation of mid- to long-term public policies. In 2005, the year of the 1st National Conference on Culture, participating municipalities signed a memorandum of understanding with the SNC. Some of the points agreed upon included the creation of cultural councils, cultural municipal funds, and municipal plans for culture<sup>81</sup>.

This process was resumed in 2012 with a new perspective, providing technical assistance to states and municipalities, enabling them to execute their plans aligned with the guidelines of the National Plan. The local (municipal) and regional (state) Cultural Plans work as an instrument of agreement involving mayors/governors, other public officials, artists' community, cultural producers, and civil society. Currently, all states of the

<sup>80</sup> IOC, 2013. Olympic Charter. Available on: [http://www.olympic.org/Documents/olympic\\_charter\\_en.pdf](http://www.olympic.org/Documents/olympic_charter_en.pdf)

<sup>81</sup> Text from the Municipal Cultural Plan of Rio de Janeiro wordpress, available on: <http://planomunicipaldecurturario.wordpress.com/oque/>

federation take part in this project and 20 municipalities, including Rio de Janeiro, receive training to develop their plans.

State and municipal Cultural Plans are in preparation; several meetings have been held since 2009 to create a preliminary diagnosis on cultural development and local demands. Currently, the guidelines and strategies resulting from this diagnosis are in the public consultation phase, to build democratic and participatory Cultural Plans<sup>82</sup>.

Another action taken by the MinC (Ministry of Culture) that deserves mention is the Cultural Points, defined as initiatives in cultural production and artistic training in low-income communities in the country, through the Programme *Mais Cultura* (More Culture). Between 2005 and 2011, 3,670 Cultural Points were deployed throughout the country. The city of Rio de Janeiro recorded 284 cultural points in 2012.

## So06.1 Host City Cultural Activities

### Purpose

This focus area aims to demonstrate the dynamism, and evolution, of cultural events performed in the city of Rio de Janeiro.

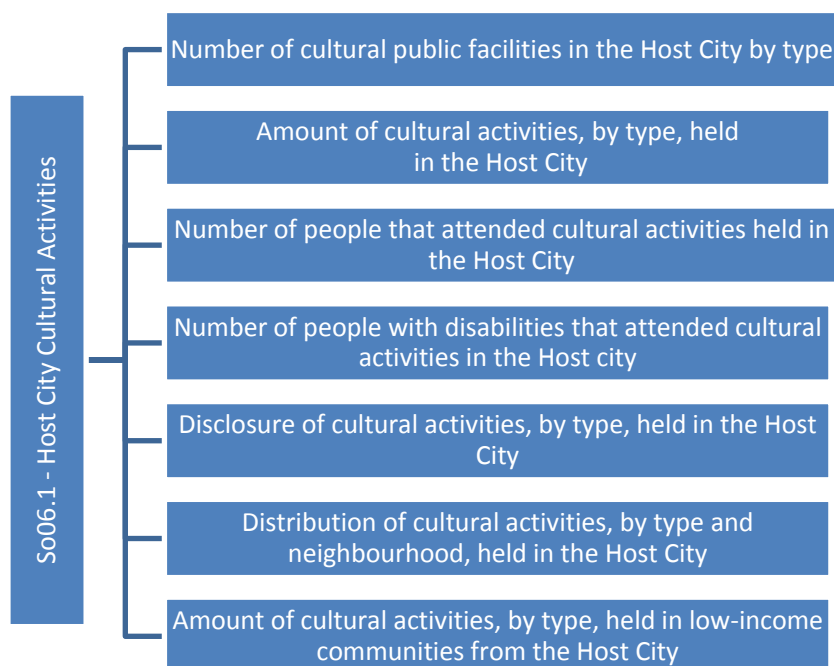
Cultural events will cover various types of leisure activities, which were selected based on the actions promoted and managed by the cultural entities from the state and city of Rio de Janeiro. The cultural activities and infrastructure to be analysed are: dance, music, literature, visual arts, heritage and memory, circus, urban arts, popular, and audio-visual arts. From another perspective, the cultural elements to be monitored are: archives, libraries, theatres, cultural popular points<sup>83</sup> (*Arenas Cariocas*, *Lonas Culturais e Pontos de Cultura*), cinemas, cultural centres, museums, and the planetarium.

The results of this focus area will show the evolution of the promotion of art and culture in the Host City through the availability of the cultural infrastructure, as well as the local supply and demand for such events. It will be made analysing seven indicators, as follows.

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<sup>82</sup> Text from the Municipal Cultural Plano of Rio de Janeiro wordpress, available in: <http://planomunicipaldecurturario.wordpress.com/oque/>

<sup>83</sup> These programmes are developed to attend low income region and people.



Indicator	Description
Number of cultural public facilities in the Host City by type	Number of cultural public and private facilities in the Host City, by type.
	Number of cultural public and private facilities with basic accessibility premises in the Host City.
	Number of inhabitants per number of cultural facilities (per 100,000 inhabitants).
Amount of cultural activities, by type, held in the Host City	Number of cultural activities, by type, in the city of Rio de Janeiro.
Number of people that attended cultural activities, held in the Host City	Number of people that attended cultural activities in the city of Rio de Janeiro.
Number of people with disabilities that attended cultural activities, held in the Host City	Number of people with disabilities that attended cultural activities in the city of Rio de Janeiro.
Appropriate dissemination of cultural activities in the Host City, by type	Disclosure scale of cultural activities in the city of Rio de Janeiro.
Distribution of cultural activities, by type and neighbourhood, held in the Host City	Number of cultural activities, by type, in each neighbourhood of the city of Rio de Janeiro.
Amount of cultural activities, by type, held in low-income communities from the Host City	Number of cultural activities, by type, in different low-income communities of the Host City.

## Results

In February 2012, the Municipal Cultural Office of Rio de Janeiro started a process of Cultural Planning. The first step was to diagnose and collect information about the

infrastructure, services, production, and access conditions to culture<sup>84</sup>. Part of these data is included in the SNIIC, compiled by region or state<sup>85</sup>.

The first stage of this work included the gathering and diagnoses of information relating to infrastructure, services, production, and access conditions of culture.<sup>86</sup> Part of this data has already been included in the SNIIC, which are compiled by state or region.

It will be possible to monitor the suggested indicators, and to analyse the data, from the results that are being obtained for the creation of the Municipal Cultural Plan. The conclusion of the infrastructure mapping study, activities, and cultural demands of the city was planned for March 2013, according to City Hall schedule. The consulted data to date are preliminary to the conclusion of the study.

The documents consulted were extracted from the website of the Municipal Department of Culture, the website of the Municipal Cultural Plan<sup>87</sup> and the blog of the Municipal Cultural Plan.<sup>88</sup>

Data from the Municipal Department of Culture indicate a growth of 81 percent in the 2012 budget, compared to 2011, which demonstrates the relevance of culture to the city.

By analysing the data obtained, it can be said that the cultural offering is concentrated in a few regions of the city and is still very limited in deprived areas. In particular the Planning Areas (AP) three and five have a low supply of cinemas, theatres, museums, libraries, and cultural centres. These are precisely the most populated areas, concentrating more than half of the city's population (2,398,572 and 1,704,773, respectively).<sup>89</sup> On the map below all cultural facilities (private, municipal, and state) are divided by Planning Area.

Cultural activities held in municipal facilities, had a growing audience of around 31 percent compared to 2011, and 59 percent compared to 2010, totalling 1,322,375 spectators until October 2012. These numbers show an increase of offerings and possibly effective communication with the target audience

In the Strategic Plan of the Municipality of Rio de Janeiro (2013 to 2016) there are some cultural indicators to be monitored until 2016, such as the promotion of cultural activities and frequency in the cultural municipal infrastructure.

Access to data being gathered by the Municipal Department of Culture for the Cultural Municipal Plan of the city of Rio will be fundamental to the study of this focus area. So far, no official data was provided, apart from the public data found in websites and on blogs.<sup>90</sup>

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<sup>84</sup> SMC, 2012 - *Relatório de Gestão 2012*.

<sup>85</sup> MinC, 2010 - *Cultura em Números – 2a. edição – SNIIC*.

<sup>86</sup> Plano Estratégico da Prefeitura do Rio de Janeiro - 2013 a 2016

<sup>87</sup> <http://www.planomunicipaldecultura.com.br>

<sup>88</sup> <http://planomunicipaldecultuario.wordpress.com>

<sup>89</sup> IBGE 2010

<sup>90</sup> Secretaria Municipal de Cultura da Prefeitura da Cidade do Rio de Janeiro. Relatório de Gestão 2012.

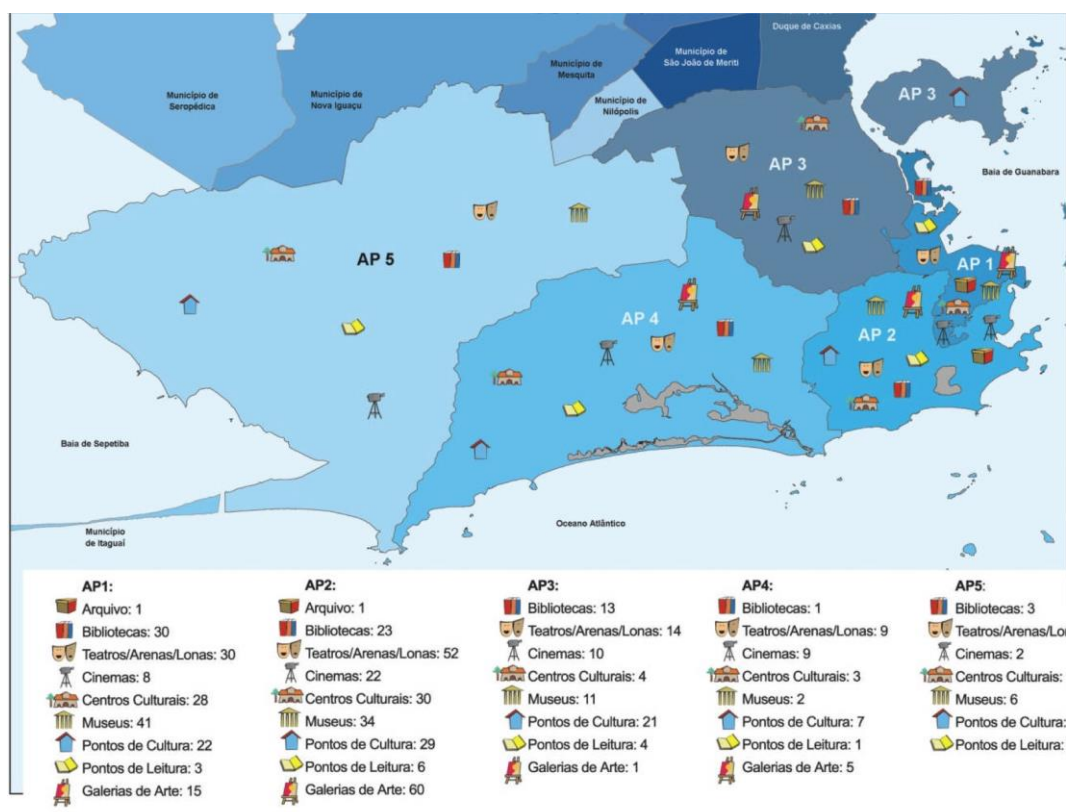


Figure 37 Map of Cultural Facilities in the City of Rio de Janeiro to Planning Areas

Source: SMC, 2012

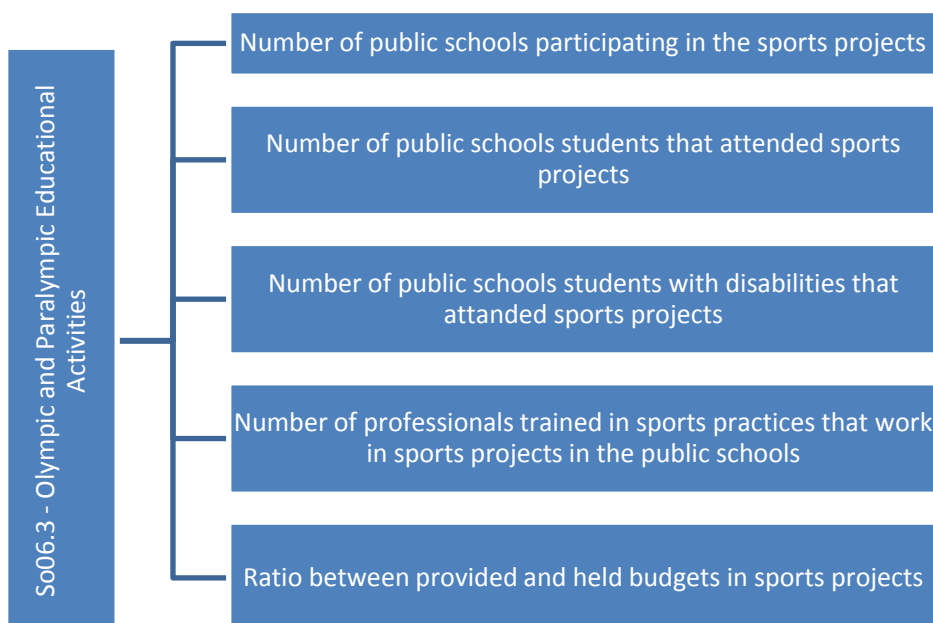
### So06.3 Olympic and Paralympic Educational Activities

#### Purpose

This thematic topic will portray the initiatives of Olympic and Paralympic activities in the area of sports and the like, promoted mainly in public schools in the city of Rio de Janeiro.

Usually, the organisation of the Olympic and Paralympic Games is accompanied by educational activities in the field of sports and other related topics, such as environmental protection, Olympic history, etc. These activities can reach different types of audiences in many ways, such as campaigns in schools, distribution of educational material, organised monitoring to watch the Games, among others.

The results of this focus area show the evolution of the exchange between the sports and activities spheres in public schools, through the analysis of five indicators.



Indicator	Description
Number of public schools participating in the sports projects	Number of public schools participating in sports projects in the city of Rio de Janeiro.
Number of public schools students that attended sports projects	Number of public school students covered by sports projects in the city of Rio de Janeiro.
Number of public schools students with disabilities that attended sports projects	Number of public school students with disabilities covered by public sports projects in the city of Rio de Janeiro.
Number of professionals trained in sports practices that work in sports projects in the public schools	Number of trained professionals who work in sports projects in public schools in the city of Rio de Janeiro.
Ratio between provided and held budgets in sports projects	Budget amount allocated to sports projects in the public schools of the city of Rio de Janeiro.
	Budget amount realised for the sports projects in the public schools of the city of Rio de Janeiro.

## Results

As informed by the Organising Committee Rio 2016™, the 2016 Education Programme, which will promote the Olympic and Paralympic values in the public schools of the Host City, is in its trial phase. Until the first half of 2013, the trial programme was implemented in 11 public schools, serving a total of 6,160 students. As for the training of professionals in sports practices, there are three trained professionals for each school, totalling 33 trained professionals who work in sports projects in public schools. The data about students with disabilities covered by the 2016 Education Programme, as well as data about the budget, were not obtained at this time.

The Host City has 1,076 schools in its public school system<sup>91</sup>. Currently, the trial programme reaches almost 1 percent of all schools. With the expansion of the programme, data from those indicators will be monitored and analysed.

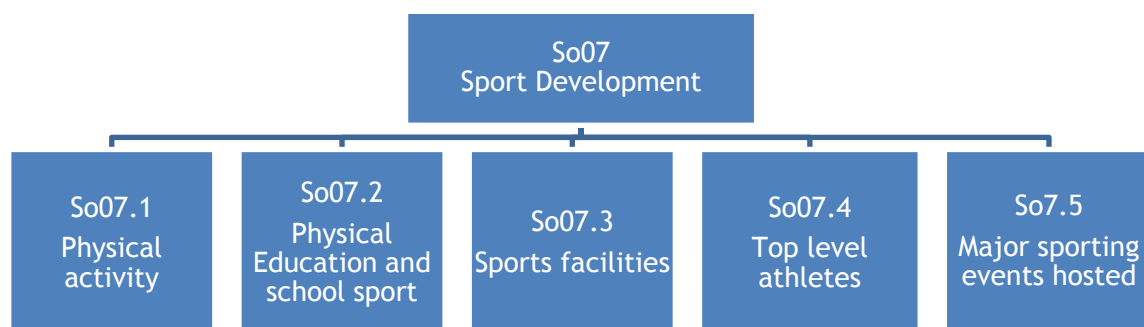
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<sup>91</sup> Education Municipal Council site, <http://www.rio.rj.gov.br/web/sme/educacao-emnumeros>

## So07 Sport Development

This thematic topic aims at monitoring, the conditions in which people can practice physical activities and participate in sports at the regional and national level, in order to assess how hosting the Games stimulate such activities, for the athletes and for the entire society.

It will be explain through five focus areas: physical activity, physical Education and school sport, sports facilities, top level athletes and major sporting events hosted in the region.



The Brazilian Constitution defines sports as a social right and determines that the State should offer it as part of a public policy<sup>92</sup>. Since the creation of the Ministry of Sport in 2003, the Brazilian government has developed many programs that reflect this guideline, promoting social inclusion through the structuring of sports education initiatives.

Known for decades as a soccer superpower, in 2010 the country adopted a new resolution to put Brazil among the top ten world sporting superpowers (starting with the 2016 Olympic Games). To reach this goal, new investment projects were put in place, according to the Ministry of Sport, such as the building of new training centres for various modalities, enhanced team preparation, professionalised sports management, and even the modification of high-performance legislation.

The latest large study on the country's sport conditions was done in 2003 by the IBGE, demanded by the Ministry of Sport, and published in 2006. It reflects a situation previous to our baseline, but it is the only study available with a wide, national level scope and it will be used in this baseline report to portray the focus areas **So07.2** and **So07.3**.

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<sup>92</sup>BRAZIL, 1988. Federal Brazilian Constitution (*Constituição Federal Brasileira*), article 27.



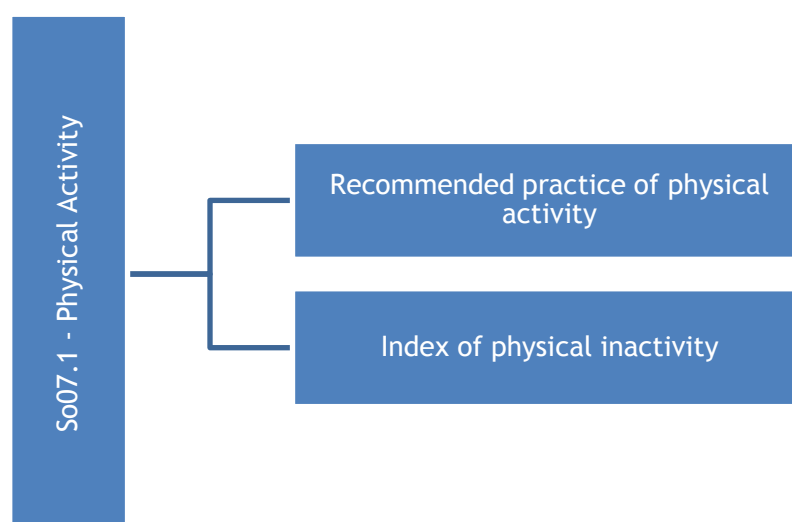
## So07.1 Physical Activity

### Purpose

This focus area has two objectives: assess the level of sports practiced in the city and region, and monitor its evolution over time.

The data was obtained through national research, conducted annually by the Ministry of Health, called Vigitel, since 2006. This research has been fulfilling its goal to monitor the frequency and distribution of the major determinants of Noncommunicable diseases (NCDs) by telephone survey. The data monitored in this report refers to the population over 18 years old, from 2007 to 2012.

According to the World Health Organization (WHO)<sup>93</sup>, a small set of risk factors accounts for the vast majority of NCDs deaths. Physical inactivity is among these factors, and Vigitel monitors the practice of physical activity, according to the following indicators that are used in this study:



Indicator	Description
Recommended Practice of Physical Activity	Proportion of adults who practice the recommended amount of physical activity in leisure time (1), by age, gender, and years of education.
	Proportion of adults who practice the recommended amount of physical activity in commuting (2), by age, gender, and years of education.
Index of Physical Inactivity	Proportion of physically inactive adults (3), by age, gender, and years of education.

(1) Physical activity in leisure time is considered:

The practice of physical activity of at least 150 minutes of mild or moderate intensity, per week; or, at least 75 minutes of physical activity per week of vigorous-intensity volume. Note: this indicator follows the changes in international recommendations (WHO, 2011), which no longer considers a minimum number of days per week for physical activity.

<sup>93</sup>WHO - <http://www.who.int/mediacentre/factsheets/fs355/en/>

(2) Physical activity in commuting is considered:

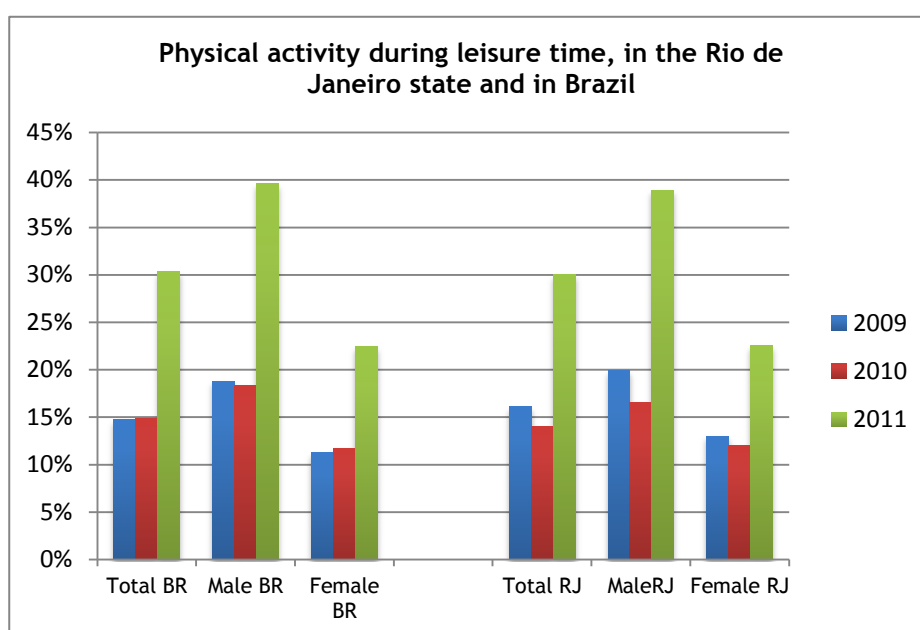
Individuals that go to work walking or biking, constituting at least 30 minutes in total, each way.

(3) Physical inactivity is considered:

Individuals who did not practice any physical activity during leisure time in the last three months, and who do not perform heavy physical exertion at work. Included were people who did not commute to work or to school on foot or by bicycle, for a minimum of 10 minutes each way by day, and not contribute to the heavy cleaning of their homes.

## Results

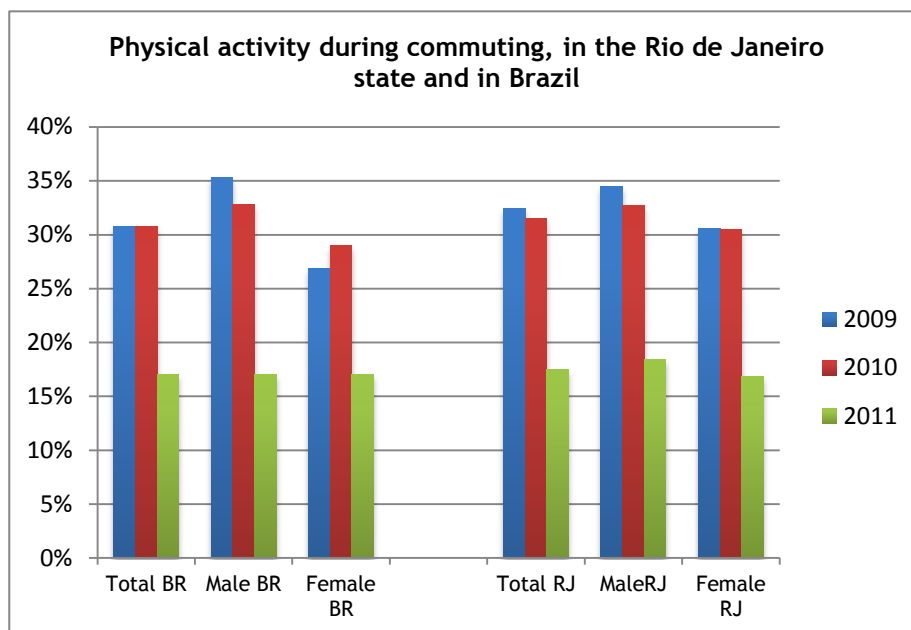
Both **Figure 38** and **Figure 39** represent the data of the Vigitel surveys, from 2009 to 2011.



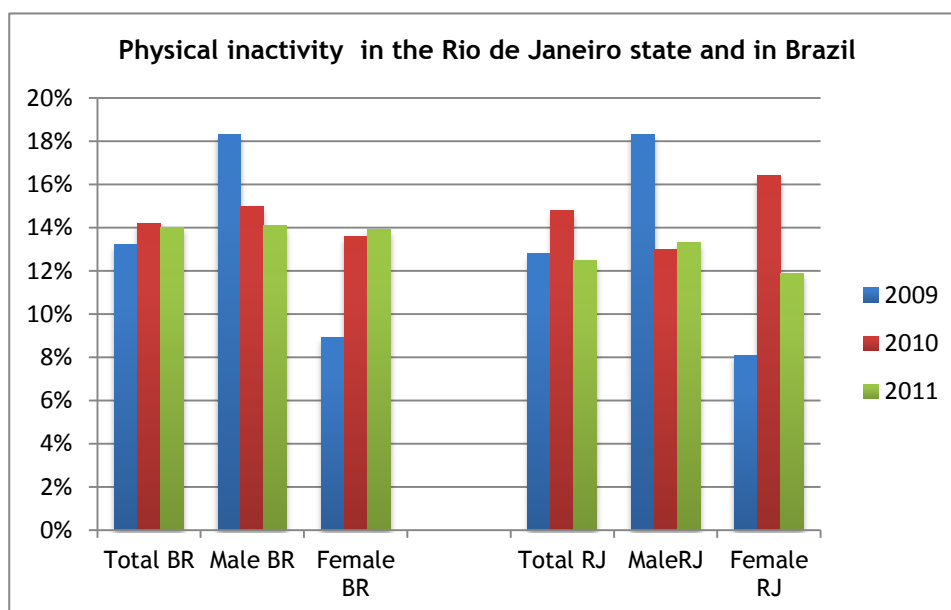
**Figure 38 Physical Activity During Leisure Time**  
Source: Ministry of Health, 2013

Note: that this indicator was modified in 2011, following the changes in international recommendations<sup>94</sup>, which no longer consider a minimum number of days per week for physical activity. With the change of calculation, this indicator is not comparable to previously published data of sufficient practice of physical activity during leisure time.

<sup>94</sup>WHO. <http://www.who.int/mediacentre/factsheets/fs355/en/>



**Figure 39 Recommended practice of physical activity, in the adult population, Brazil**  
Source: MS. Vigitel Surveys - 2009 to 2011



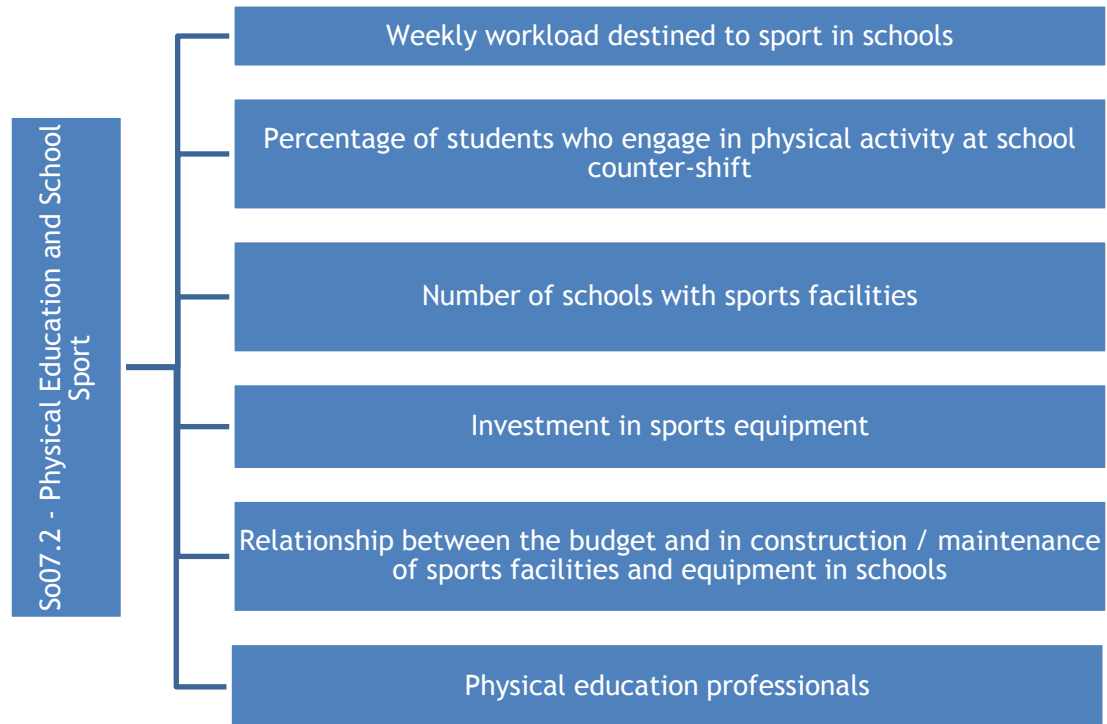
**Figure 40 Index of physical inactivity**  
Source: MS. Vigitel Surveys - 2009 to 2011

As a local initiative, we can highlight the *Rio em Forma Olímpico*, a municipal Programme created in 2009, aimed at improving access to sports practiced by offering free physical activity of high quality, with the support of qualified professionals, from Monday to Friday, across urban areas of the city of Rio de Janeiro. Currently, there are more than 24,000 people being assisted in 436 units.

## So07.2 Physical Education and School Sport

### Purpose

This focus area illustrates the importance given to physical education and extra-curricular sport in school, based on the premise that sport is an integral part of education. It assesses the role of schools in encouraging sport participation and the percentage of students who practice extra-curricular sports at school facilities.



Indicator	Description
Weekly workload destined to sport in schools	Number of weekly hours devoted to sports in elementary schools.
	Number of weekly hours devoted to sports in middle schools.
	Number of weekly hours devoted to sports in high schools.
Percentage of students who engage in physical activity at school counter-shift	Percentage number of students who practice physical activity in elementary schools.
	Percentage number of students who practice physical activity in middle schools.
	Percentage number of students who practice physical activity in high schools.
Number of schools with sports facilities	Number of schools with sports facilities (swimming pool, indoor court, court discovery).
	Percentage number of elementary schools with sports facilities (swimming pool, indoor court, court discovery).
	Percentage number of middle schools with sports facilities (swimming pool, indoor court, court discovery).
	Percentage number of high schools with sports facilities (swimming pool, indoor court, court discovery).
Investment in sports equipment	Investment in sports equipment for Physical Education.
Relationship between the budget and in construction/ maintenance of sports facilities and equipment in schools	Budgeted amount for the construction and maintenance of sports facilities and equipment in schools.
	Amount realized for the construction and maintenance of sports facilities and equipment in schools.
Professionals in physical education	Investment in Physical Education professionals' training.
	Number of Physical Education professionals hired for elementary school.
	Number of Physical Education professionals hired for middle schools.
	Number of Physical Education professionals hired for high schools.

## Results

For this report, although the team has been in contact with the Ministries of Sport and Education, the data could not be gathered, because it has not yet been published. That is the reason why the proposed indicators for assessing this focus area in this report will have to be revalidated in following reports.

Nonetheless, some results are presented as first available outcomes, accounting for current government programmes under implementation.

### 1. More Education Programme (*Programa Mais Educação*), federal level:

The More Education Programme funds sports infrastructure and aims at increasing “the educational offer in public schools through optative activities grouped together in macro fields such as pedagogical monitoring, the environment, sports and leisure, human rights, culture and the arts, digital culture, prevention and promotion of health, communications education, scientific education and economic education. It consists in an inter-sectorial initiative between the public educational and social policies, contributing both to the decrease in educational inequalities and appreciation of

Brazilian cultural diversity”<sup>95</sup>. Activities began early in 2008. In 2011, a total 14,995 schools with a total of 3,067,644 students adhered to the programme.

For this programme, the following amount of money was invested in sports kits and supervision costs, amounting to US\$ 100,355,378,82 from 2008 to 2011:

Table 33 Investments in Sports Kits Through the more Education Programme in Brazil

Investment	2008	2009	2010	2011	2012
Sports kits	R\$ 1,794,866	R\$ 11,594,220	R\$ 15,983,243	R\$ 30,815,644	R\$ 114,929,013
Supervision cost	R\$ 199,680	R\$ 1,783,560	R\$ 2,135,820	R\$ 192,900	R\$ 12,327,936
US\$ value against Real in the year	2,313	1,752	1,659	1,865	2,0296
TOTAL US\$ (1)	862,320	7,635,719	10,921,677	18,235,155	62,700,379

(1): The Candidature File for Rio de Janeiro to host the 2016 Olympic and Paralympic Games states that among the specific initiatives is “investment of more than US\$ 400 million between 2009 and 2016.

Source: Rio 2016<sup>TM</sup>, 2013

## 2. Second Half Programme (*programa Segundo Tempo*), federal level:

The Second Time aims at democratizing the access to the practice and culture of sport to promote an integral development of children and teenagers, as a factor of citizenship training and improving the quality of life, primarily in areas of social vulnerability<sup>96</sup>. The educational sports units aim at filling students' free time and offer, in the after-school hours, sporting activities under the guidance of coordinators and instructors.

The programme has grown from 1,081,024 children and youth participants in 2011 to 1,867,324 in 2012. From 2009 to 2016, PST will grow from 1 to 3 million children and youth.<sup>97</sup>

## 3. Programme of Construction of Sports Courts for Schools (*Programa Quadras Esportivas*), federal level:

This programme started in 2011 and aims at improving the physical infrastructure for pedagogical, recreational, cultural, and sports activities in public elementary and middle schools with standardised projects for the construction and covering of courts.

The proposal is to benefit 10,116 schools by 2014, 6,116 of them will have new covered courts and the remaining 4,000 will cover existing courts. Total investment will be of R\$ 4.1 billion (approximately, US\$ 2,014,643,015). The programme considers schools with a total of 500 students or more.

## 4. Suderj Project, state level:

The programme aims at enabling the use of public leisure spaces in the cities of Rio de Janeiro State. The programme benefitted more than 300,000 people in 2012, in more than 1,000 sites throughout the State.

## 5. Student Games (*Jogos Estudantis*), municipal level:

<sup>95</sup> Comitê Rio 2016<sup>TM</sup>. Available in <<http://www.rio2016.org/transparencia/documentos>>

<sup>96</sup> Sport Ministry website - <http://portal.esporte.gov.br/snee/segundotempo>

<sup>97</sup> Data received from the Comitê Rio 2016<sup>TM</sup>.

By annually promoting Student Games, the city Secretariat of Education bets on countless learning possibilities that sport brings in terms of developing independence, self-confidence, cooperation, respect, solidarity, and responsibility.

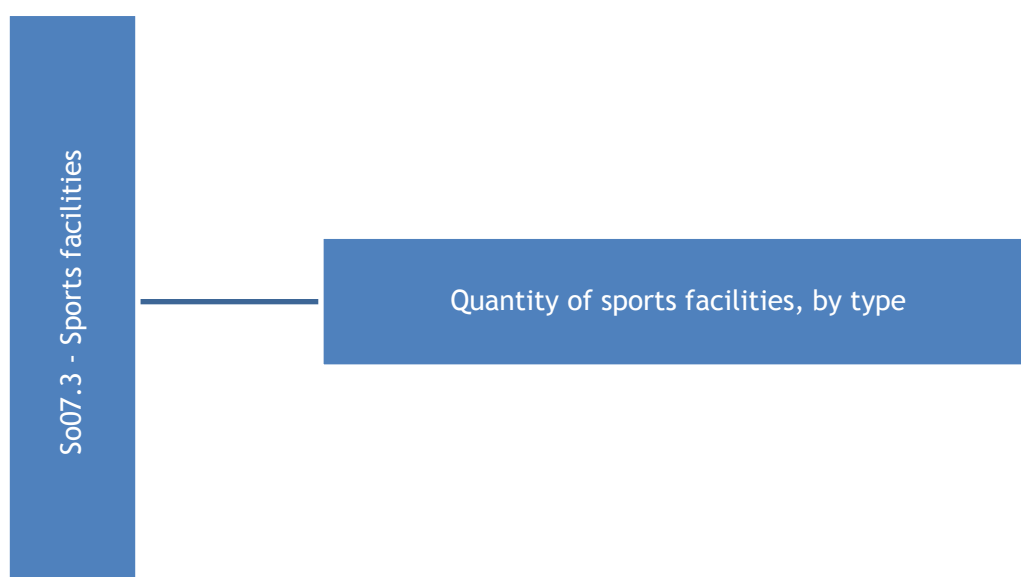
The Student Games include seven sports modalities divided into four categories: pre-junior (8/9 years old), junior (10/11 years), pre-juvenile (infantil) (12/13) and juvenile (14/15 years). In the last four years, the average number of students participating has been between 16,000 and 17,000, from 340 school units. At each edition, students who stand out, mainly from the 9th year (14/15 years old) are awarded grants from private institutions that allow them to continue their studies and training.

### So07.3 Sports Facilities

#### Purpose

This focus area shows the sporting capacity and dynamism of the Host City in terms of facilities. Identifying sports facilities and equipment would help in understanding local conditions. However, such data could not be obtained for this report.

The last survey on sports facilities was done in 2003 by IBGE, in partnership with the Ministry of Sport. Many themes and data about the municipal management of sport were investigated, in all Brazilian municipalities, for year base 2003. This survey presents the general picture of sports activity in the municipalities under the direct responsibility of governments, and/or with their participation.



Indicator	Description
Quantity of sports facilities, by type	Number of sports facilities (1) and equipment (2) by type, under construction or existing.
	Number of sports facilities and equipment with accessibility, by type, under construction or existing.

- (1) Sports facility: Fundamental unit of sports where sports activity takes place (court, soccer field, swimming pool, etc.).
- (2) Sports equipment: Apart from sports facilities, the sports equipment may refer to sports facilities aiming at supporting and offering services to the sports practice (outpatient, warehouses, administrative areas, cafeterias, accommodation, restaurants/cafeterias, auditoriums, etc.).

Olympic Villages (*Vilas Olímpicas*) is an important government project. The Olympic Villages are high-performance sports complexes installed in the poorest regions of Rio. Altogether, the city has 10 Olympic Villages and each village has about 10,000 children<sup>98</sup>.

Table 34 Number of Sports Facilities by type, Existing or Under Construction

Sports facilities	Existing	Under construction	Total
Court	14460	786	15246
Football Field	17312	242	17554
Leisure pool	698	36	734
Semi-Olympic and Olympic pools	601	30	631
Athletics track	602	74	676
Boccia field	769	21	790
Horseshoe pit	485	15	500
Skate, roller skates, and similar	394	38	432
<b>TOTAL</b>	<b>35321</b>	<b>1242</b>	<b>36563</b>

Source: IBGE, 2006

Table 35 Number of Sports Equipments by type, Existing or Under Construction

Sports Equipment	Existing	% With Accessibility	Works in progress	Under Construction Delayed construction	Total Under construction
Gymnasium	4168	33,8	350	118	468
Football Stadium	1639	26,5	128	42	170
Aquatic Complex	139	45,5	5	-	5
Sportive Complex	N/A	N/A	35	8	43
Autodrome	9	25	2	-	2
Karting	60	26,8	2	1	3
Hippodrome and similar	2	100	1	-	1
<b>TOTAL</b>	<b>4432</b>	<b>--</b>	<b>523</b>	<b>169</b>	<b>692</b>

Source: IBGE, 2006

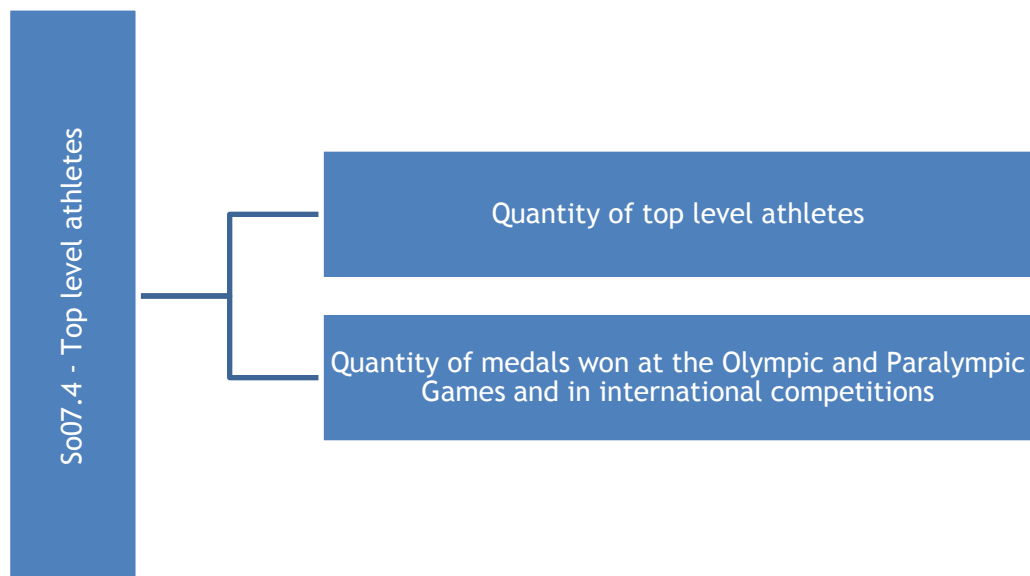
<sup>98</sup> Olympic City website - [www.cidadeolimpica.com.br](http://www.cidadeolimpica.com.br)



## So07.4 Top-level Athletes

### Purpose

Top-level athletes are often put forward as being the successful outcomes of sports policies and federations. The number of top-level sportsmen and women support this.



Paralympic champions are also considered role models and inspiring examples.

Indicator	Description
Quantity of top level athletes	Number of top level athletes, by sport and gender.
Quantity of medals won at the Olympic and Paralympic Games and in international competitions	Number of medals won at summer and Winter Olympic and Paralympic Games, by sport and gender.
	Number of medals won in international competitions, by sport and gender.

## Results

Since 2005, the Brazilian government maintains the largest individual athlete sponsorship programme in the world, aimed at high performance athletes and para-athletes within their modalities.

As a result, the Brazilian athletes have been improving their performance and participation in local, South American, Pan America, World, Olympic and Paralympic competitions.

Although the Government is investing in those top-level athletes, some data for this focus area could not be gathered. According to the Ministry of Sport, the total number of top-level athletes in the country is not available for this report.

The Athlete Scholarship Programme can be presented as an important and constant investment, but does not represent the national total, since it only considers the top 3three athletes in each sport modality.

The tables below show the large investment of the government in top-level athletes. Out of the total beneficiaries in 2012, 41 percent (1,744) were women and 28 percent (1,184) were athletes with disabilities.

With regard to the medals indicators, Brazil improved by two medals during the London 2012 Summer Olympic Games, from the total obtained in the previous Summer Games, held in Beijing in 2008, and occupied the 22<sup>nd</sup> position in medal results for both Summer Games. At the Summer Paralympic Games, Brazil held 7<sup>th</sup> position in 2012, having improved from 9<sup>th</sup> position in 2008.

In the international competitions arena, Brazil occupied the 3<sup>rd</sup> position in 2007 for results of the Pan American Games. For the Para Pan American Games, held in the same year, the country took the 1<sup>st</sup> place. Brazil was also in 1<sup>st</sup> place for the 2011 World Military Games.

**Table 36 Number of Athlete Scholarship in Brazil from 2006 to 2012**

Year	Total athletes benefitted
2007	846
2008	2,160
2009	3,370
2010	2,954
2011	3,643
2012	4,243

Source: Ministry of Sport, 2012

The total resources invested in Athletes Scholarship by the Brazilian government in 2012 was R\$ 60.2 million, cumulating R\$ 284.4 million since 2005.<sup>99</sup>

<sup>99</sup>Ministry of Sport. Brazil of all Sports, 2012. Brasília: Ministry of Sport, 2012./133p.il.

**Table 37 Number of Medals Won at Olympic and Paralympic Summer Games**

		Gold Medals	Silver Medals	Bronze Medals	TOTAL	RANKING
<b>Beijing 2008 Games</b>	Olympics	3	4	8	15	22 <sup>th</sup>
	Paralympics	9	7	9	25	9 <sup>th</sup>
<b>London 2012 Games</b>	Olympics	3	5	9	17	22 <sup>th</sup>
	Paralympics	21	14	8	43	7 <sup>th</sup>

Source: Own elaboration, 2013

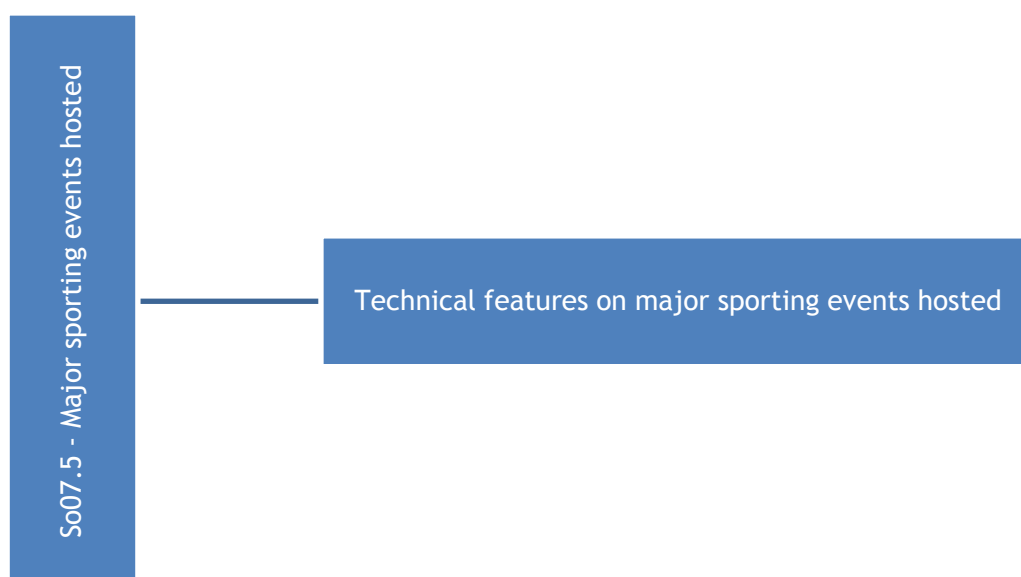
**Table 38 Number of Medals Won at International Competitions**

International Competitions	Gold Medals	Silver Medals	Bronze Medals	TOTAL	RANKING
<b>2007 Pan American</b>	3	5	9	17	3 <sup>rd</sup>
<b>2007 Parapan American</b>	83	68	77	228	1 <sup>st</sup>
<b>2011 World Military Games</b>	37	20	23	80	1 <sup>st</sup>

Source: Own elaboration, 2013

**So07.5 Major Sporting Events Hosted****Purpose**

This focus area assesses the local organisation of major sporting events, including energy and time and money invested in such projects.



Indicator	Description
<b>Technical features of major sporting events hosted</b>	Quantity of major sporting events hosted.
	Host City.
	Dates and total days of duration.
	Number of athletes.
	Number of organisers (staff and volunteers).
	Budget.
	Number of spectators.

Most of the data for this indicator is available on the Internet and could be easily found. But data, such as budget, numbers of organisers, and spectators could not be gathered for this report, because they were not available.<sup>100</sup>

## Results

Since 2007, Brazil has hosted four major events: 2007 Pan American Games, 2007 Parapan American Games, 2011 Military World Games, and the 2013 FIFA Confederations World Cup (Table 39).

<sup>100</sup> In fact, the data for monitoring this focus area could be gathered and communicated by the responsible entities for sports, such as the Ministry of Sport or the COB and CPB. At this moment, it was impossible for it to attend the research demand, but it is expected, and desirable, that the Ministry of Sport will be the official source of such data for the next reports.

**Table 39 Technical features on major sporting events hosted**

Event	Host City or Country	Dates and duration (number of days)	Number of Athletes
<b>2007 Pan American</b>	Rio de Janeiro	13 to 29 July (17 days)	<b>5,662</b>
<b>2007 Parapan American</b>	Rio de Janeiro	12 to 19 August (8 days)	<b>1,300</b>
<b>2011 World Military Games</b>	Rio de Janeiro	16 to 24 July - 9 days	<b>5,650</b>
<b>2013 FIFA Confederations Cup</b>	Brazil	15 to 30 June - 15 days	<b>8 teams</b>

Source: Own elaboration, 2013

The 2007 Pan American brought 5,623 athletes from 42 countries on the continent to Rio de Janeiro. Following the Pan American Games, Rio hosted the 2007 Parapan American, which convened 1,115 athletes from 25 other countries.

Brazil also won the right to be the headquarters of the 5<sup>th</sup> Military World Games in 2011. Organized by the International Military Sports Council, and first carried out in the Americas, the Military Games brought another 6,000 athletes from 111 countries to the city of Rio de Janeiro<sup>101</sup>. This year, 2013, Rio held the 9<sup>th</sup> FIFA Confederations World Cup as a prelude to the 2014 FIFA World Cup. Brazil won the first place, followed by Spain in second place, and Italy in third place.

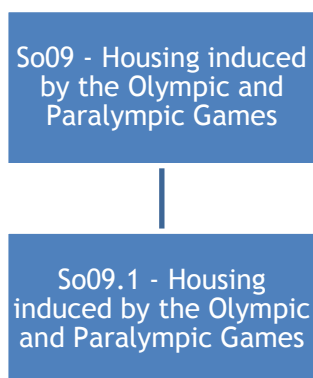
<sup>101</sup>Ministry of Sport. Brazil of all Sports, 2012. Brasília: Ministry of Sport, 2012./133p.il.

## So09 Housing Induced by the Olympic and Paralympic Games

To host the Olympic and Paralympic Games, the Host City is responsible for the infrastructure projects, which implies an eventual increase in the region's supply of housing, the demolition of homes, and removal and resettlement of families. The apartments built in the Olympic Village, for example, will become housing units. This thematic topic measures the change in the supply of housing induced directly by the Games, and the removal and resettlement of families, depending on the infrastructure.

One of the possible legacies of the Olympic and Paralympic Games is the creation of new housing areas. Among the candidacy proposals of Rio de Janeiro are, the construction of new residential centres in the areas of Maracanã and Deodoro and the availability of over 24,000 rooms nearby the Games' venues. However, some of the infrastructure projects envisaged will lead to the demolition of homes and, consequently, the removal and resettlement of families.

This topic theme is presented through a focus area with the same name.



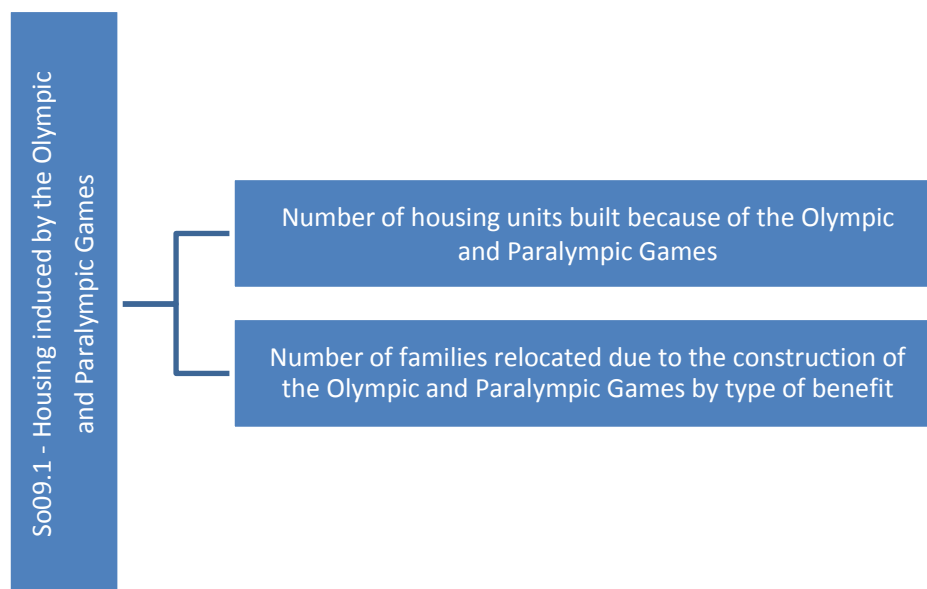
As shown in the Candidature file, some of the works that will be carried out in the city of Rio de Janeiro, to host the Rio 2016 Games, are the following: Porto Maravilha, Line 4 subway, transport routes Transcarioca, TransOlímpica and Transoeste, the Olympic Village, renovation of the *Sambódromo*, and the Antônio Carlos Jobim (Galeão) airport. Not all of these works require the demolition of homes, but all are directly incurred from the Games and will be for the local population as a long-term legacy. While not all of the above-mentioned works will modify the existing housing offer, they are certainly directly linked to the Games and are expected to leave a long-term local legacy.

According to data released by the city of Rio de Janeiro, the only works that have demanded the removal of families, thus far, were Transcarioca and Transolímpica. There is also a plan to remove 600 families of Vila Autódromo, but this topic became highly controversial, due to pressure groups' claims. The Municipality of Rio de Janeiro has considered a review of this decision (see **So01.3** above).

## So09.1 Housing Induced by the Olympic and Paralympic Games

### Purpose

This focus area aims at presenting the impacts of the Rio 2016 Olympic and Paralympic Games on residential construction, and the relocation of families in the city of Rio de Janeiro.



Indicator	Description
Number of housing units built depending on the Olympic and Paralympic Games	Number of housing units built because of the Olympic and Paralympic Games.
Number of families relocated due to the construction of the Olympic and Paralympic Games by type of benefit	Number of families relocated due to works related to the Games by type of benefit.

### Results

There have been many changes in the areas of security and infrastructure, to prepare the city of Rio de Janeiro to host the 2016 Games.

In recent years, the state and city of Rio de Janeiro have developed a number of projects aimed at upgrading the slums. An example of this effort is the introduction in 2008 of Pacifying Police Units (UPP), controlled by the Department of State Security of Rio de Janeiro (SESEG-RJ) in these communities.

The UPPs are part of the public safety policy of the state of Rio de Janeiro, which proposes the restoration of public safety in slums, dominated by drug traffic, through community policing. The concept of UPPs is based on bringing together the police and the community, to jointly work on social projects, and often led by police officers. In July 2013, there were 33 UPPs in place and it is estimated that more than 40 slums will be pacified in total, by 2014.

The upgrading of the slums progressed in 2009, when the city of Rio de Janeiro took on the federal programme, *Minha Casa, Minha Vida* and in 2010 created the municipal programme *Morar Carioca*. The former aims at enabling home ownership by linking the pension value of a family with its payment capacity. This scheme made it possible to compensate the families who were evicted from their homes, and to carry out infrastructure projects linked to the Rio 2016 Games. The latter aims at promoting social inclusion through urban and social integration in all the slums of Rio de Janeiro, until the year 2020. This programme made it possible to construct cultural centres, slopes, lifts, health centres, sports centres, housing units, etc. within the slums and its surroundings.

Similar to the Pacifying Police Units (UPPs), these projects were not created specifically as a result of Rio hosting the 2016 Games, but contribute indirectly to achieving them properly. But some other, agreed upon, projects in preparation for the Games, are also influencing the image of the city and its tourism business, and involve vacating inhabited areas. The following explains the pathway disclosed by the Municipal Department for Housing (SMH) to evict the families located in areas where construction work would take place:

- Department (SMH) notice informing its interest in demolishing the residence;
- Social Technical Work to involve them in the process;
- Registration of residents and housing lots;
- Evaluation of the properties;
- Negotiation of compensations;
- Compensation payment or agreeing on a lease for *Minha Casa, Minha Vida*.

The possible compensation methods are: the offer of a new housing unit, compensation for improvements made to the property by the now former inhabitants, assisted purchase of a new home, or rent assistance (assistance granted for a period of 12 months valued on R\$ 400 or 500).

Table 40 shows the data gathered by the Municipal Department for Housing on expropriation and compensation, by March 2011.

Table 40 Number of Families Relocated by Type of Compensation

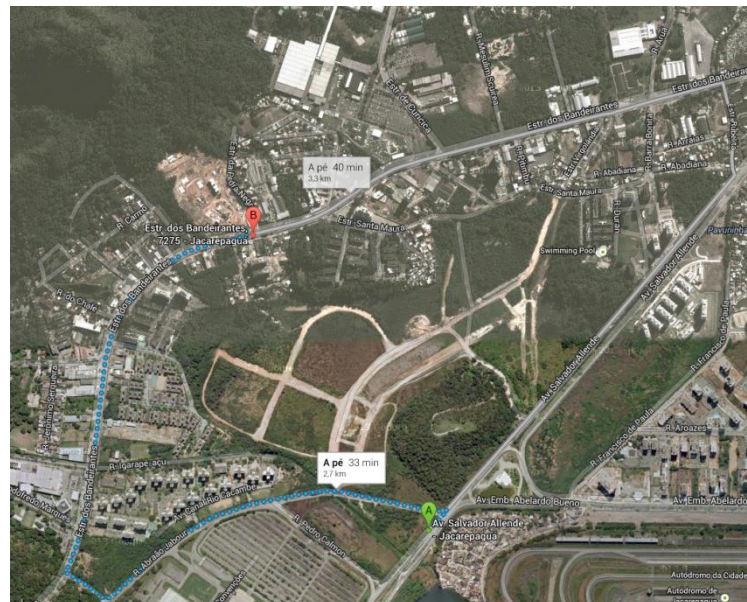
Year	Assisted Purchase	Compensation	Social Rental	<i>Minha Casa, Minha Vida</i>
2009	512	181	133	3308
2010	596	1068	3673	
2011 (until May)	104	571	1358	700
TOTAL	1.212	1.820	5.184	4.008

Source: SMH, 2013

The figure shows that 4,008 families were compensated and relocated statewide. However, it is not possible to know what proportion of this total is directly related to the preparation of the Rio 2016 Games (few data are available at the time). According to the Municipal Department for Housing of Rio de Janeiro, 738 families were evicted by



July 2013, for the construction of new road alternatives, 666 families because of the Transoeste, and 72 families because of the Transcarioca.



**Figure 41 Walking path from the slum Vila Autódromo to the land where the Parque Carioca will be built**  
Source: Google Maps

The Parque Carioca project includes the construction of 900 apartments distributed in four condominiums. Out of these apartments, 700 will have three bedrooms and 200 will have two bedrooms. Out of this total, 45 apartments will be adapted for people with disabilities, ten three-bedroom and 35 two-bedroom. In addition, a leisure area will be built with a school, swimming pool, commercial space, kiosks, playground, and others. Due to the pressure of these families and political groups supporting them, it is not yet certain that demolitions will in fact materialise.



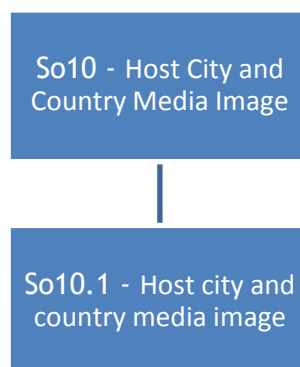
**Figure 42 Parque Carioca Condominium Project**  
 Source: Adapted from City Hall website, 2013 (<http://www.rio.rj.gov.br/>)

## So10 Host City and Country Media Image

“Once an Olympic city, always an Olympic city”. The Host City and the Organising Committee for the Olympic Games seek to leverage the image of the Olympic City in order to create a strong brand and keep the memory of the games alive in the local population and for the entire audience who attended, or watched the games. The branding elements, such as the Olympic logo and the mascots, are powerful tools that can be used to achieve it.

A mega-event like the Games is characterised by its temporary nature, its ability to attract a large number of participants from different nationalities, and also to draw the attention of the media resulting in a global impact. Rio now begins to benefit from a greater global visibility, one of the many potential legacies of the Olympic Games.

This thematic topic is presented through the focus area *Host City and country media image*

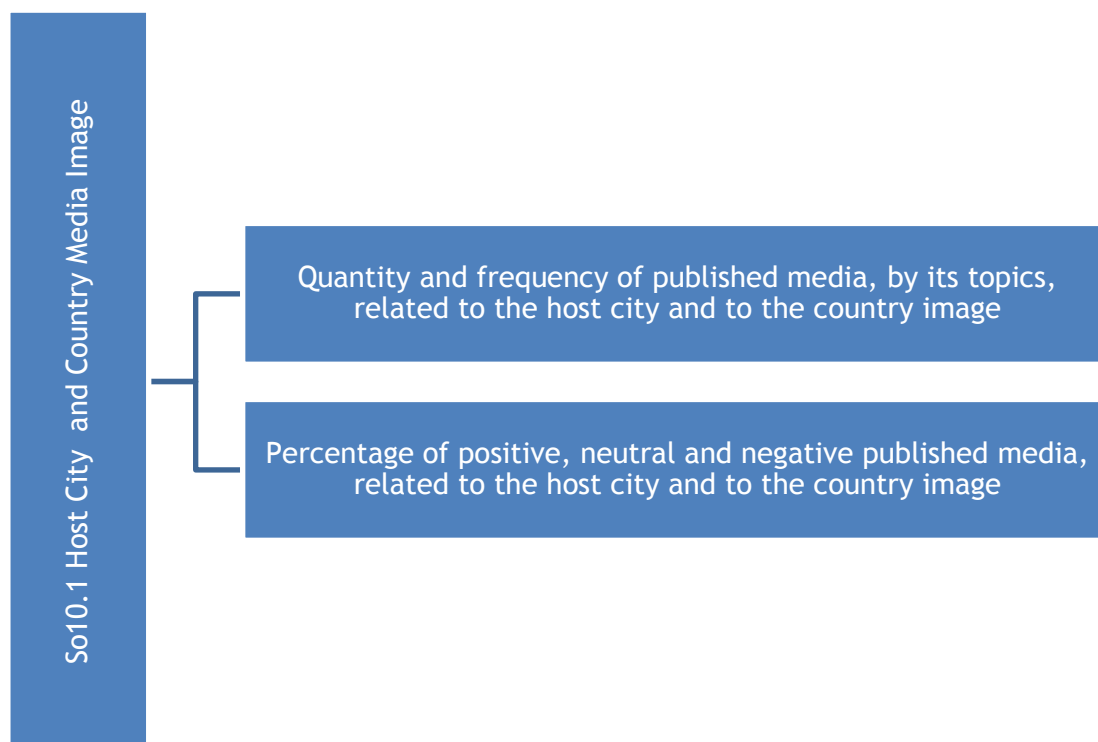


### So10.1 Host City and Country Media Image

#### Purpose

This focus area aims at evaluating the influence of the Olympic and Paralympic Games in the image of the city of Rio de Janeiro and Brazil. The perceptions of the city, state, and country will be valued before, during, and after the Games.

The results of this focus area will demonstrate the evolution of the city and the country image, projected in national and international media, through a quantitative analysis of those media (TV channels, newspapers, and social networks).



Indicator	Description
<b>Quantity and frequency of published media, by its themes, related to the Host City and the country image</b>	Number of published media, by its themes and sources, related to the media Host City and country Image.
<b>Percentage of positive, neutral and negative published media, related to the host city and the country image</b>	Number of positive, neutral and negative published media to related the host city and the country Image.

## Results

The sources identified to provide such data were not available at this time, so it was not possible to establish a media panel and implement the recommended methodology for this OGI indicator. Contact has been made with government Communications Departments (SECOM and ASCOM), which conduct this monitoring on a monthly basis (at both a national and international level) to obtain such data. We also expect to secure data from the local Organising Committee Rio 2016™ Communications Department.

Since June 2013, Brazil is undergoing a series of popular protests, which have resulted in an abrupt and unparalleled change of the Brazilians' perception of their country. After eight years of research, in only one month, one in five Brazilians changed their opinion about the country's direction. For the first time, since 2007, more Brazilians think the country is on the wrong track (58 percent) than headed in the right direction (42 percent). In the previous month (May 2013), 63 percent of Brazilians said that Brazil was on the right track. According to Ipsos Research Institute<sup>102</sup>, the data remained negative in July 2013.

<sup>102</sup>Ipsos Research Institute (<http://ipsos.com.br>)

A significant change in the perception of *Cariocas* about their city, as reported by NGO *Rio Como Vamos*<sup>103</sup>, denotes the local population's recent dissatisfaction. In 2011, 76 percent of *Cariocas* were proud of their city, this number has now dropped to 63 percent. Meanwhile, the number of locals that would like to move to another city has increased by 21 percent.

Two major international events were held in the country in this period: the 2013 Confederations World Cup (from 15 to 30 June) and the 2013 World Youth Day (WYD— from 23 to 28 June). Both events served to test the country and the Host City's infrastructure capacity to accept large events.

Despite the positive perception of the tourists during these two great events and the local approval for the Olympic Games in Rio de Janeiro, the demonstrations resulted in a new national scene, which is still undefined. Experts believe that if claims are not met, outbreaks will tend to intensify as the major events approach (especially the 2014 World Cup).

Even though the demonstrations were taking place, and some of the infrastructure problems were exposed during these events, tourist's perception of the country was still positive. According to a research study conducted by the Tourism Ministry, the satisfaction rates of those two events in 2013 exceeded the ones obtained in the last major event hosted prior to that, the Rio+20 Conference (held on 20 to 22 June 2012). A survey of foreigners who were in Rio de Janeiro for the 2013 WYD, conducted by Embratur<sup>104</sup>, shows primarily that 89 percent of the tourists were “satisfied” or “very satisfied”, and that 90 percent intend to return to the country.

Also, a survey, was carried out on social and online media<sup>105</sup> during the 2013 Confederations World Cup, and showed that people's opinion about the safety of the event were influenced by the protests, and that most of negative mentions referred to the protests as harmful to the event.

The Datafolha Research Institute released a poll held in June 2013<sup>106</sup>, showing that most Brazilians support the occurrence of the Olympic Games in the country. As for the *Cariocas*, according to this survey, 66 percent are in favour of the Games, 47 percent believe it will bring more benefits than harm, and 40 percent believe that the event will bring more harm than benefits (to corroborate the results of others polls, see thematic topic **So03**).

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<sup>103</sup>Rio Como Vamos - <http://www.riocomovamos.org.br/portal/content.asp?cc=6&mn=3>

<sup>104</sup>Embratur is a special agency of the Ministry of Tourism responsible for the implementation of the National Tourism Policy with regard to promotion, marketing, and support to marketing of destinations, and tourism products and services in Brazil in the international market.

<sup>105</sup>A study conducted by the company of Intelligence and Media Monitoring Online SKYit. Confederations Cup / Brazil 2013: Analysis of Social Media and Online — Structure and organisation of the event.

<sup>106</sup>World Cup and Olympics — <http://media.folha.uol.com.br/datafolha/2013/07/01/copa-do-mundo-e-olimpiadas.pdf>

## So11 Sport Education for People with Disabilities

This thematic topic aims at monitoring the availability of courses and qualified professionals to provide physical education for people with disabilities. Sport professionals who have the knowledge and skills to transmit physical education to disabled people and/or athletes are a major factor affecting the access and integration of people with disabilities into physical activity and sport. Such participation is crucial for physical rehabilitation, sporting success, social inclusion, and recognition towards people with disabilities.<sup>107</sup>

This thematic topic, *Sport Education for people with disabilities*, is represented by a focus area with the same classification.



There was a significant increase in the number of educational institutions and vacancies, enrolled and titled in undergraduate courses in physical education<sup>108</sup>.

There is a recognition of the importance of post-graduate courses in physical education, to provide a continuity of the academic training of these professionals, and the promotion of sports development, as well as sports for people with disabilities. The parameters involved in this context will be presented in the next phase of this report, due to the unavailability of data by the competent agencies.

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<sup>107</sup>IOC. *Technical Manual on Olympic Games Impact Study, 5<sup>a</sup> Edition – Post-Vancouver 2010 Winter Games*. 2012

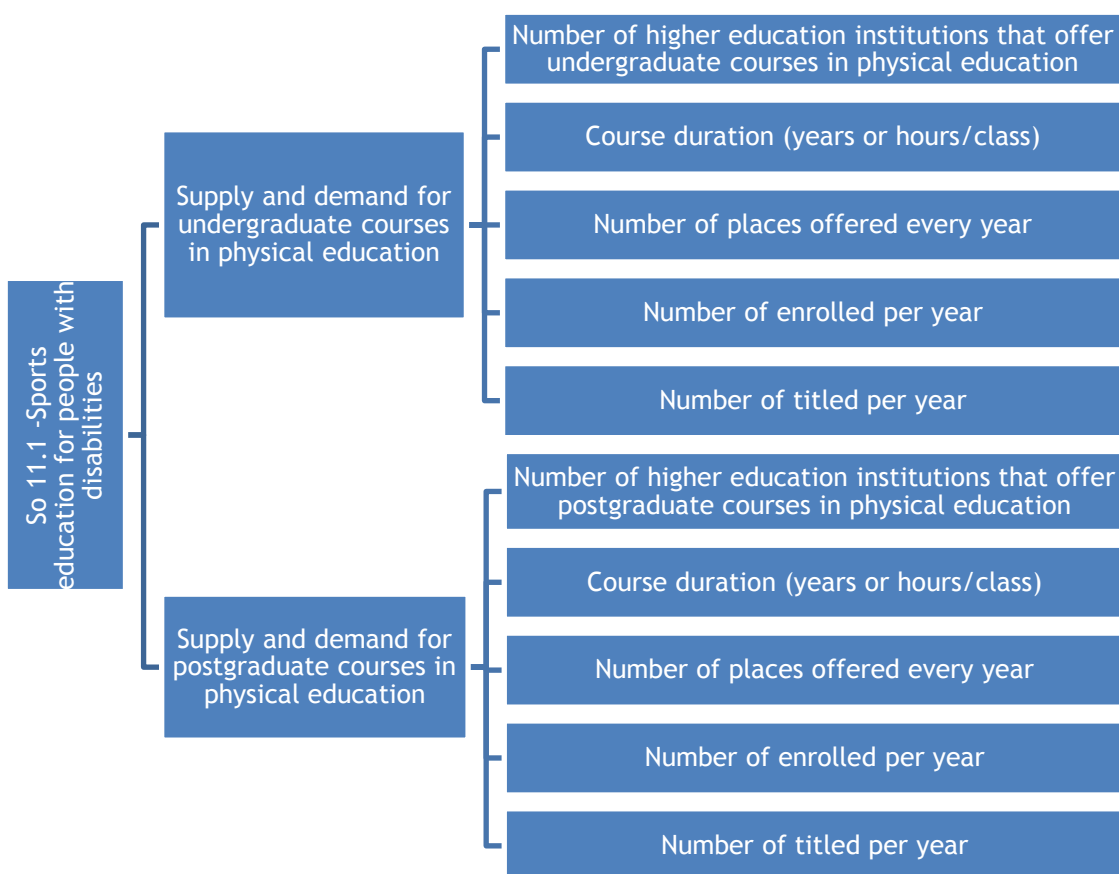
<sup>108</sup> MEC, 2013.

## So11.1 Sports Education for People with Disabilities

### Purpose

Sports activities, and sports intended for people with disabilities, enhance both the development of base psychomotor behaviour (auditory, visual and tactile perception, and thin/wide coordination) as affective and cognitive development and physical qualities (strength, power, speed, and agility), which allow for a clear integration and its valuation by society.<sup>109</sup>

The focus area will portray the situation of professional training in physical education, either at the graduate or postgraduate level. It intends to measure the number of educational institutions, course duration, the number of places offered every year, the number of people registered, and the number of those who obtain titles.



<sup>109</sup>CRUZ, G. de C. Classe especial e regular no contexto da educação física: segregar ou integrar? Dissertação (Mestrado em Educação) – Universidade Estadual do Rio de Janeiro. Rio de Janeiro. 1996.

Indicator	Description
Number of higher education institutions that offer undergraduate courses in physical education	Number of higher education institutions that offer undergraduate courses in physical education, with at least one class about Adapted Physical Education.
Number of higher education institutions that offer postgraduate courses in Adapted Physical Education	Number of higher education institutions that offer postgraduate courses in Adapted Physical Education.
Course duration (years or hours/class)	Course duration, in years, or hours/class.
Number of places offered every year	Number of places offered every year.
Number of enrolled per year	Number of students formally registered in an educational institution at a given level/stage of a teaching modality.
Number of titled per year	Number of students who obtained titles.

## Results

It has to be noted that in Brazil, there are no specific graduation courses on Adapted Physical Education (APE). But according to MEC, every graduation programme in Physical Education has at least one course on physical education for people with disabilities in its curriculum.

Undergraduate courses on physical education last four years and, within the analysed period between 2007 and 2011, a significant growth has been achieved in the number of colleges and consequently, the number of vacancies available, those enrolled, and titled students.

In 2007, there were 492 educational institutions registered with the Ministry of Education to deliver this course and this number rose to 762 in 2011, representing a 155 percent increase in four years. This fact led to a 122 percent increase in the number of vacancies offered, as well as the number of enrolments, which increased by 99 percent between 2007 and 2011, generating a 112 percent increase in the number of professionals able to practice in this area.

Regarding post graduate courses, among the 28 institutions registered with MEC/CAPES to offer postgraduate courses in the area of physical education, only one University in Brazil offers an accredited Adapted Physical Education programme, *stricto sensu* (a two-year Masters and four-year PhD programmes). The State University of Campinas (*Universidade Estadual de Campinas – UNICAMP*), in São Paulo state, has been certificated to offer these programmes since 1988.

Table 41 shows the number of post-graduate students titled in Adapted Physical Education each year, since 2007; and Table 42 compares the demand with the students admitted in such programmes, since 2011.

Table 41 Post-graduation Physical Adapted Education Students Titled in Brazil

Post-graduate students	2007	2008	2009	2010	2011	2012	2013 (until Nov.)	TOTAL
PhD	1	6	8	3	7	4	7	36
Masters	12	10	9	6	6	5	11	59

Source: School of Physical Education, Unicamp. 2013



Table 42 Post-graduation Physical Adapted Education Selection Process in Brazil

Post-graduation programme	Number of places	Entrance year in the programme				TOTAL
		2011(*)	2012	2013	2014	
PhD	candidates	12	14	15	11	52
	admissions	9	6	7	9	32
Masters	candidates	19	12	24	20	65
	admissions	11	5	10	14	40

(\*) The provider for these data sent the data from the year 2011. It is quite possible that such figures were not monitored before.

Source: School of Physical Education, Unicamp. 2013

These results seem to show a real interest in Physical Adapted Education Programmes, *stricto sensu*, as well as an increase in the demand for such courses – mainly for the Masters programme where it can be noted that the number of candidates have doubled in the last two years, compared with previous years.

Moreover, a few other federal and state public universities may offer specialisation programmes, *lato sensu*, or 360 hours on APE, but these universities do not need to be referenced by MEC, which is why it is difficult to monitor this area precisely. According to phone interviews and website consultations, it is presumed that at least – other universities are offering, or have offered, this type of course, according to the demand. These universities are: the Federal University of Uberlândia (*Universidade Federal de Uberlândia – UFU*)<sup>110</sup>; Pernambuco University (*Universidade de Pernambuco – UPE*)<sup>111</sup>; the Federal University of São Carlos (*Universidade Federal de São Carlos – UFSCar*),<sup>112</sup> and the State University of Campinas (*Universidade Estadual de Campinas – UNICAMP*).

In Brazil, the approach to physical education, focused on people with disabilities and called the Adapted Physical Education (APE), was initiated in 1958 with the founding of the Paraplegic Club in São Paulo and the Optimism Club in Rio de Janeiro. The main objective of these initiatives was to promote the practice of activities, games, and rhythms suited to the interests, abilities, and limitations of individuals with disabilities who could not engage and secure participation in an unrestricted general physical education programme<sup>113</sup>.

These initiatives promote not only the spread of physical education, but are also directed to those people with disabilities who are concerned about the physical activity itself, in order to encourage integration and inclusion. The progress of this scenario has fostered initiatives that have resulted in the sports practices of these individuals<sup>114</sup>.

Initially, the focus on sports activities for people with disabilities was medical, as a therapeutic supplement, in order to improve the rehabilitation process. Subsequently, the view of disabled people participating in sports has evolved and is now seen as an

<sup>110</sup> <http://www.cefep.faei.ufu.br/>

<sup>111</sup> <http://www.upe.br/portal/cursos-de-pos-graduacao/lato-sensu/saude/educacao-fisica/educacao-fisica-adaptada-a-portadores-de-doencas-cronico-degenerativa-e-idosos/>

<sup>112</sup> Information given by a professional of the UFU.

<sup>113</sup> PEDRINELLI, V. J. Educação física adaptada: conceituação e terminologia. In: PEDRINELLI, V. J. Educação física e desporto para pessoas portadoras de deficiência. Brasília. MEC/Sedes. 1994.

<sup>114</sup> PEDRINELLI, V. J. Educação física adaptada: conceituação e terminologia. In: PEDRINELLI, V. J. Educação física e desporto para pessoas portadoras de deficiência. Brasília. MEC/Sedes. 1994.

instrument of social integration, a practice that can be done with peers, something that enhances competitive spirit, and one that also helps overcome negative stereotypes<sup>115</sup>.

Some sports were created exclusively to assist people with disabilities; among them are bocce and goal ball. The first includes individuals with cerebral palsy and the second people with visual impairments<sup>116</sup>.

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<sup>115</sup>PEDRINELLI, V. J. Educação física adaptada: conceituação e terminologia. In: PEDRINELLI, V.J. Educação física e desporto para pessoas portadoras de deficiência. Brasília. MEC/Sedes. 1994.

<sup>116</sup>COSTA A. M.; SOUSA S.B. Educação física e esporte adaptado: história, avanços e retrocessos em relação aos princípios da integração/inclusão e perspectivas para o século XXI. Rev. Bras. Cienc. Esporte, Campinas/SP, v. 25, n. 3, 2004.

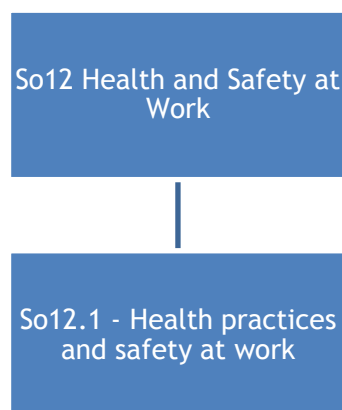
## So12 Health and Safety at Work

The protection of workers against occupational, or work, disease and work-related accidents is one of the fundamental objectives of the International Labour Organisation (ILO), as well as being an essential element of social justice. According to the ILO<sup>117</sup>, about 2.34 million people die every year due to work-related accidents and diseases; and, every year there are 160 million cases of non-lethal diseases linked to professional activity.

The ILO estimates that the direct and indirect costs of accidents at work, and occupational diseases, result in annual loss of 4 percent of world GDP, about 2.8 billion dollars.

The constant evaluation of the health and safety conditions for the workforce involved with the construction and development of the Olympic and Paralympic Games is crucial, in order to prevent and minimise risks through prevention, in addition to worker protection, and the promotion of a good health and safety culture.

This thematic topic is presented through the focus area, *Health and safety practices at work*.



To host the Olympic and Paralympic Games some sectors of the Host City are getting infrastructure improvements and new Olympic venues are being constructed. In its Sustainability Management Plan of the Olympic Games, the Rio 2016 Organising Committee described some prerogatives for the adoption and maintenance of best business practices into the routine, encouraging all of its suppliers to show certain certifications.

Regarding the Health and Safety at Work, the Rio 2016 Organising Committee gives preference to companies with OHSAS 18001 (Occupational Health and Safety Assessment Services) for the Evaluation of Health and Safety at Work.

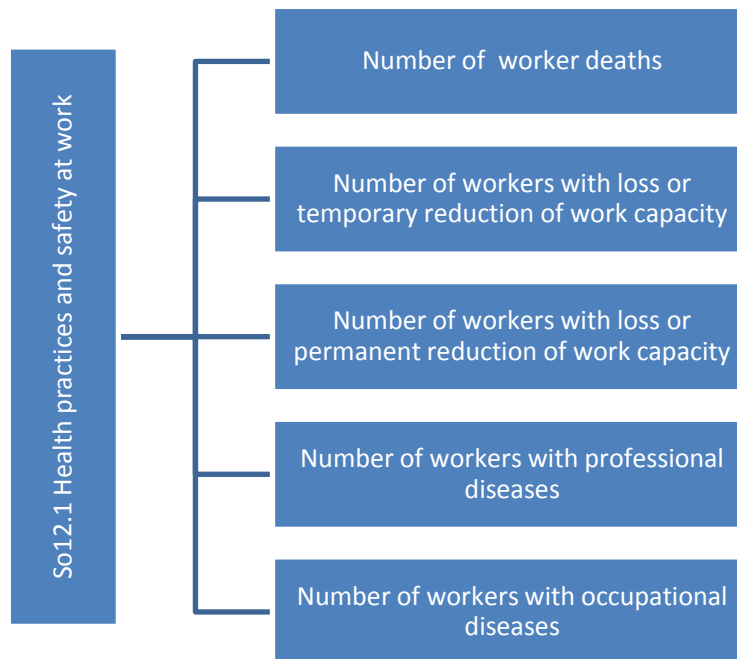
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<sup>117</sup>Prevention of Occupational Diseases – International Labour Organisation – 2013.

## So12.1 Health and Safety Practices at Work

### Purpose

This focus area aims at evaluating the management practices of health and safety at work in various stages of implementation, and accomplishment of, the Olympic and Paralympic Games.



Indicator	Description
Number of worker deaths	Number of workplace accidents resulting in the deaths of workers.
Number of workers with loss or temporary reduction of work capacity	Number of workplace accidents resulting in loss, or temporary reduction of work capacity.
Number of workers with loss, or permanent reduction of work capacity	Number of accidents resulting in loss, or permanent reduction of work capacity.
Number of workers with professional diseases	Number of workers who have acquired professional diseases. <sup>118</sup>
Number of workers with occupational diseases	Number of workers who have acquired occupational diseases. <sup>119</sup>

### Results

For this first report, we are only considering the workforce of the Rio 2016 Organising Committee. The workers involved in infrastructure works will be included in the next

<sup>118</sup> Professional diseases are those incurred as a result of worker exposure to certain agents / risk factors in the workplace.

<sup>119</sup> Occupational diseases are those related to work, which are acquired or activated according to special conditions under which the work is done and it relates directly.

reports. Right now the numbers monitored directly refer to the Organising Committee workforce in its headquarters building. By July 2013, there were a total of 515 employees hired.

The monitoring of health and safety practices is of the utmost importance over the coming years, due to infrastructure works that will greatly increase the workforce. The predictive number for the Rio 2016™ Organising Committee for the year 2016 is 4,000 permanent and temporary employees, 35,000 contractors, and 70,000 volunteers, who will be included in the analysis<sup>120</sup>.

As informed by Rio 2016 Organising Committee, since hiring began in June 2010 and until late 2012, when there were 371 employees, and there was no occurrence of a work accident.

In 2013, there were two cases of work accidents, resulting in loss, or temporary reduction of work capacity by accident; the first one was in February when a person was ran over, and the second was in May, the result of a fall. The Rio 2016 Committee accounted for 419 and 474 employees, respectively in February end May, and had a 0.2 percent accident rate with loss or temporary reduction of working capacity.

Currently, the Organising Committee offers two training programmes in the area of Health and Safety: “Safety Driving Directions”, and “Preventive Practices against Slips and Fall”. Implementation is also planned for training in “Fighting and Fire Prevention”, and “Emergency, First Aid and Ergonomics” (Rio 2016 Committee).

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<sup>120</sup>Comitê Rio 2016™ - <http://www.rio2016.org/en/organising-committee/committee/organising-committee>

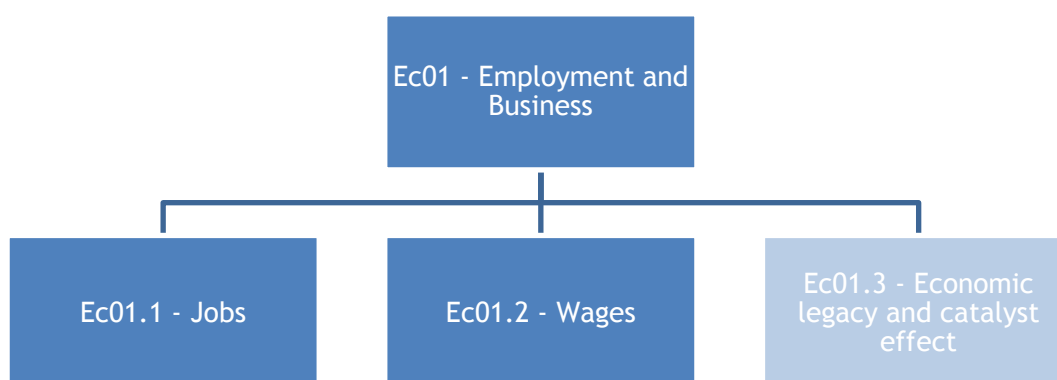
### 5.3 Economic Outcomes

**Table 43 Summary Table of the Economic Sphere Data**

Economic TT	Economic FA	Relevance	R1 Data Available			Data Sources	DSMC	Quant.	Qual.	Methodology Limitations	
			Y	Part	N					temporal discontinuity	data source
Ec01 Employment and Business	Ec01.1 Jobs	H	X			IBGE; RAIS-MTE; RIO 2016	X	X		X	
	Ec01.2 Wages	H	X			IBGE; RAIS-MTE; RIO 2016	X	X		X	X
Ec02 Tourism	Ec02.1 Tourism and Hotel Availability	VH		X		ABIH; MT; RIOTUR; HOTELINXEST; INFRAERO; ANAC; FECOMÉRCIO	X	X			
Ec03 Prices	Ec03.1 Price Index	H		X		IBGE; FIPE-ZAP		X		X	
Ec04 Budget Structure of the Organising Committee	Ec04.1 Budget Structure of Rio 2016 Organising Committee	H	X			Candidature File	X	X		X	
Ec05 Public Investment	Ec05.1 Public Investment	H		X		CEF; APO	X	X		X	X
Ec08 Gross Regional Product	Ec08.1 Gross Regional Product	H	X			IBGE	X	X		X	

## Ec01 Employment and Business

The thematic topic of *Employment and business* aims at evaluating the effect in terms of legacy and impact that the Olympic and Paralympic Games in Rio de Janeiro, and Brazil as a whole, may have on the generation of jobs, and the stimulation of business opportunities. It is expected that these events will bring benefits to the local, regional, and national economies by stimulating incremental and structural investments. It covers three focus areas that, analysed together, provide an understanding of the socio-economic characteristics of Brazil, and the state and city of Rio de Janeiro.



This report covers the first two focus areas, *Jobs* and *Wages*. The third focus area, which covers specific indicators to evaluate the *catalyst effect and economic legacy* of the Games, will be considered in the post-Games report.

Despite the weak economic growth in the past two years, the labour market remains in a very positive circumstance in Brazil, with a low unemployment growth rate in real wages, an increase in workers' purchasing power, and the formalisation of employment contracts. The combination of these aspects ensures the economic stability supported by the increase in household consumption, and creates a virtuous cycle of job creation, income, and demand.

As the second largest economy in the country, and with a per capita income higher than the national average, Rio de Janeiro has a highly specialised productive services structure. The success of the oil and gas industry, in addition to the promotion of major events, has allowed the state to overcome a major crisis experienced in the 1980s and, currently, to have the country's largest concentration of investments per square kilometre.<sup>121</sup>

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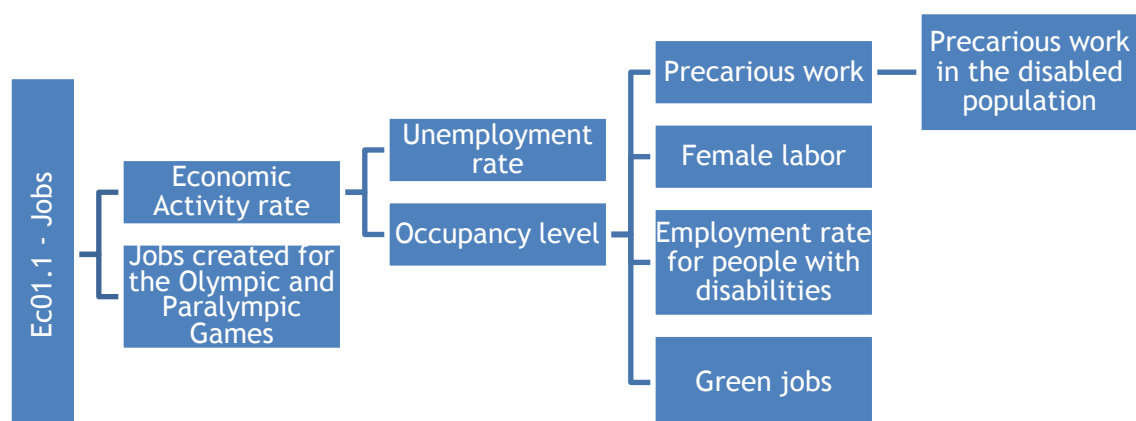
<sup>121</sup> Study *Decision Rio 2012-2014*, prepared by the Federation of Industries of the State of Rio de Janeiro.



## Ec01.1 Jobs

### Purpose

The focus area *Jobs* comprises nine indicators that, analysed together, provide an understanding of the most important aspects of the jobs-related economic changes in Brazil and Rio de Janeiro in the pre-Games period.<sup>122</sup> It aims at presenting the socio-economic characteristics of Rio de Janeiro and Brazil, and at revealing possible impacts of the Olympic Games, through the observation of some important aspects: the proportion of jobs in the economically active population and at working age; evolution of unemployment rate, precarious work and occupation in green sectors of the economy; inclusion of women and people with disabilities in the labour market.



Indicator	Description
<b>Economic activity rate</b>	Proportion of the economically active population (EAP) in the working age population (WAP). The WAP comprises people 15 years of age or older; among these who fall into the EAP are those between 15 to 65 years of age who are employed or seeking employment. Thus, this indicator reflects the proportion of the labour force available to the productive sector, compared to the population able to work.
<b>Unemployment rate</b>	Proportion of unemployed people, for example, those who are looking for employment, with respect to the EAP. An unemployed or unoccupied person is one who, although not employed, wants to work, having taken some action, in the 30 days preceding the survey, to attempt to get a job.
<b>Occupancy level</b>	Percentage of employed people compared to the total economically active population. This includes, employees, self-employed, employers, and people working with no payment (aiding family unit members).
<b>Precarious work (*)</b>	Comprises at least two problems, the absence or reduction of legal rights and job security, and poor life quality at work. This focus area quantifies the employed population working in the informal market and/or those who earn less than the minimum salary.

<sup>122</sup>Some indicators refer to the Metropolitan Region of Rio de Janeiro, some others to the state and/or to the city. All coverage areas are properly identified in the graphs and tables.

Indicator	Description
<b>Precarious work in the disabled population (**)</b>	Proportion of workers with disabilities who are employed in the informal market, relative to the total number of employed people with disabilities.
<b>Female labour</b>	Ratio of employed women and economically active female population. From this segment, it will be possible to analyse the situation of women entering the labour market.
<b>Employment of people with disabilities</b>	Number of employed people with disabilities by gender and type of disability.
<b>Green jobs</b>	Number of people employed in sectors considered green, for example, sectors which provide a decent job with a low carbon consumption.
<b>Jobs created for the olympic and paralympic games</b>	Number of economically active people who are working in the context of Olympic activities.

(\*) More detailed data will be available in the next Report.

(\*\*) These data due to ongoing research and data collection are not yet available for analysis.

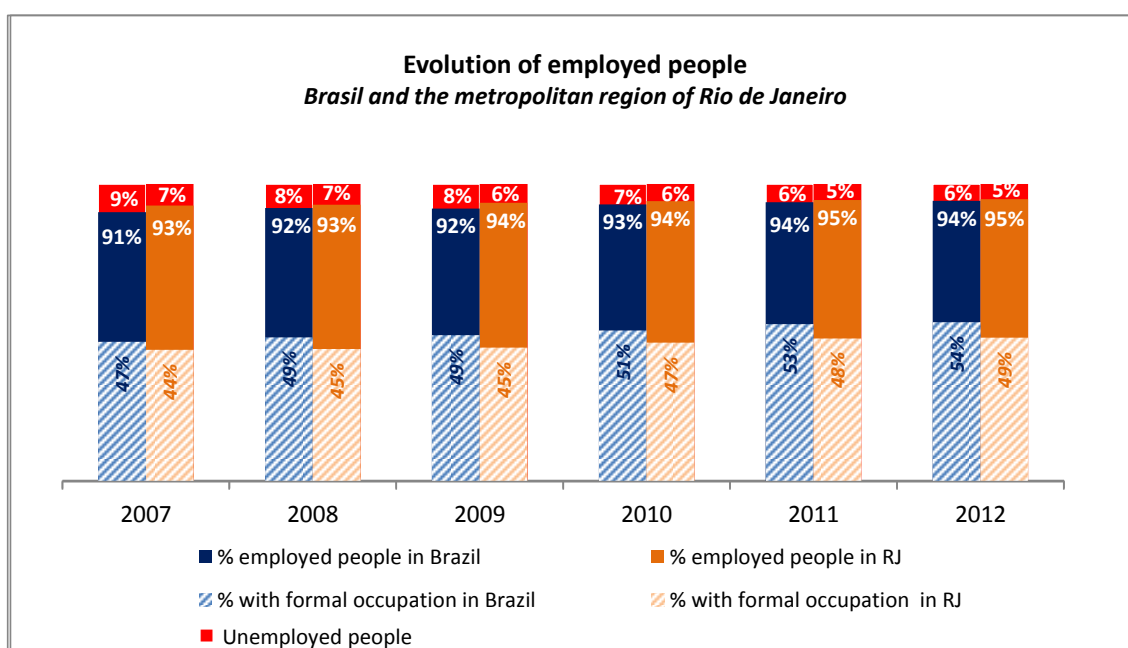
## Results

One of the variables that make it possible to evaluate the quality of employment is the formal employment relationship, materialised by registration with the Ministry of Labour and Social Security. This offers benefits and protections, such as the guarantee of labour rights. The proportion of people employed in the formal market of Rio de Janeiro (**Figure 43**) has been lower historically than the proportion in the country as a whole, not due to informality (proportion of people employed in the informal market), but because of the large proportion of self-employed people, as standalones or as employers<sup>123</sup>. In 2012, 17.8 percent and 20.9 percent of employed people worked in this condition in Brazil and Rio de Janeiro, respectively.

Regarding precarious work, the precariousness occurs when worker rights are not ensured and when there is no quality of employment. In Brazil, Social Welfare is increasing due to the growth of the formal market in recent years and government actions toward welfare inclusion for individual contributors, such as the Individual Micro Entrepreneur (*Microempreendedor Individual – MEI*) and the simplified tax regime. All of that meant a reduction of precarious work, and, consequently, a significant increase in social security contributions. However, there is still a large contingent of workers who do not contribute to social security due to the informality.

Another aspect refers to women in the labour market. In fact, the increasing insertion of women into the workforce is one of the most important recent developments in Brazilian society, and in Rio de Janeiro. This trend is due to the association of a higher degree of industrialisation, decline of the fertility rate, migration of people from the countryside to urban centres, and the increase of the educational level of the female population.

<sup>123</sup>IBGE. Monthly Employment Survey (PME).

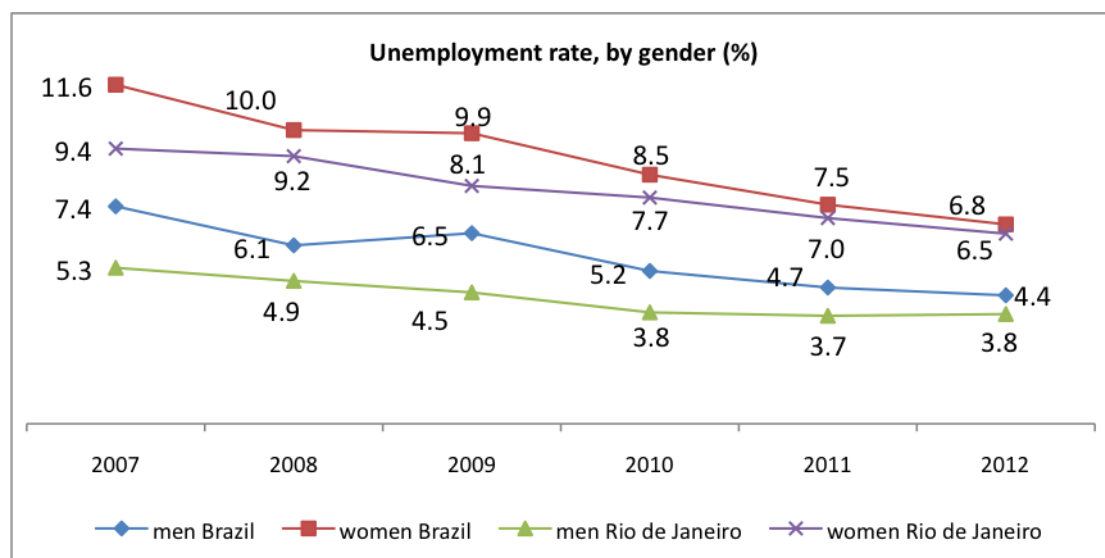


**Figure 43 Evolution of employed people (Brazil and the metropolitan region of Rio de Janeiro)**

Source: PME/IBGE, 2013<sup>124</sup>

Additionally, not only has the unemployment rate has been decreasing over the last years (**Figure 44**), but in this indicator, Rio de Janeiro is below the national average for both men and women. A decrease of 2.9 percentage points in the six years of analysis shows the strong increase of women's participation in the productive market. It is known that there are still some obstacles, such as less access to leadership positions (although, for example, there are women at the head of both the National Executive Power and the largest company in the country, incidentally, based in Rio de Janeiro). Employed women work mainly in the service sector: 80 percent of them are teachers, shopkeepers, hairdressers, manicurists, civil servants, or health services workers. The largest proportion of women work in domestic service.

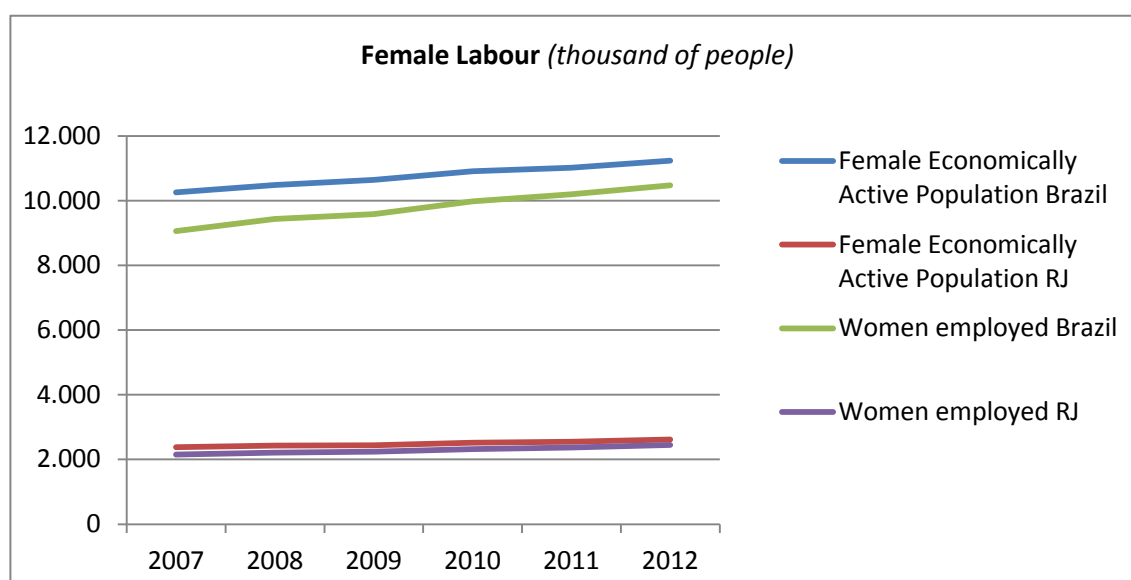
<sup>124</sup> IBGE. Monthly Employment Survey (PME). Available in:  
<http://www.sidra.ibge.gov.br/bda/pesquisas/pme/default.asp>



**Figure 44 Evolution of unemployment rate (Brazil and metropolitan region of Rio de Janeiro)**

Source: PME/IBGE, 2013

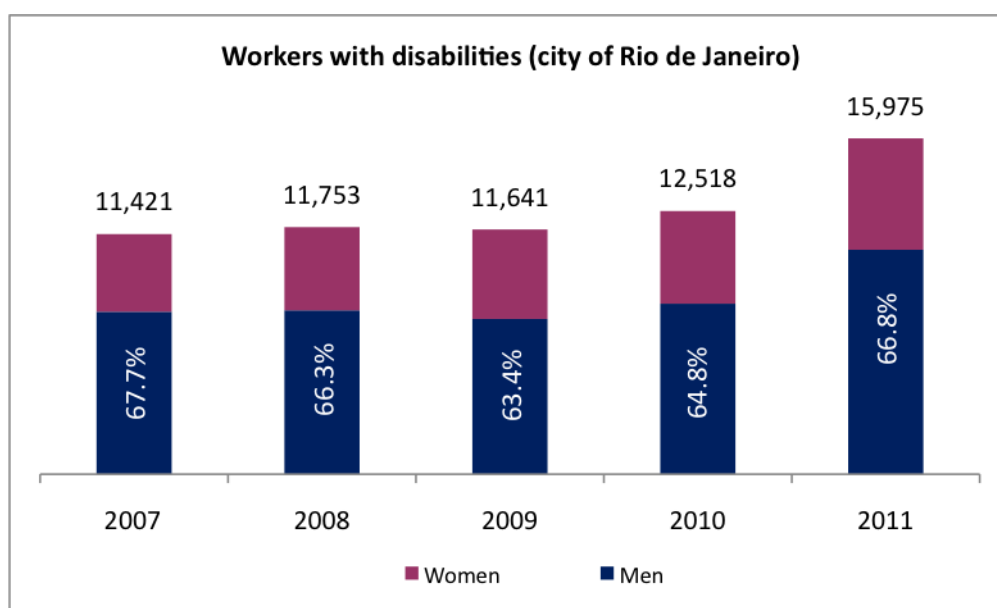
When compared to the economically active female population (**Figure 45**), the rate of women employed increased by three percentage points during the period of 2007 to 2012, reaching a significant proportion of 94 percent in Rio de Janeiro.



**Figure 45 Female Labour (Brazil and Metropolitan Region of Rio de Janeiro)**

Source: PME/IBGE, 2013

With regard to the work positions occupied by people with physical and/or mental disabilities, the Federal Law nº 8.213/91 instituted minimum quotas from two percent to five percent, depending upon the size of the organization. In 2011, nearly 16,000 people with disabilities (especially physical and auditory) were employed in the city of Rio de Janeiro (**Figure 46**). However, despite the fairly representative contingent of workers with disabilities, wider access to the labour market is halted due to the lack of adequate training.



**Figure 46 Workers With Disabilities (City of Rio de Janeiro)**  
Source: RAIS/MTE, 2013

Regarding the employment in green sectors, the numbers have grown substantially over the years. Between 2007 to 2011, the number of jobs in the city of Rio de Janeiro compatible with the classification of green jobs, defined by the International Labour Organisation, grew at an average rate of 3.3 percent a year, reaching 215 000 jobs by the end of the period.

According to the United Nations Programme for the Environment (UNEP), the companies belonging to the productive sectors that generate low-carbon emission, which are efficient in the use of resources and social inclusion, may fall within the so-called Green Economy. In this regard, during the Rio+20 Conference<sup>125</sup>, the state government of Rio de Janeiro initiated some of the government actions that stimulated the green economy in 2012, among them was the creation of green poles. The first of these clusters will meet with representatives of green research centres in private companies, with the purpose of promoting technological development and innovation, in conjunction with universities; the second will cover sustainable industrial parks, which can house green technology companies (reverse logistics, recycling, renewable energy sources); and, finally, the green agro-ecology cluster will consist of areas for development of agricultural techniques and use of materials for organic farming and forestry.

<sup>125</sup>SEA. *Green Economy in the state of Rio de Janeiro*. Rio de Janeiro, 2012.

For this first report, we are only considering jobs created in the Olympic and Paralympic Games workforce of Rio 2016™. The jobs involved in infrastructure works will be included in the subsequent reports.

In December 2012, the Organising Committee of the Olympic and Paralympic Games Rio 2016 accounted for 365 employees working in the headquarters<sup>126</sup>(Figure 47), of which 14 were disabled, equivalent to a four percent participation. Almost half of the employees were women (49 percent).

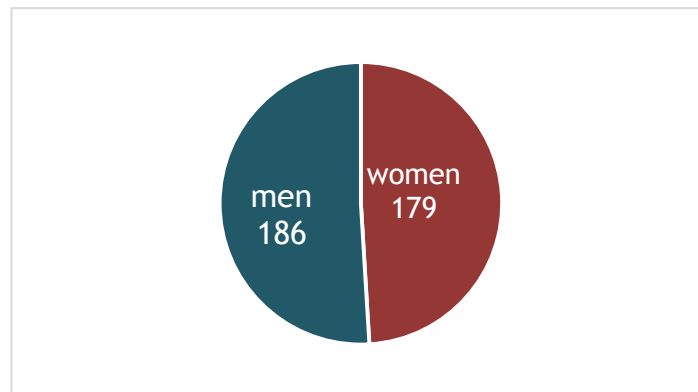


Figure 47 Workforce in Rio 2016 Organising Committee (Dec/13)  
Source: Rio 2016™, 2013

The provision is that the number of employees in Rio 2016 Committee doubles every year (around 600 in late 2013, 1,200 in late 2014 and 2,400 in late 2015), reaching 8,000 employees and 70,000 volunteers in 2016.

## Ec01.2 Wages

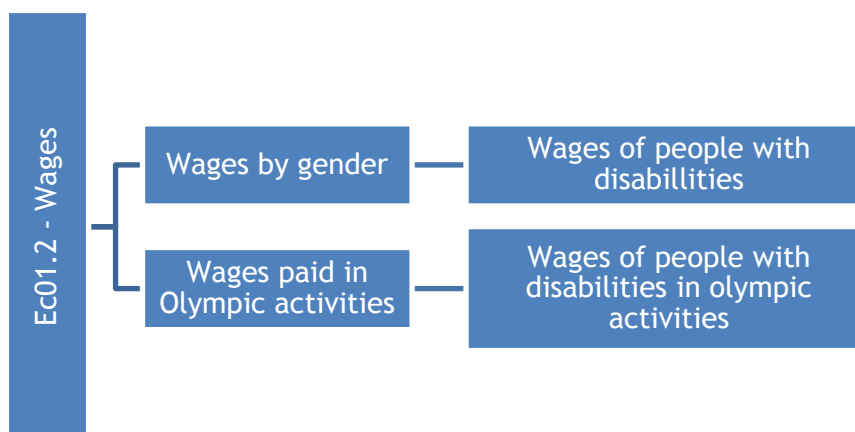
### Purpose

This focus area aims at monitoring the changes in the wage structure from the analysis of four indicators that include the absolute and relative remuneration composition of men and women, with and without disabilities. Additionally, this focus area also includes data on remuneration of sectors considered green.

When the economy provides fair, decent, and socially balanced wages, it enables a good life quality at work. The analysis of the evolution of the wage structure by gender and disabilities enables us to understand the level of income inequality. Through the combined analysis of the indicators, it is expected to identify the influence of the Olympic Games on income earners in Brazil, the state and city of Rio de Janeiro, before, during, and after the Games.

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<sup>126</sup> RIO 2016™ Organising Committee for the Olympic and Paralympic Games - Rua Ulysses Guimarães, 2016, Cidade Nova -20.211-225 Rio de Janeiro RJ Brasil.



Indicator	Description
<b>Wages by Gender</b>	The indicator considers the average remuneration by gender in Brazilian Reais (R\$), the national currency unit. Through it, one can evaluate the disparity between salaries of men and women in Brazil, in the state and in the city of Rio de Janeiro.
<b>Wages of People with Disabilities</b>	This indicator includes the average remuneration of employed workers with disabilities by gender and type of disability. It is important in the assessment of the labour market for people with disabilities.
<b>Wages Paid in Olympic Activities</b>	It consists of the average remuneration of men and women who are working in Olympic activities.
<b>Wages of People with Disabilities in Olympic Activities</b>	Covers the value of the average remuneration of workers with disabilities hired to work in Olympic activities.

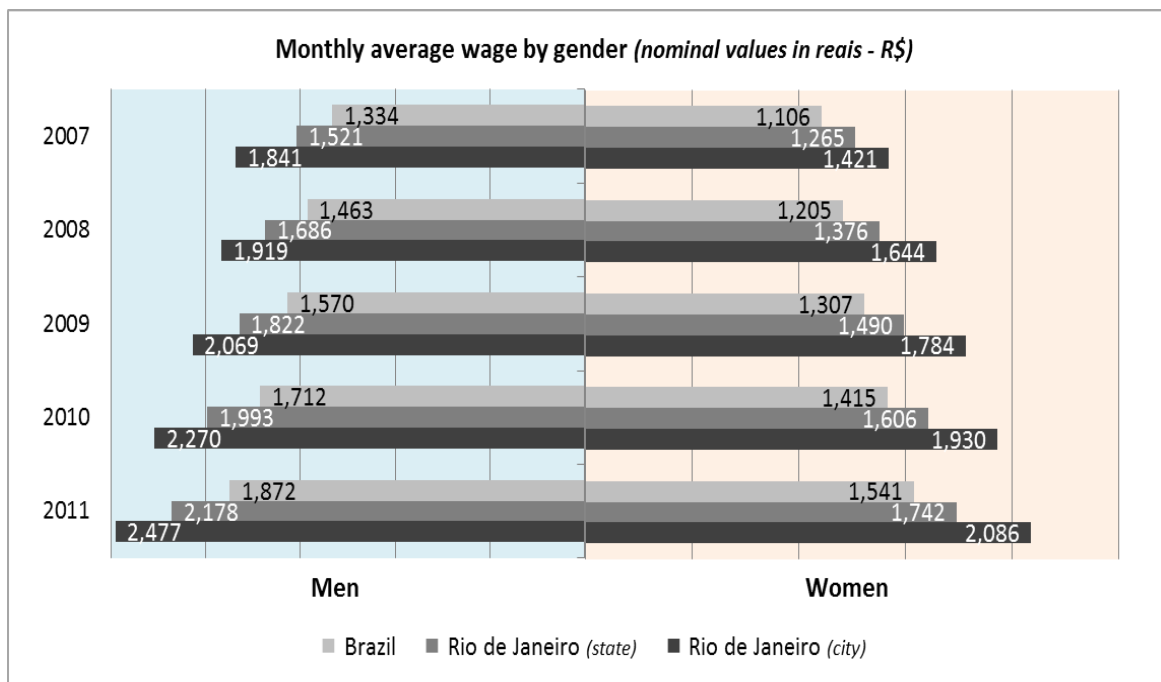
## Results

Within the context of economic growth, the Brazilian population is showing increased purchasing power. The increase in remuneration of formal jobs in Brazil, in recent years, reflects the resumption of economic activity in the country and, consequently, reduction of unemployment and increased formality. One of the main factors for the evolution of wage levels was a significant recovery of the minimum wage, a result of the minimum wage policy implemented by the federal government.

**Figure 48** compares income by gender, showing a large difference between average earnings of men and women. Despite the definitive insertion of women in the labour market, some of the difficulties they face are remarkable. Even with a higher educational level, women represent more than one half of the unemployed population and if employed, receive lower wages than men. Considering the period from 2007 to 2011 in Brazil, men had an average income 21 percent higher than that of women. However, when comparing the average wages of admission, the difference between men and women decreases to 13.75 percent<sup>127</sup>. In the state of Rio de Janeiro, the situation is similar to that of the country as a whole: men received average wages 20 percent higher than women in 2007; this difference increased to 25

<sup>127</sup>MTE. General Register of Employment and Unemployment - Available on: CAGED. <http://portal.mte.gov.br/caged>. Accessed on August, 2013.

percent in 2011, even though the difference of the average wage between men and women had been 16.72 percent.<sup>128</sup>



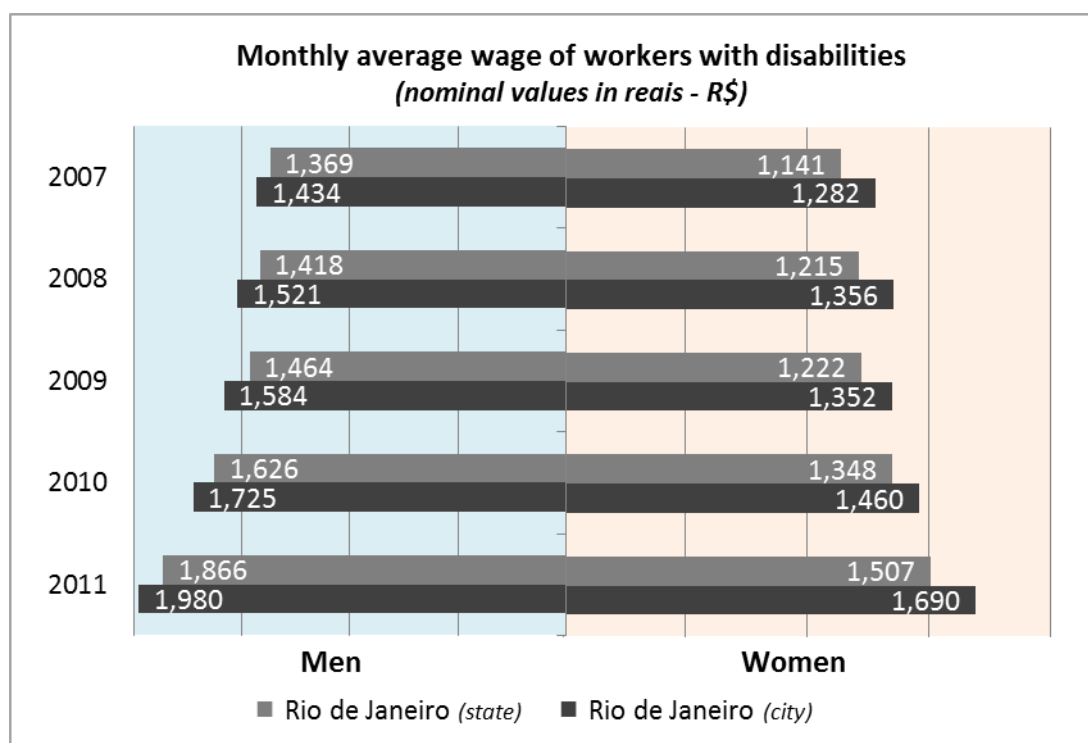
**Figure 48 Monthly Average Wage By Gender (R\$ nominal)**  
Source: RAIS/MTE, 2013

The population with disability receives lower wages (**Figure 49**).<sup>129</sup> In 2011, one worker with disability earned, on average, 13 percent less than a worker without disabilities in the state of Rio de Janeiro. This difference was smaller in 2007 (8.5 percent), but reached 18 percent in 2009. The results of the municipality of Rio de Janeiro show an even greater wage gap: 16 percent in 2007, reaching 23 percent in 2009, and decreasing to 18 percent in 2011. When considering the salary gap between workers for men with and without disabilities, the difference is even greater. There is also disparity between the average remuneration of men and women with disabilities: considering the period 2007 to 2011, men earned, on average, 20 percent more than women in the state of Rio de Janeiro, whereas the average difference drops to 15 percent in the city.

<sup>128</sup> A study by the Inter American Bank of Development (IBD) stresses that to achieve gender equality in the labour market, changes are needed with regard to domestic roles and stereotypes that result in the equal distribution of household tasks, incentives to women to study science and math, and the adoption of measures for mothers to have more time available to participate in the labour market. *Inter-American Development Bank (IDB). New Century, Old Disparities – Gender and Ethnic Wage Gaps in Latin America. 2009*

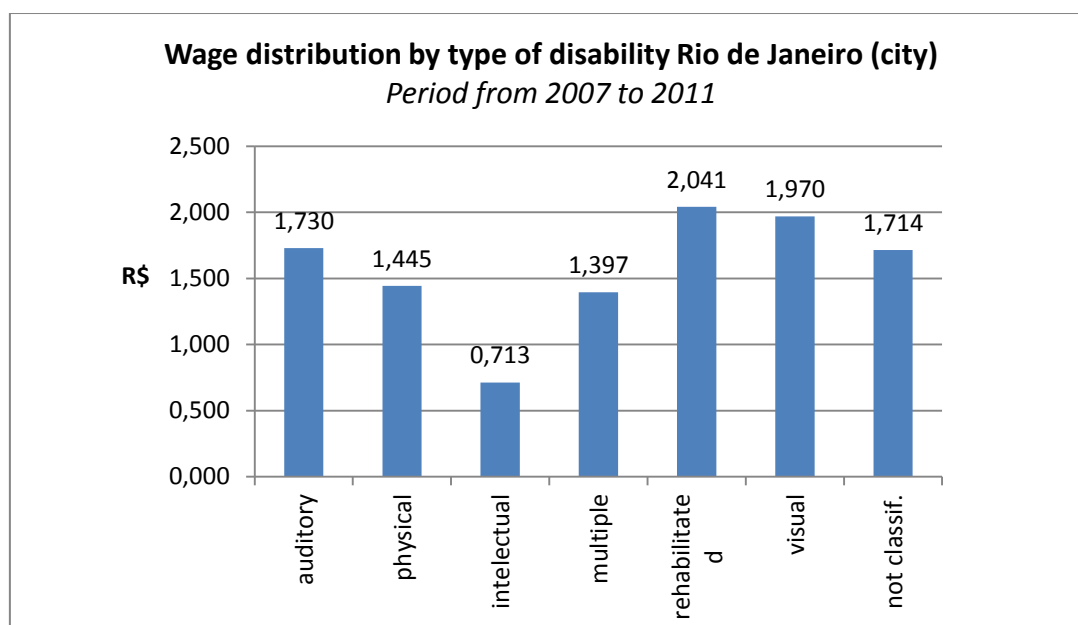
<sup>129</sup> It adopted the concept of the United Nations (UN), where people with disabilities include those who have physical, intellectual or sensory impairments.





**Figure 49 Average Wage Of Workers With disabilities (R\$ nominal)**  
Source: RAIS/MTE, 2013

To find work, it is more difficult for the so-called totally disabled, such as blind and wheelchair-bound people. However, the lowest wages are for workers with intellectual disabilities (mental), earning less than half the average remuneration of workers with disabilities. Among the disabled with higher wages are those with visual disabilities, whom often went through an orientation process of rehabilitation, enabling them a level of professional development sufficient to re-enter the labour market and participate in community life (Figure 50).



**Figure 50 Average Wage By Type Of Disability (R\$ nominal - City of Rio de Janeiro)**  
Source: RAIS/MTE, 2013

Referring to the wages in Olympic activities (Table 44), in this moment only the Rio 2016 Organising Committee workforce is considered. The average wage of employees working there (in Dec. 2012) is of the order of R\$ 11,700. The average wage of men is up to 20 percent higher than the wage of women.

Table 44 Wages in Olympic activities by gender (Dec/2012)

Wage Range (*)	Women		Men	
	Average wage (R\$)	Amount (people)	Average wage (R\$)	Amount (people)
<b>Operational</b>	1.346,00	1	1.947,00	2
<b>1</b>	2.305,00	1	2.310,60	5
<b>2</b>	2.975,50	4	2.864,25	8
<b>3</b>	3.740,00	6	3.869,49	7
<b>4</b>	5.057,10	30	4.913,00	17
<b>5</b>	6.574,13	30	6.639,48	27
<b>6</b>	8.893,25	36	8.802,50	29
<b>7</b>	11.298,18	22	11.018,93	28
<b>8</b>	13.786,80	20	14.514,93	14
<b>9</b>	18.198,14	14	18.636,81	21
<b>10</b>	22.022,14	7	22.432,44	9
<b>11</b>	27.862,00	4	28.282,25	4
<b>12</b>	36.986,25	4	38.281,73	15
<b>-</b>	<b>R\$ 10.612,88</b>	<b>179</b>	<b>R\$ 12.773,47</b>	<b>186</b>

(\*) internal categorisation by similarity of responsibility of their positions

Source: Rio 2016™, 2013

With respect to employees with disabilities, their average wage range is comparable with that of other employees, sometimes even overcoming it, as occurs in salary ranges three and six, for example (Table 45). Nevertheless, the average wage of employees with disabilities (R\$ 6,637) is 43 percent lower than the average wage of total employees (R\$ 11,700).

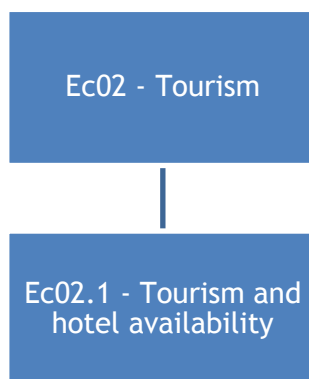
Table 45 Wages of People with Disabilities in the Olympic Activities (Dec/2012)

Wage Range	Employees with Disabilities		Other Staff (R\$)
	Average wage (R\$)	Amount (people)	
<b>1</b>	2.666,00	1	2.238,40
<b>2</b>	2.864,25	4	2.919,88
<b>3</b>	3.932,00	2	3.787,49
<b>4</b>	4.883,00	1	5.007,63
<b>5</b>	6.377,50	2	6.613,36
<b>6</b>	10.633,14	3	8.766,61
<b>10</b>	21.400,00	1	22.309,80
<b>-</b>	<b>R\$ 6.637,46</b>	<b>14</b>	<b>-</b>

Source: Comitê Rio 2016™, 2013

## Ec02 Tourism

The tourism industry has gained importance in various parts of the world, generating jobs, income, and investments, and, thereby, contributing to the economic and social development of countries. This thematic topic examines the tourism sector in the city of Rio de Janeiro and Brazil. It consists of the focus area *Tourism and hotel availability*.



In October 2011, when the Brazilian inflation rate had reached its highest peak in six years, Brazilians and tourists paid much more than in the past for hotels in some of the country's largest cities. The lack of facilities to meet the demand has further aggravated the high prices. In this period, the average daily rate in major cities increased by more than ten percent, especially in São Paulo (+13 percent), and Brasília (+18 percent); Rio de Janeiro had increased by 11 percent.

With Brazil hosting the 2014 World Cup, and Rio de Janeiro hosting the 2016 Olympic Games, it is interesting to compare the behaviour of prices during similar events, recently. Cape Town experienced a significant increase in hotel prices during 2010, caused by the increased demand for rooms during the South Africa World Cup; however, the following year prices dropped by 28 percent.

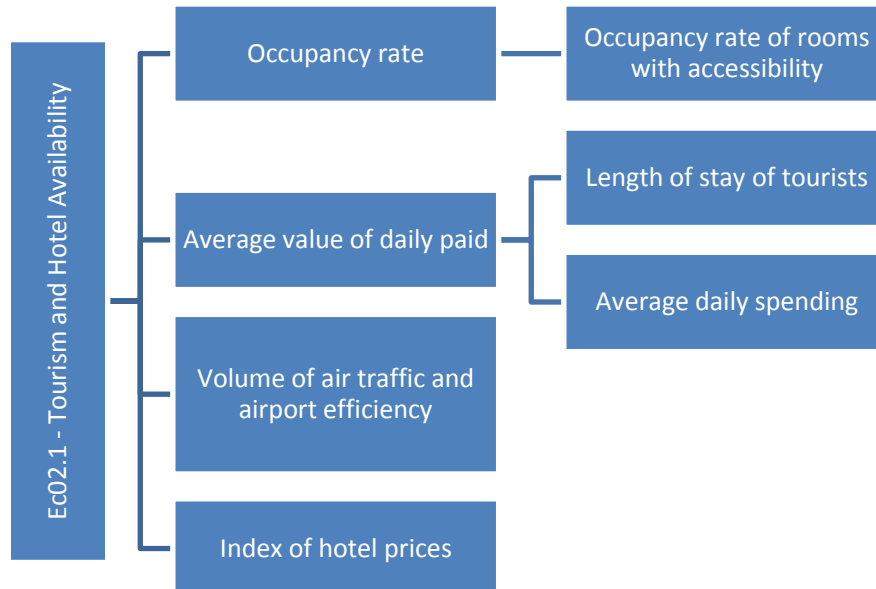
According to projections and economic studies, it is expected that for the 2016 Olympics, new hotels will be built in a number compatible with the expected boost in tourism demand. This legacy might position Rio de Janeiro as one of the main routes of national and international tourism, with diversified hotel services, and most probably at competitive prices.

### Ec02.1 Tourism and Hotel Availability

#### Purpose

The purpose of this focus area is to observe the tendency of indicators that can demonstrate if the city, state, and country will respond satisfactorily to the increased demand of hotel rooms due to the Olympic and Paralympic Games Rio 2016. In this sense, it is intended to present the evolution of the number of rooms in the hotel industry, the daily spending of tourists, and the average length of stay in the city of Rio de Janeiro.

This focus area comprises seven indicators, namely: occupancy rate, occupancy rate of rooms with accessibility, average value of daily paid, length of stay of tourists, average daily spending, volume of air traffic and airport efficiency, and index of hotel prices, as shown below.



Indicator	Description
Occupancy rate	Potential supply – not the actual number available.
Occupancy rate of rooms with Accessibility	Potential supply of accessible rooms.
Average value of daily paid	Average amount spent daily in main Brazilian regions.
Length of stay of tourists	Average length of stay of tourists in the city and in the country.
Average daily spending	Average daily spending of tourists in major Brazilian cities.
Volume of air traffic and airport efficiency	Landing and boarding of aircrafts and passenger handling.
Index of Hotel Prices	Measure of the prices fluctuation in hotels.

## Results

The occupancy rate in the city of Rio de Janeiro, calculated according to the number of nights sold, compared to the total capacity of accommodation units (AU), grew over the last years, reaching 79 percent in 2011 (**Figure 51**). In 2012, the mean occupancy rate recorded a slight drop compared to the previous year, due to the

entry of three large hotel units in the city, which increased the total capacity of AUs<sup>130</sup>.

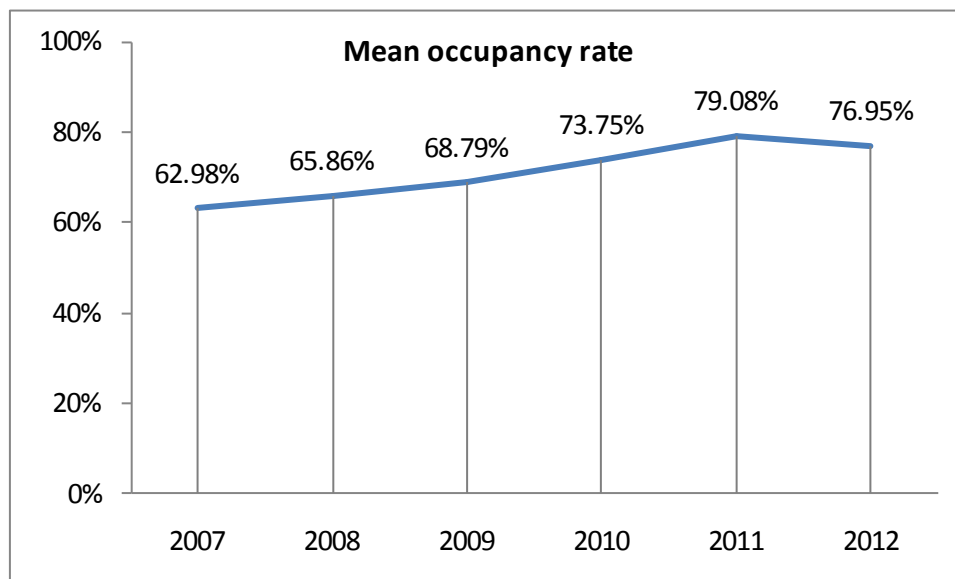


Figure 51 Mean Occupancy Rate of Rooms in the City of Rio de Janeiro  
Source: ABIH-RJ/Fecomércio-RJ, 2013

Four-star AUs showed a higher occupancy (79 percent) in 2012 (see accommodation occupancy rate per category table in **Annex Ec 02**). The lower occupancy occurred in the two-stars category: only 65 percent (11 percentage points below the average for the year). This is influenced by increased hotel offerings with additional accommodation units meeting international standards, to conform with the standards required by the Olympic Games, such as the accessibility criteria. The occupancy rate of accessible rooms is not yet available.

According to Hotel Invest (2013), there were no significant changes in daily rates due to domestic and international economic issues, over the past three years. In the short-term, it is expected that the daily rate progressively increases, driven by higher hotel occupancy.<sup>131</sup>

The Brazilian Association of Companies for Events (ABEOC)<sup>132</sup> states that the increase in hotel rates in the country was ten percent higher than the global average of only four percent in 2012. On an annual comparison basis, prices decreased two percent in Asia, but increased in other regions (eight percent in the Pacific, five percent in North America, four percent in Latin America, three percent in the Caribbean, and two percent in Europe and Middle East). Out of all the Brazilian destinations – resort town Angra dos Reis (Rio de Janeiro) – was the most expensive, charging US\$ 190 per night (even with a drop of 19 percent compared to 2010). Among the large cities, Rio de Janeiro was the most expensive, with an 11 percent increase in the price of lodging. Rio also has the most expensive five-star hotels, with an average rate of US\$ 520 per night. Second in the ranking, New York has a daily average of US\$ 430 in

<sup>130</sup>ABIH. Available on: <[www.riodejaneirohotel.com.br](http://www.riodejaneirohotel.com.br)>. Accessed on 20/07/2013.

<sup>131</sup>Hotel Invest. [www.hotelinvest.com.br](http://www.hotelinvest.com.br), accessed on 20/07/2013

<sup>132</sup>ABEOC. Availbale on [www.abeoc.org.br](http://www.abeoc.org.br). Accessed on 07/15/2013.

high-standard hotels. Lisbon was considered to have the cheapest accommodation in this category with a daily rate of only US\$ 135.

Business tourism is, in general, the main reason for travelling to the Rio de Janeiro city (Table 46). Data from 2012 shows that there was an intense demand for Rio's hotels, induced primarily by petrochemical, marine, and transport areas.<sup>133</sup> Indeed, business tourism has been the main reason for staying in the city during the analysed period, although leisure is the main reason for tourists travelling in the high season (December to February). Regardless of the reason for the trip, the average stay of tourists in Rio de Janeiro is three days, as shown in the table in **Annex Ec02**.

**Table 46 Reason for Stays of tourists in Rio de Janeiro**

Reason for Travelling	Year					
	2007	2008	2009	2010	2011	2012
<b>Business in general</b>	54.31%	55.53%	48.54%	51.22%	51.35%	48.35%
<b>Business/Work</b>	38.34%	42.06%	36.48%	39.36%	39.67%	36,17%
<b>Conventions / conferences / fairs</b>	15.97%	13.47%	12.06%	11.86%	11.68%	12.18%
<b>Leisure</b>	31.30%	31.43%	33.35%	32.08%	30.87%	32,83%
<b>Member of air crew</b>	7,09%	7.09%	10.54%	9.55%	10.14%	7.03%
<b>Other / Unspecified</b>	5,94%	5.94%	7.57%	7.15%	7.64%	11.79%

Source: ABIH-RJ/Fecomércio-RJ, 2013

For Brazil as a whole, the numbers are slightly different (**Table 47**). Business tourists spent about US\$ 120 per day in 2010. It was the highest average spending per capita recorded since 2004, when the Study of International Tourism Demand in Brazil began.<sup>134</sup> Leisure tourists had a daily average expenditure of US\$ 70.53. This shows that, even placing second in the number of visitors, business tourism has generated more resources for the local economy than leisure tourism. Trips motivated by leisure correspond to 46.1 percent of the total; foreigners interested in business, events and conventions accounted for 23.3 percent; other (visits to relatives and friends; studies; health treatment; religious tourism, among others) represented 30.6 percent of the visitors who came to Brazil in 2010.

Regarding tourists average spending *per capita* in the country, there was a relative increase for all travelling motivations in 2010, compared to the previous year and reversing therefore a decline observed since 2007.<sup>135</sup>

**Table 47 Average Tourist Spending Per Capita**

Average spending per capita/day, depending on the travelling reason (Brazil)				
Year	Average spending per capita/day in Brazil (US\$)			
	Total	Leisure	Business, events, and conventions	Other reasons
<b>2007</b>	65.59	73.37	112.86	43.57
<b>2008</b>	61.05	68.00	110.89	42.79
<b>2009</b>	58.19	63.26	106.14	42.35
<b>2010</b>	66.27	70.53	119.38	48.58

Source: FIPE, 2013

<sup>133</sup> ABIH. [www.riodejaneirohotel.com.br](http://www.riodejaneirohotel.com.br), accessed on 07/20/2013.

<sup>134</sup> The study was conducted by Institute of Economic Research (FIPE) and published by the Ministry of Tourism.

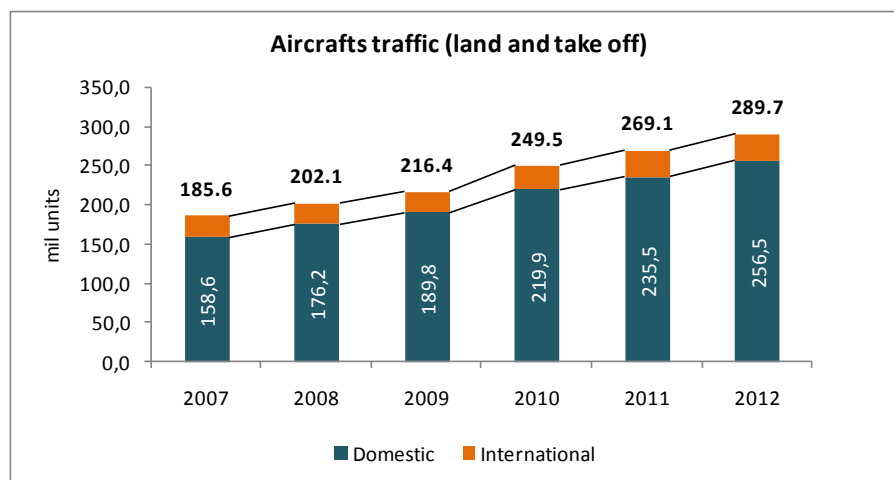
<sup>135</sup> FIPE. [www.fipe.org.br](http://www.fipe.org.br). Accessed on 07/15/2013.

Another survey, limited to Rio de Janeiro, showed that business travels represented 51.2 percent of the total in 2010, ahead of those for leisure (32 percent) and for other reasons, such as studies, visits to relatives, etc. (seven percent). Figures for the year 2012 were very similar; tourism business continued to be the main reason for foreigners coming to the city.<sup>136</sup>

Total spending by foreign tourists visiting Brazil reached 5.8 billion dollars in 2008, 16.8 percent more than in 2007. The country encompassed 3.4 percent of the international tourist flow on the American continent in 2008. In 2006, 1.87 million people were employed in the sector, with 768 thousand formal jobs (41 percent) and 1.1 million informal occupations (59 percent).

During the games, visitors will have expenses, which must be compared to those of tourists not necessarily attracted by the Olympic events. Brazilian visitors will possibly have a major participation in relation to foreign visitors. Side or parallel events may attract a great number of people. This is a parallel impact that will attract a substantial part of the resources. A great number of shows will be probably scheduled.

Aircraft traffic in the two main airports of Rio de Janeiro (Galeão International Airport and Santos Dumont Airport) overcame the mark of 280,000 units, representing a growth of over 50 percent with respect to traffic in 2007. Regarding annual growth, the year 2010 had the highest growth rate compared to a previous year (over 15 percent). After that, the growth was on average 7.8 percent per year. The domestic aircraft traffic remained at 85 percent of total traffic (**Figure 52**).<sup>137</sup>



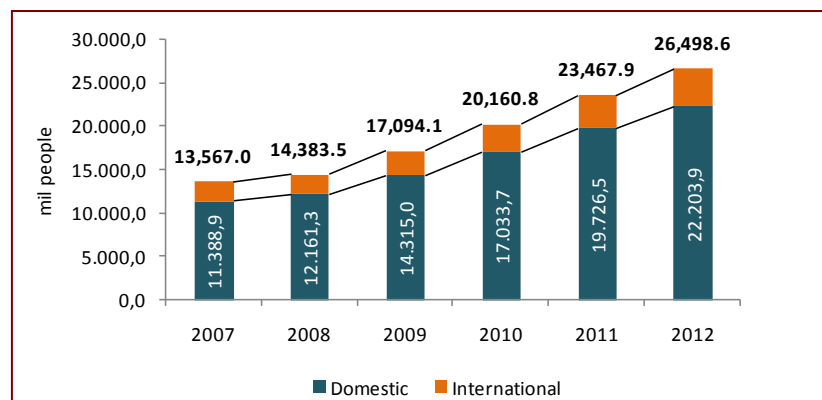
**Figure 52** Traffic at Airports in the Rio de Janeiro  
Source: Infraero, 2013

The total number of users of Galeão and Santos Dumont in 2012 exceeded by 90 percent the amount observed in 2007. With respect to international flights, growth in this-five-year period exceeded 97 percent, reaching a total number of 4.3 million people in 2012. It is noteworthy that the share of domestic passenger traffic in

<sup>136</sup>Fecomércio. [www.fecomercio-rj.com.br](http://www.fecomercio-rj.com.br). Accessed on 07/20/2013.

<sup>137</sup>Infraero. [www.infraero.gov.br](http://www.infraero.gov.br) Accessed on 07/10/2013.

Galeão decreased during the period: the share was 72 percent in 2007 and dropped to 59 percent in 2012.



**Figure 53 Passengers boarding and landing in airports in Rio de Janeiro**  
Source: Infraero, 2013

Regarding the cargo traffic in the two airports (Table 48), the volume handled in 2011 was much higher than in previous years, and the growth continued in 2012.

**Table 48 Traffic of Cargo in International and National Flights (ton/year)**

Year	Domestic	International	Total
2007	32.543	51.493	<b>84.036</b>
2008	35.396	50.145	<b>85.541</b>
2009	27.546	56.289	<b>83.835</b>
2010	20.272	62.874	<b>83.146</b>
2011	30.595	89.324	<b>119.920</b>
2012	39.008	86.569	<b>125.576</b>

Source: Infraero, 2013

When analysing the efficiency of airports, this efficiency index is a ratio of the WLU and the airport cost - for example the weight of passengers and cargo divided by the total expenditure of the airport. Galeão had the worst efficiency ratio in both 2010 and 2011, compared with the rates of airports in category 1, which includes the largest airports in the country (16 airports in 2011). Santos-Dumont airport had better indexes, reaching the 9<sup>th</sup> position in the 2011 ranking, behind airports such as Fortaleza and Salvador.<sup>138</sup>

<sup>138</sup>ANAC (Agência Nacional de Aviação Civil) - National Civil Aviation Agency. [www.anac.gov.br](http://www.anac.gov.br). Accessed on 07/10/2013.



### Ec03 Prices

The thematic topic *Prices* has a single focus area called *Price index*. From the evaluation of its behaviour, it is possible to identify variations that affect the living cost of the population.



The most commonly used indicator to measure changes in the living cost of families is the IPCA (National Price Index of Broad Consumer). It provides the official figures of inflation in the country, because it measures the variation of families' expenditures on food, transport, health, housing, education, and clothing, among others. For nearly a decade, Brazil has reached levels of inflation within the targets set by the government.

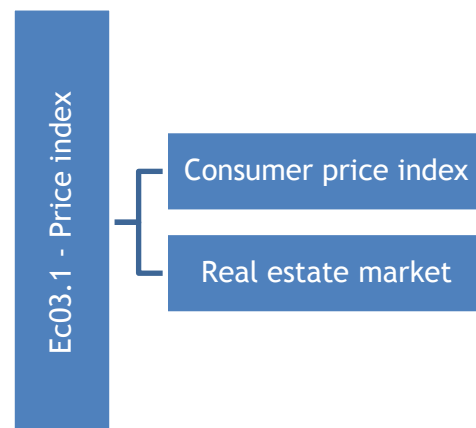
The product group *food and beverage* has the highest weight in the index composition, and it was a major contributor to the performance over the period analysed (2007 to 2012). Another group of products and services with weight in determining the living cost of families is shaped by transport costs, the object of popular demonstrations in the Second Quarter 2013 calling for the reduction in rates of urban public transport (UPT), mainly because of service quality. For decades, the country's public policies have favoured the individual transport at the expense of that collective. In the whole period analysed for the transport sector (2007 to 2011), the increase in bus fares was higher than inflation, except in 2008 (when there was a fare increase on trains). However, expenses associated with certain vehicles (automobile purchase, maintenance, transit fees, and insurance) have increased less than inflation; in the specific case of new vehicles, there was a decrease in prices, due to the adoption of measures by the government to stimulate car purchases, with reduction/exemption of tax in the manufacturing.

Another important group is the analysis of real estate prices, whose performance causes reflections in a long production chain from production of raw materials for construction, to selling business of built property. In the last years, house prices in Rio de Janeiro have increased dramatically. The expansion of the real estate market stems mainly from changes that the city has been suffering due to the economic attractiveness of the city and to the mega-events (including the Games), for instance security projects (such as the implementation of the Pacifying Police Units) and investments in transport and sanitation. If the rise in prices stabilises at a level much higher than the income gains, we could have an inflationary legacy concern.

## Ec03.1 Price Index

### Purpose

The focus area *Price index* includes two indicators that, when analysed together, provide an objective view of the overall price behaviour in Brazil and Rio de Janeiro. It aims at portraying the behaviour of specific price indices for purposes of appropriating the inflationary effect, highlighting the sector of urban public transport, and the measurement of valuation of real estate assets. Therefore, it will be possible to fix the monetary values to enable comparisons and evaluate correspondence relationships between the Olympic Games and the real estate valuation in the city of Rio de Janeiro.



Indicator	Description
<b>Consumer Price Index</b>	The IPCA is a Federal Government official indicator for gauging inflation targets. It measures the change in the living cost of families with monthly income of one to 40 minimum wages in major metropolitan areas. <sup>139</sup>
<b>Real Estate Market</b>	This indicator allows the evaluation of the value of residential and commercial properties per square meter, new and used, in the city and Olympic regions from the FipeZAP Index prepared by the Institute of Economic Research (FIFE), in partnership with ZAP Imóveis. <sup>140</sup>

### Results

Targets for inflation (measured by IPCA) have been achieved since 2004, which means that for nine consecutive years, consumer inflation has remained within the targets set by the government. The weight of Rio de Janeiro in the IPCA is 12.46 percent.<sup>141</sup> **Figure 50** shows the evolution of inflation in recent years.

<sup>139</sup> Belém, Belo Horizonte, Curitiba, Fortaleza, Porto Alegre, Recife, Rio de Janeiro, Salvador, São Paulo, Goiânia e Distrito Federal.

<sup>140</sup> ZAP Real Estate is the largest portal of real estate listings in Brazil.

<sup>141</sup> IBGE, 2012.

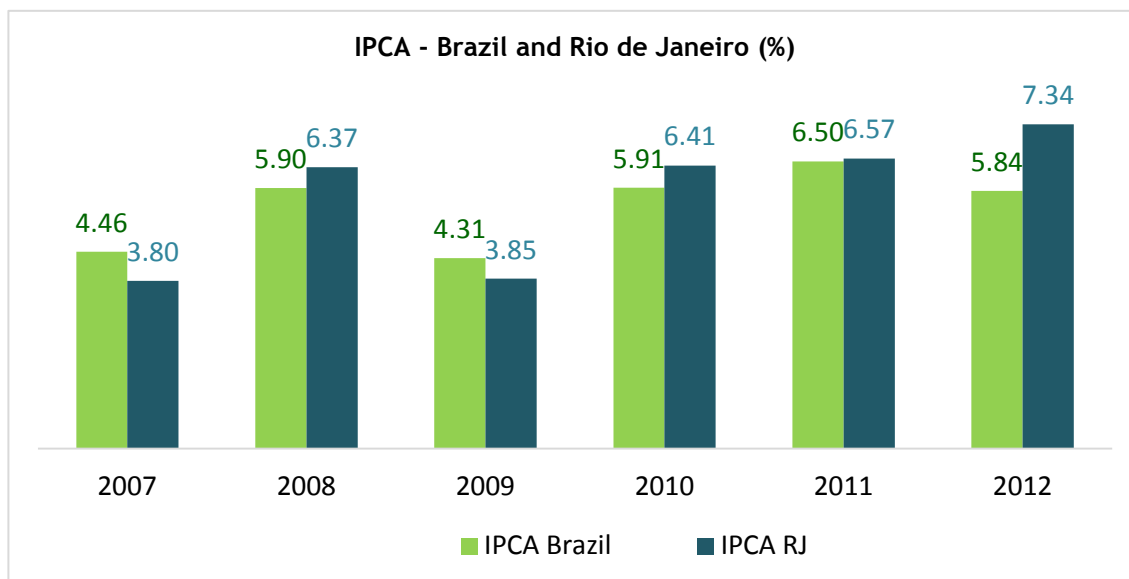


Figure 54 Price Index of Broad Consumer (Brazil and the metropolitan region of Rio de Janeiro)  
Source: IBGE, 2013<sup>142</sup>

With the exception of 2007 and 2008, inflation recorded in Rio de Janeiro was higher than the national level. In 2010, the difference was 0.5 percentage points. The greatest difference occurred in 2012: 1.5 percentage points highlighting the increase in expenses, due mainly to a rise in domestic services. The food and beverage group, which had more weight in the IPCA and through which families can more easily grasp the inflation effects, also had a significant increase compared to 2011.

Inflation in 2011 (6.50 percent) was the highest since 2004, highlighting the transport group. Airline tickets were up over 50 percent from the previous year, due to the rising price of jet fuel and increased demand for air transport.

Spending on transport is the second greatest weight in Brazilian families, only behind the food and drink expenditure. Due to its importance, it was added as an assessment of IPCA, which focused on public transport expenses (specifically urban bus, train, and subway) and private, the latter limited to analysis of fuel costs (gasoline) and purchasing a new car. **Figure 55** shows the inflation behaviour unfolded in key components of the transport group.

<sup>142</sup> IBGE. IPCA - Índice Nacional de Preços ao Consumidor Amplo. Accessible on: <http://www.sidra.ibge.gov.br/bda/precos/default.asp?t=3&z=t&o=20&u1=1&u2=1&u3=1>

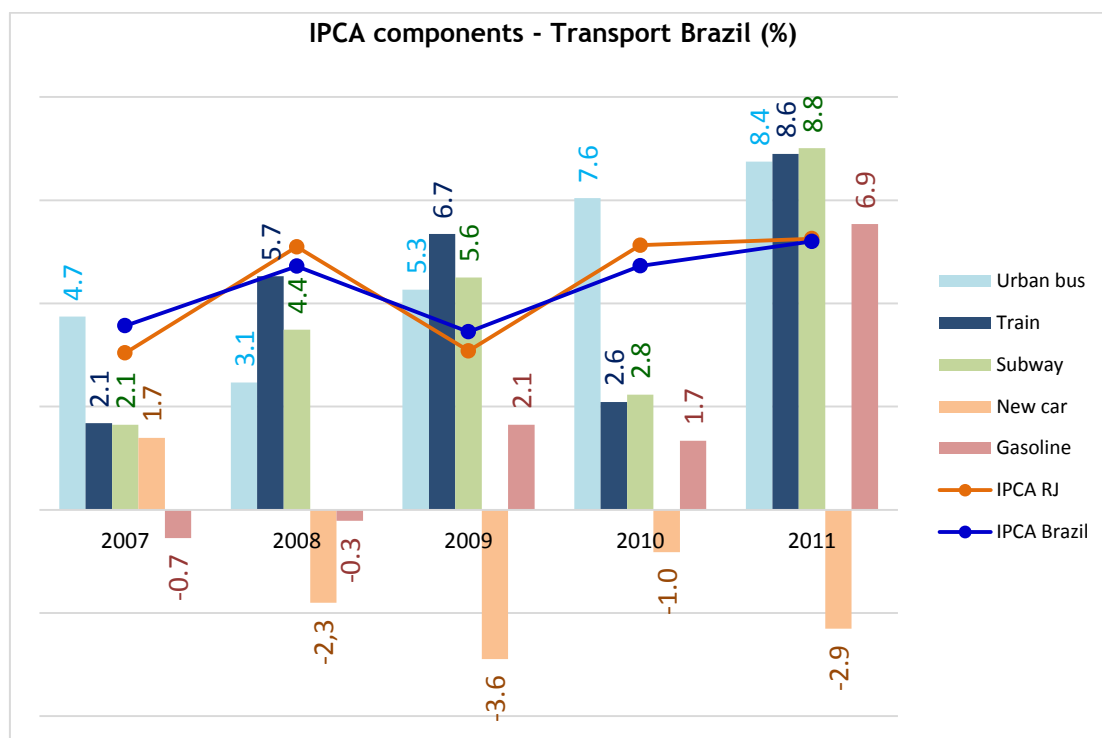


Figure 55 IPCA Components - Transport (Brazil)  
Source: IBGE, 2013

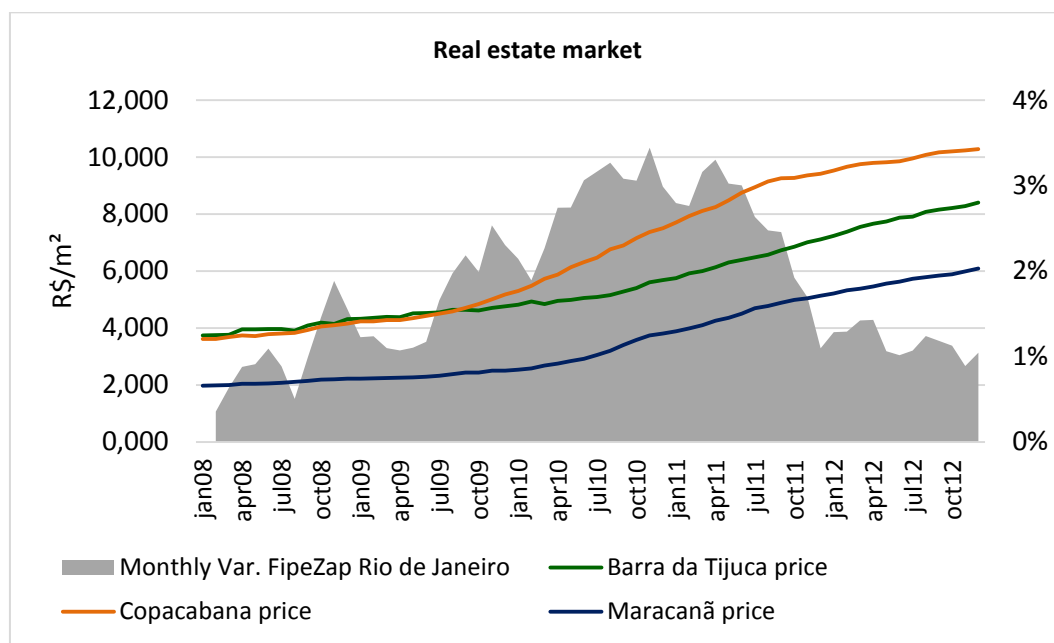
One can check that the variation in spending on urban buses exceeds the national average inflation in the whole period (except in 2008), and with emphasis on 2009, when the urban bus fare was 1.02 percent higher than inflation. In 2010, the difference was 1.64 percent, reaching the level of almost two percentage points in 2011, when it reached 8.4 percent. Increases were also significant in trains and subways in the same year: 8.6 percent and 8.8 percent, respectively.

In the opposite direction of inflation behaviour, the graph shows the negative changes in population spending in purchasing a new car. In Brazil, the policies related to transport encourage individual transport in detriment to the public transport. Recent measures to encourage the purchase of automobiles or motorcycles aim at stimulating the industrial production, but other expenses associated with the vehicle, such as maintenance, transit fees, and even the price of gasoline, have also risen at rates lower than inflation.

In the specific case of Rio de Janeiro, higher prices on public transport are mitigated by the availability of effective tariff that allow tariff reductions on intercity services, including buses, ferries, trains, subway, and vans (regulated). Every day 120,000 people benefit from tariff reductions by the Integrated Ticket, which means 350 thousand integrations on buses, ferries, trains, and subway<sup>143</sup>.

<sup>143</sup>According to study of *Fundação Getúlio Vargas* (FGV), 2010.

With regard to real estate in Rio de Janeiro, house prices have suffered a *boom* in the last years, including in the neighbourhoods of the future Olympic venues. There was a recovery in property prices, especially in areas that are receiving investments, such as sanitation works and new subway lines. **Figure 56** shows the evolution of the square metre price of the real estate in three neighbourhoods who will receive the Olympic facilities and monthly variation of the FipeZAP index.<sup>144</sup> In early 2008, the price of square metre in Barra da Tijuca was R\$3.7 thousand, R\$3.6 thousand in Copacabana, and R\$ 1.9 thousand in the region of Maracanã.<sup>145</sup> A year later, prices were already 13 percent higher, on average. In 2010, the rise in prices occurred at higher rates, due mainly to the onset of the pacification process of the city's slums. In January 2011, the price of the square metre in Maracanã area had grown more than 50 percent over the same month last year. This escalation was driven by the installation of the Pacifying Police Units (UPPs) in the surrounding slums. After this *boom*, prices have continued to grow, albeit at lower annual rates. In December 2012, the price of a square metre in Barra da Tijuca reached R\$ 8.4, in Copacabana R\$ 10,300, and in the region of Maracanã R\$ 6.1; the city average was R\$ 8,600 – 22 percent higher than the national average. The price of a square metre in Rio de Janeiro almost tripled in the period 2008 to 2012.



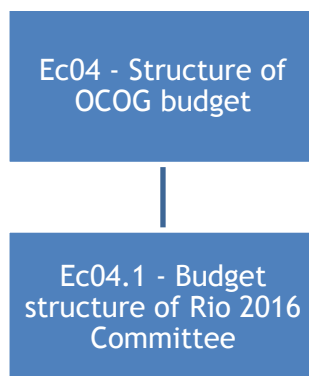
**Figure 56 Real Estate Market**  
Source: FipeZap/ZAP imóveis, 2013

<sup>144</sup> The neighborhood of Deodoro will also receive Olympic facility, but it was not considered in the analysis because it possesses too small a sample to calculate the average price.

<sup>145</sup> It was considered the Tijuca sample for being the neighborhood of greatest estate representativeness in the area of the Maracanã.

## Ec04 Structure of OCOG Budget

This thematic topic examines the specificities of the budget structure of the Organising Committee for the 2016 Olympic Games (Rio 2016 Committee). Its data was developed based on a number of considerations, such as the strategic and operational planning of the Rio 2016 Organising Committee and recent information of candidate cities for the Olympic Games. It consists of only one focus area, the *budget structure of Rio 2016 Committee*.



The data reported here uses the Candidature Dossier as source, for example budget data predicted at the time of the application of the city of Rio de Janeiro to host the Games. According to this document, the budget of the Organising Committee of the Olympic Games (Rio 2016) was prepared based on the economic conditions demonstrated in 2008, taking into account the effects of inflation, and the exchange rates projections until 2016. The Rio 2016 Organising Committee will adopt a policy of protection against the financial risks of foreign exchange, through a strategy that combines hedging practices and protective measures against exposure of financial resources in periods of high volatility of exchange rates. The initial budget presented in 2008 was R\$ 28.8 billion (US\$ 14.4 billion). The projected values for 2016, year of the event, were R\$ 38.7 billion (US\$ 16.7 billion). However, the budget plan is divided mainly into two segments: (i) the Organising Committee responsibility for planning, operation of the event and installation of temporary structures; and (ii) the segment of government responsibility, private initiative etc., which includes the construction of the Olympic Village, Media Village, stadiums, etc.<sup>146</sup> A revised budget was disclosed in January 2014, updating the previsions of the Candidature file<sup>147</sup>.

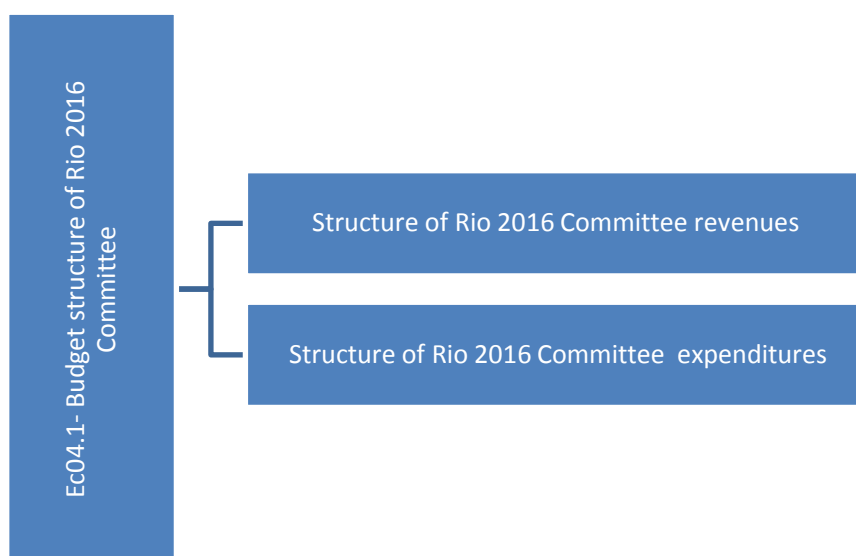
<sup>146</sup>Rio 2016™. Candidature File. Available on <[www.rio2016.org.br](http://www.rio2016.org.br)>. Accessed on 07/20/2013.

<sup>147</sup>Rio 2016™. *Orçamento*. Available on <<http://www.rio2016.org/transparencia/orcamento>>. Accessed on 20/01/2014. (only in Portuguese version at this date).

## Ec04.1 Budget Structure of Rio 2016 Committee

### Purpose

The purpose of this focus area is to make a comparison between the budgets planned and carried out by the Rio 2016 Organising Committee, detailing their income, and expenses, as well as detecting possible changes. This focus area covers two indicators that, when analysed in combination, provide understanding of the budgetary structure of the Rio 2016 Committee in order to reveal the possible impacts of investments, expenses, costs, revenues, and expenses. The gross revenues and expenses will be detailed in accordance with the procedures adopted by the International Olympic Committee and executed by the Rio 2016 Organising Committee.



Indicator	Description
Structure of Rio 2016 Committee Revenues	Revenue structure of the Games Organising Committee for planning, operation and assembly of the Games.
Structure of Rio 2016 Committee Expenditures	Expenditure structure of the Games Organising Committee for planning, operation and assembly of the Games.

### Results

The original budget of the local Organising Committee, as stated in the Candidature File (provisions of 2008), was R\$ 5.6 billion (US\$ 2.8 billion) to be funded from three parts: contributions of the International Olympic Committee; subsidies from federal, state and municipal governments (divided into equal parts); and sponsorships (local sponsors, including value-in-kind, for example products or services, and corresponding to categories with potential for partnership development) and ticket sales (for example, revenue directly acquired with sale of tickets to events) [see detailed figures in Annex Ec04.1].

A revised budget was disclosed in January 2014. The increase was justified by the inclusion of four new sport modalities. Nevertheless, all public funding in the Committee budget has been eliminated.

**Table 49 Budget of the Local Organising Committee Rio 2016**

	<b>Forecast values (billion) 2008</b>	<b>Revised values (billion) (01/14)</b>
<b>IOC subsidies</b>	R\$ 1.2 (US\$ 0.6)	R\$ 1.47 (US\$ 0.63)
<b>Public Funding (federal, state, and local governments)</b>	R\$ 1.4 (US\$ 0.7)	-
<b>Sponsorships and Ticket Sales</b>	R\$ 2.1 (US\$ 0.8)	R\$ 4.41 (US\$ 1.89)
<b>Other</b>	R\$ 1.0 (US\$ 0.5)	R\$ 1.12 (US\$ 0.48)
<b>TOTAL</b>	<b>R\$ 5.6 billion (US\$ 2.8)</b>	<b>R\$ 7.0 billion (US\$3.0)</b>

Source: Rio 2016<sup>TM</sup>, 2013



## Ec05 Public Investment

A detailed analysis of the focus area is expected to report R2 in 2014; however, the availability of some preliminary information allows its anticipation. It aims at evaluating the participation of the public sector in expenditure related to the Olympic and Paralympic activities, comparing such investment levels to those achieved in the context activities<sup>148</sup>. The main part of public investments in Olympic activities is related to the Games facilities. The alignment of the concept of Games facilities with the objective of long-term urban planning of the city of Rio de Janeiro is essential for planning the infrastructure of the Olympic and Paralympic Games Rio 2016.

Information, albeit initial, provides the sense of the allocation of federal public investments to the city of Rio de Janeiro. A considerable part of public investments associated with the Olympic Games is managed by the *Caixa Econômica Federal* (CEF), including funding for facilities and mobility. It is recalled that data are preliminary and may be adjusted over time.

With regard to Arenas, four written agreements were signed with funds from the general federal budget, related to CAP. These funds will be allocated in the Barra Olympic Park, where the competitions of Handball, Tennis, Swimming, and Velodrome will take place. **Table 50** shows the direct investment to be made in each gymnasium or stadium. The transfer of federal funds to the city of Rio de Janeiro has not occurred since the works have not yet started. In the last column of the table, appears the announced investment planned in the responsibility matrix, the investment for each venue includes both construction, and maintenance or relocation phases.

**Table 50 Investments in Arenas**

	Federal Gov. Investment Prevision (1)	Government Investment Prevision (2) (R\$MM)	
		Federal	Municipal
Venue – Olympic Park in Barra			
Basic Projects of the Works	-	31.1	-
Gym Hall 4 Handball	R\$ 108.647.200,00	146.8	-
Tennis Centre	R\$ 182.070.977,00	175.4	-
Aquatic Stadium	R\$ 219.556.980,00	226.5	-
Velodrome	R\$ 143.238.688,00	143.1	-
Deodoro Electricity Transmission (partial)	-	77	-
TOTAL Barra	(R\$MM) 653.5	722.9	-
Maracanã Region			
Urban Infrastrusture		-	118.2

<sup>148</sup> The orientation of Technical Manual Olympic is to differentiate, between the activities that can be considered as linked to Games, two different types: Olympic activities and Context activities. In this way, we adopt that “any activity which is managed by the OCOG, and any activity identified as being necessary to staging the Games in the Candidature File is an Olympic activity. Note that an activity managed by the OCOG may not be funded by the OCOG”, and from another part “Any activity set up to support, but is not strictly necessary to the staging of the Games, is a context activity” (IOC, Technical Manual on Olympic Games study - 5<sup>th</sup> version, post Vancouver Winter Games.2012. p.29).

<b>Sambodrome</b>	-	65 – including PPP funds(*)
<b>TOTAL Maracanã</b>	-	<b>183.2</b>

(\*)PPP: Public Private Partnership/

Source: (1) CEF, 2013 – (2) APO, 2014.<sup>149</sup>

Investing in mobility is focused on two projects:

- VLT (*Veículo Leve sobre Trilhos*, from the literal traduction of the english Light Rail Vehicle - LRV) in Central and Port Areas)
- BRT (Bus Rapid Transport) Transbrasil.

The resources intended for the former are R\$ 1,156,686,874.08, being R\$ 532 million from the federal budget and R\$ 624,686,874.08 to be contributed by the VLT Carioca S.A. Still, there was no transfer of funds, because the works had not yet started. For the latter, the city of Rio de Janeiro is funding R\$ 1,097,000,000.00 with Guarantee Fund for Length of Service (Fundo de Garantia por Tempo de Serviço - FGTS) and added an R\$ 203,000,000.00 counterpart, totalling R\$ 1,300,000,000.00 of investment.<sup>150</sup>

There are also strong CEF investments in housing. Several projects, of which three stand out:

- Parque Carioca Enterprise, with 900 housing units and investment of R\$ 72,500,000.00 (R\$ 67,500,000.00 resources from *Minha Casa Minha Vida* and R\$ 5,000,000.00 from the Municipality of Rio de Janeiro);
- Athletes' Village Enterprise, with 3.604 housing units (operation still under analysis and feasibility study in CEF); and
- Porto Vida Residential Enterprise, with 1,333 housing units (also under analysis and feasibility study).<sup>151</sup>

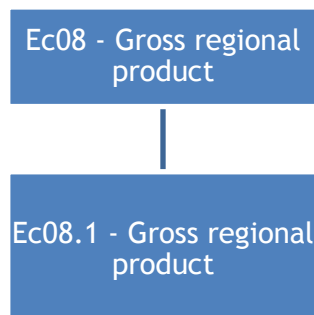
<sup>149</sup> Responsibility Matrix version 1.0, disclosed on 28/01/2014 – Available on: <http://www.apo.gov.br/site/matriz/>. Accessed on: 28/01/2014

<sup>150</sup> CEF. Feasibility study of investment.

<sup>151</sup> CEF. Feasibility study of investment.

## Ec08 Gross Regional Product

This thematic topic aims at reporting and understanding the local economy dynamic, through the evolution of the national and state Gross Regional Product (GRP) over the years. It consists of an area-focus of same name, whose interpretation and details are shown below.



The GRP, at market prices, measures total goods and services produced by resident producer units, intended for final consumption, being the sum of the values added by the various economic activities, plus taxes and net subsidies on products. On the other hand, it is also equivalent to the sum of primary income. Therefore, GRP is expressed from three perspectives: production, demand, and income.<sup>152</sup>

The GRP calculation takes into account the monitoring of sectoral research that the Brazilian Institute of Geography and Statistics (IBGE) performs throughout the year in areas such as agriculture, industry, construction, and transport. The indicator includes government spending, businesses spending, and families. It also measures the wealth generated by exports and imports.

### Ec08.1 Gross Regional Product

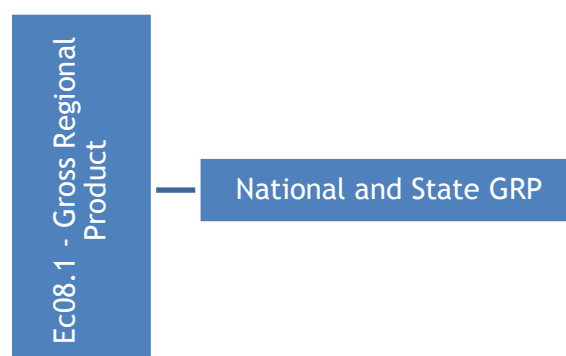
#### Purpose

The purpose of this focus area is to analyse the economic context of the region of the Host City and the GRP evolution, in order to understand whether there is a direct or indirect effect of the event on the local economy.

This focus area is portrayed by a single indicator, composed of items, such as families' consumption and government expenditures, information on exports and imports, and investments (formation fixed of gross capital). These data will be responsible for setting the context of the state of Rio de Janeiro and Brazil, as well as its impact on the local economy.

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<sup>152</sup> IBGE. Research on the profile of Brazilian municipalities, 2008. [www.ibge.gov.br](http://www.ibge.gov.br).



Indicator	Description
GRP	National and State GRP

## Results

Despite being a country with large agricultural production, availability of raw materials, and a broad, diverse industrial base, the service sector is the one that contributes the most to Brazilian GRP. The new composition of the national GRP gives the service sector a share of 68.5 percent in 2012. On the demand side, families' consumption increased 3.1 percent, the worst performance since 2003. However, the country had the lowest GRP among the countries of the BRICS group - - Brazil, Russia, India, China and South Africa - in 2012, having surpassed only the European countries battered by the crisis; on the supply side, the services sector grew 1.7 percent, but agriculture and industry decreased by 2.3 percent and 0.8 percent, respectively.

Its strong domestic market remains stable even in periods of reduced economic activity, such as 2009.

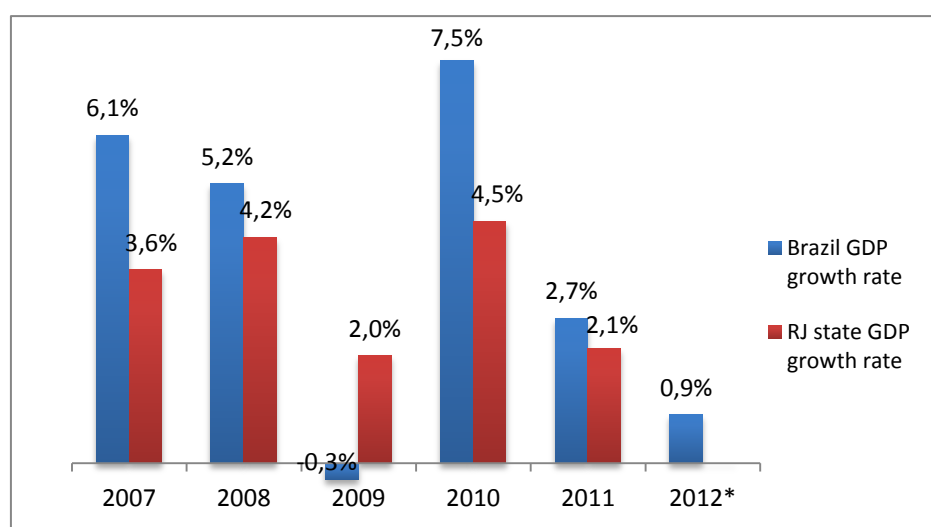


Figure 57 National and State GDP Growth Rate

Source: IBGE, 2013<sup>153</sup>

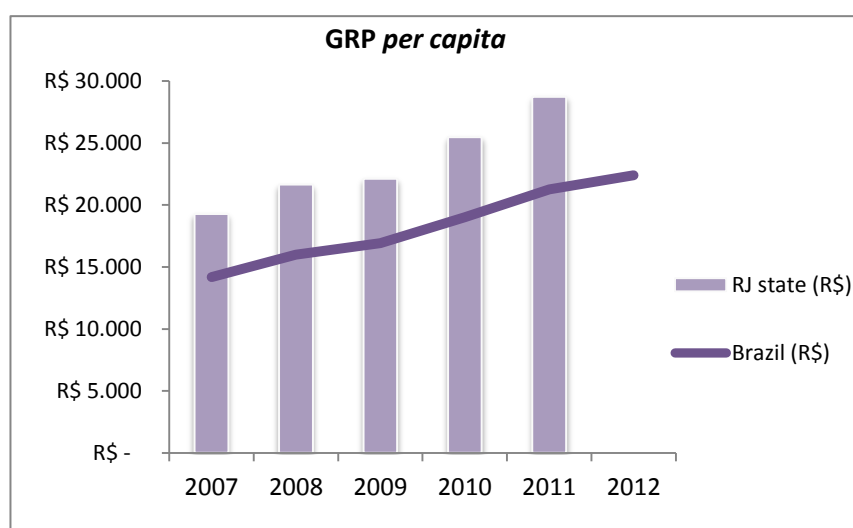


Figure 58 National and State GDP per capita  
Source: IBGE, 2013<sup>154</sup>

Over the past five years, the national and state gross domestic product has undergone significant changes.

The Brazilian economy in 2007 showed an increased Gross Domestic Product (GRP) of 6.1 percent over the previous year. At current values, the result reached R\$ 2.74 trillion (US\$ 1.30 trillion). The impact of the global financial crisis on different sectors and branches of the Brazilian economy has been significant and non-uniform, influencing the relative composition of GRP. After expanding by 5.2 percent in 2008, Brazilian GRP in 2009 decreased 0.3 percent, compared to the previous year. Rio de Janeiro, however, achieved a positive performance, closing the year with a 2.0 percent increase, under the influence of positive results of the extractive industry and administration, public health, education, and social security.

It is noticeable that between 2007 and 2011, the local GDP per capita, at both the national and state levels, is increasing at a rate about 12 percent – excepted in the year of 2009 when the increase has been much lower (2.2 percent for the Rio de Janeiro state and 5.7 percent for the Brazil). Even in a national context of GDP decrease, the GDP per capita increased.

Favourable public policies and investments in agriculture, industry, and civil construction in Brazil and Rio de Janeiro encouraged a further increase of the index in 2010 and 2011. To boost the economy, the government has taken some steps, such as grand programmes for railways, airports and ports, unburdening the payroll for 40 sectors and the programme of reducing costs with electricity to consumers and

<sup>153</sup> IBGE - PIB Nacional - Relatório Indicadores IBGE - Contas Nacionais Trimestrais, Dez 2013. Accessible on: [ftp://ftp.ibge.gov.br/Contas\\_Nacionais/Contas\\_Nacionais\\_Trimestrais/Fasciculo\\_Indicadores\\_IBGE/pib-vol-val\\_201304caderno.pdf](ftp://ftp.ibge.gov.br/Contas_Nacionais/Contas_Nacionais_Trimestrais/Fasciculo_Indicadores_IBGE/pib-vol-val_201304caderno.pdf)

<sup>154</sup> IBGE - PIB Nacional - Relatório Indicadores IBGE - Contas Nacionais Trimestrais, Dez 2013. Accessible on: [ftp://ftp.ibge.gov.br/Contas\\_Nacionais/Contas\\_Nacionais\\_Trimestrais/Fasciculo\\_Indicadores\\_IBGE/pib-vol-val\\_201304caderno.pdf](ftp://ftp.ibge.gov.br/Contas_Nacionais/Contas_Nacionais_Trimestrais/Fasciculo_Indicadores_IBGE/pib-vol-val_201304caderno.pdf)

industry, among others. For 2013, the expectation was that the economy grows again with more force, driven by a record grain harvest and the industry rebound. Most economists, as well as the United Nations (UN) project a three percent increase in the GRP.<sup>155</sup>

The state of Rio de Janeiro concentrates a record volume of investments announced for the period 2012 to 2014:

- R\$ 211.5 billion, according to the Federation of Industries of Rio de Janeiro (FIRJAN).<sup>156</sup> The sectors that showed higher forecast investments are infrastructure, responsible for R\$ 51 billion (24.1 percent) of the announced investments, and processing industry, with R\$ 40.5 billion (19.2 percent) in enterprises, according to the study.
- Out of the R\$ 40.5 billion in industrial investments between 2012 and 2014, R\$ 15.4 billion (38 percent) are in shipbuilding, R\$ 10.1 billion (24.8 percent) in steel, R\$ 6.1 billion (15.1 percent) in the petrochemical sector, and R\$ 6.1 billion (15.1 percent) in the automotive sector.
- Investments in transport and logistics (R\$ 21.3 billion) had increased by 80.3 percent in the previous three years (2011 to 2013).
- Projects for the development of ports totalled R\$ 8.8 billion, R\$ 5.4 billion, for highways, and R\$ 5.1 billion, for rails and subways.

The state of Rio de Janeiro is responsible for around 11 percent of national GRP, which places it as the second largest state contributing to the national GRP (after São Paulo, responsible for more or less 33 percent during the period).

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<sup>155</sup>UN – United Nations. [www.onu.org.br](http://www.onu.org.br). Accessed on 07/19/2013.

<sup>156</sup>FIRJAN. <http://www.firjan.org.br>. Accessed on 08/01/2013.

## 6 Next Steps

The next report (R2) is expected in the first semester of 2015. It will analyse the evolution of the Games' sustainability, with respect to this initial analysis (R1). We believe it will be based on a broader, more reliable set of data.

For a better understanding of the contextual environment of the Games preparation, the study will include case studies, best practices, and lessons learnt, in order to capture aspects that cannot be otherwise elaborated upon. Those case studies will also provide additional information for the interpretation of each thematic topic<sup>157</sup>.

Venues, works, implementation of public policies, etc. cannot be immediately assessed. Nevertheless, most of the listed case studies can be monitored from now on, until the end of the study (2019). Some of them will be included in the next report (R2), in 2014. A partial disclosure of the outcomes will be available on Reports 3 or 4, according to the characteristics of the case studies.

Case studies preliminary list	Related FA
<b>CREATIVE ECONOMY</b> Study of the Rio de Janeiro creative sector, using employment data and salary. Focused on the port area ( <i>Porto Maravilha</i> project).	Ec01.3
<b>DEODORO REGION</b> Economic evaluation of the changes in the region and nearby (Radical Park and arenas).	Ec01.3
<b>SUSTAINABLE PROCUREMENT</b> Initiatives, challenges, and results in managing the local supply chain based on the <i>Supplier Development – Programme of the Rio2016™ Organising Committee</i> .	Ec01.3 Ec09.1 En09.1
<b>VENUE(S)</b> ✓ Life Cycle Inventory of one (or more) Olympic venue(s) (Olympic Park) ✓ Evaluate the budget savings or expenses resulting from temporary or overlay venues and selected materials (ex: handball; Flamengo Park) ✓ Image considerations (total look <i>versus</i> reduced look); comparison with London initiatives.	En08.1 Ec01.3 Ec06.1
<b>SANITATION</b> Evaluation of the changes of the collection and treatment network (results of the <i>Pact for Sanitation</i> ), and improvement of hydric bodies. Focused on the extension of the collection network influenced by the Games (nearby venues).	En01.1 En07.2 So05
<b>BIODIVERSITY</b> Monitoring of the threatened species nearby the competition venues areas ("Broad-snouted caiman" ( <i>Caiman latirostris</i> ) in the Barra da Tijuca lagoon; "Guiana dolphin"; "Barred tail perlfish" ( <i>Leptolebias Minimus</i> ).	En03.3
<b>ECOSYSTEM SERVICES</b> Estimation of an ecosystem service affected or improved by the Olympic Games (to be defined, for example, a Conservation Unit).	En03.4

<sup>157</sup> IOC, 2012, page 47.

Case studies preliminary list (cont.)	Related FA
<b>SPORTS AND EDUCATION</b> Description and analysis of the government programme “Sand”, its results in schools and other relevant places, as the Olympic Villages (ex. <i>Educação Rio 2016; Rio Criança Global, Rio em Forma</i> )	So05.2 So05.4 So06.3
<b>CITY IMAGE</b> Tourist group vision about the city and the country, during the Olympic Games period, and/or entrance and exit questionnaires (need of a partnership with other entities, such as RioTur/Ministry of Tourism).	So10.1
<b>REMOVAL/REHOUSING</b> Description of one of the potential polemic removal/reallocation and analysis of the different discourses (government vs. society vs. expert analyst).	Ec03.2 So 09.1 So01.3
<b>PUBLIC TRANSPORT</b> Description and analysis of the public transport network changes (modernisation; intermodal integration, etc. ) – Sustainable urban mobility plan.	Ec01.3 En05.1 So01.3 So2.1 So10.1
<b>TOURISM</b> Evaluate the impacts (Ec, En and So) of the boost in the sector of tourism (professionals preparation; <i>Trilha Transcarioca</i> ; ecotourism; etc.).	Ec02.1 Ec01.3 En03.2 So10.1
<b>GOLF COURSE</b> Description of the direct impacts in the region (economic development but environmental prejudice because of the Conservation Unit), and the problem and debate caused (pressure groups).	Ec03.1 En03.2 So01.3



## 7 Appendix

### 7.1 Appendix 1 List of external stakeholders consulted (1)

Stakeholder name	Organisation
Alessandro Zelesco	Former President of Rowing Federation of RJ
Carlos Jardel	Dieese (Trade Union)
Cristiane Rose Duarte	FAU/UFRJ/Núcleo Pró-acesso
Flavio Aniceto	International Consultant – Culture
Gerard Bourgeaiseau	ABIH-RJ (hostel industry)
Isa Boechat	LixSustentável (GT ABNT 20121)
Izabel Maior	School of Medicine - UFRJ
Janete Salgueiro	Cáritas (ONG)
Johny Teixeira	Haztec (waste treatment company)
Juliana Paiva Vasconcellos	Expert in Economy (IBGE)
Karin Pey	Rio Como Vamos (NGO)
Lamartine Da Costa	Universidade Gama Filho
Luiz Antonio de Oliveira	Museu da Maré/CEASM
Marcelo Costa	CREF1 (sport teacher.)
Márcia Vaz	Fetranspor
Nivando Walt	Haztec (waste treatment company)
Paulina Porto	Expert in Environment
Regina Cohen	Núcleo Pró-acesso FAU/UFRJ
Thereza Lobo	Rio Como Vamos (NGO)

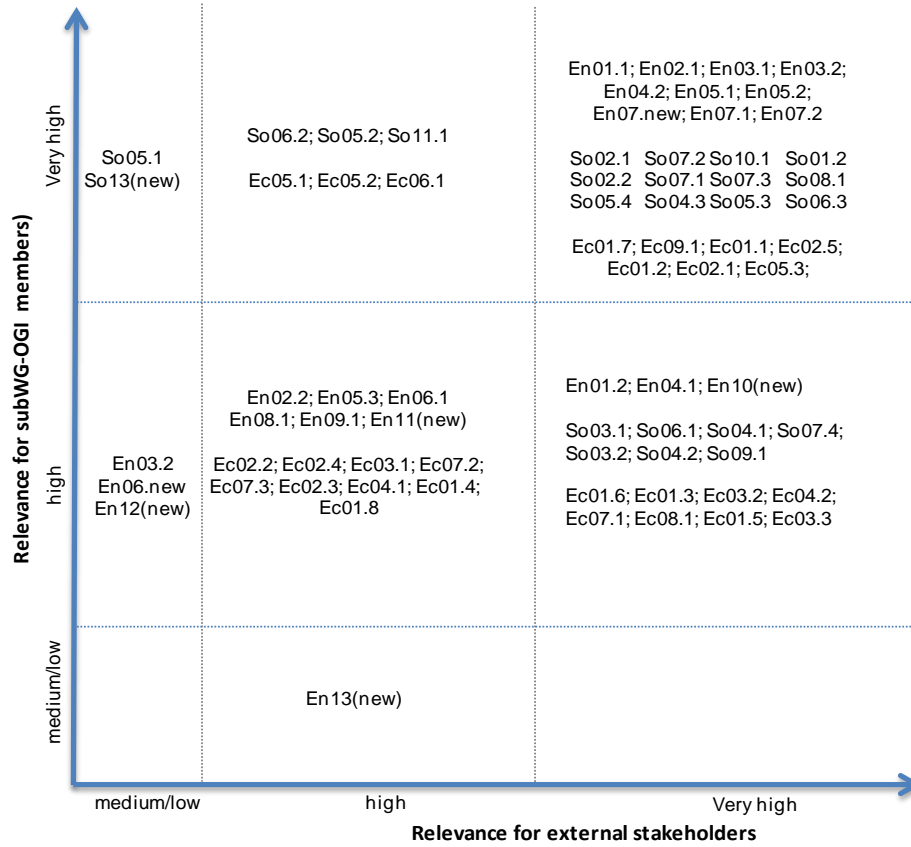
(1) List of participants in the stakeholder consultation, which took place at the SAGE/COPPE/UFRJ in 01/29/13, in Rio de Janeiro.

## 7.2 Appendix 2 Matrix of relevance for defining focus areas for the study

Resulting from the consultation with external stakeholders and sub-WG-OGI members:

<p>En01.1 Water Quality  En01.2 Quality of water discharged by Olympic and Paralympic venues  En02.1 Air Quality  En02.2 Greenhouse gas emissions of the Olympic and Paralympic Games  En03.1 Olympic induced land use changes  En03.2 Olympic and Paralympic venues in protected sites  En03.2 Threatened species  En04.1 Venues development and design strategy  En04.2 Resource efficiency of Olympic and Paralympic venues  En05.1 Use and evolution of the public transport network  En05.2 Olympic and Paralympic induced transport  En05.3 Olympic and Paralympic transport impacts  En06.new Use and evolution of energy consumption  En06.1 Olympic and Paralympic energy consumption  En 07.new Waste and wastewater management  En07.1 Solid waste production of Olympic and Paralympic Games  En07.2 New waste and wastewater treatment facilities and major improvements  En08.1 Inventory of energy and materials of the Olympic and Paralympic Games  En09.1 Procured products and services with environmental, social and/or ethical certification  En10 (new) Floods  En 11 (new) Landslides  En12 (new) Urban sound quality  En13 (new) Bike lanes</p>	<p>So01.1 Legislative activities related to the Olympic and Paralympic Games  So01.2 Deferment and abandonment of public policies  So01.3 Pressure groups  So02.1 Compliance of places where public services are offered with accessibility criteria  So02.2 Compliance of Olympic venues with accessibility criteria  So03.1 Opinion polls  So03.2 Consultation with stakeholders  So04.1 Participation of minorities in the Games  So04.2 Promotion of minorities and indigenous population  So04.3 Perception about people with disabilities in society  So05.1 Poverty and social exclusion  So05.2 Education  So05.3 Crime and public safety  So05.4 Health  So05.5 Nutrition  So06.1 Host city cultural activities  So06.2 Olympic cultural programme  So06.3 Olympic and paralympic educational activities  So07.1 Sport and physical activities  So07.2 Physical education and school sport  So07.3 Sport facilities  So07.4 Top level athletes  So07.5 Major sporting events hosted  So08.1 National anti-doping programme  So09.1 Olympic induced housing  So09.new Housing conditions  So10.1 Host city's media image  So11.1 Professional sport education for people with disabilities  So12.1 Health and safety practices at work</p>
<p>Ec01.1 Employment Indicators  Ec01.2 - Employment of people with disabilities  Ec01.3 Wages  Ec01.4 Wages paid in Olympic activities  Ec01.5 Jobs created in Olympic and context activities  Ec01.6 Number of business start-ups in the local area of the Olympic sites  Ec01.7 Economic Legacy  Ec01.8 Non-accredited people working in context activities  Ec02.1 Accommodation infrastructure  Ec02.2 Accommodation occupancy rate  Ec02.3 Tourists nights  Ec02.4 Visitors spending  Ec02.5 Hosting international events  Ec03.1 Consumer price index</p>	<p>Ec03.2 Hotel price index  Ec03.3 Real estate market  Ec04.1 Structure of OCOG revenues  Ec04.2 Structure of OCOG expenditures  Ec05.1 Total expenditure in the Games (Olympic activities)  Ec05.2 Total revenues in the Games (Olympic and context activities)  Ec05.3 Catalyst effect of the Games  Ec06.1 Total Capital expenditure of Olympic activities  Ec07.1 Public share of expenditure (Olympic activities)  Ec07.2 Tax revenue of the Games  Ec07.3 Olympic expenditures in Olympic and context activities, the public sector, in addition to public expenses planning  Ec08.1 Gross Regional Domestic Product  Ec09.1 Economic impact of sustainable initiatives</p>

**Materiality Matrix Resulting from the Consultation on Focus Areas Proposed  
by the Technical Manual**



## 8 Annexes

### 8.1 Environmental Annexes

#### Annex En01.1

##### Guanabara Bay Data

The Guanabara Bay data exposes the lack of periodicity in data collection. Data marked in red are those that exceed the recommended value, and blank cells represent missing data.

Station	Date	Faecal Coliforms (MPN/100ml)	BOD (mg/L)	Total Phosphorus (mg/L)	Nitrate (mg/L)	Ammoniacal Nitrogen (mg/L)	DO - (mg/L)
GN0022	28/11/2007		6,4	0,8	0,02		16
GN0022	18/12/2007		5,8	0,2	0,01		14
GN0022	27/03/2008		5,8	0,15	0,05	0,07	8
GN0022	28/05/2008	23					
GN0022	08/09/2008	170	3,6	0,20	0,03	0,2	
GN0022	21/10/2008	23	5	0,15	0,15	0,4	8
GN0022	05/11/2008	23	3,6	0,50	0,06	0,02	20
GN0022	05/03/2009	130					
GN0022	23/02/2010		4,8	0,30	0,01		20,6
GN0022	06/05/2010		2	0,15	0,01		6,8
GN0022	03/08/2010	2.400	3	0,10		0,5	7
GN0022	14/09/2010	49	7,2	0,20		0,94	4,6
GN0022	09/11/2010	33	4	0,26		0,41	11,2
GN0022	08/02/2011	330	4	0,24		0,56	7,8
GN0022	12/04/2011	33	5,8	0,50		0,38	12,4
GN0022	25/05/2011		4,4	0,15			8,4
GN0022	21/06/2011	330					
GN0022	26/07/2011	490					
GN0022	19/09/2012		2	0,05	0,22	1,22	
GN0022	08/10/2012		2	0,11	0,15	0,38	
GN0022	21/11/2012		2	0,08	10	0,73	
GN0022	18/12/2012		2	0,14	0,09	0,37	
GN0022	16/01/2013		2,8	0,42	0,09		
GN0022	05/03/2013		2,2	0,13	0,06	0,3	
GN0022	17/04/2013		3,4	0,15	0,1		2,4
GN0022	27/05/2013		2	0,09	0,11	0,74	
GN0022	17/06/2013		2	0,11	0,08	0,46	
GN0022	22/07/2013		2	0,14	0,1		
GN0022	14/08/2013						3,29
GN0025	28/11/2007		5,2	0,15	0,01		10,6

GN0025	18/12/2007		5	0,20	0,01		12,2
GN0025	27/03/2008		4,4	0,15	0,1		8,2
GN0025	28/05/2008	30					
GN0025	08/09/2008	230	2	0,10	0,01	0,09	
GN0025	21/10/2008	49	2,8	0,10	0,09	0,1	7,6
GN0025	05/11/2008	79	5,6	0,15	0,01	0,02	10,4
GN0025	05/03/2009	79	6	0,15	0,01		12,8
GN0025	23/02/2010	23	2	0,20	0,01		10,2
GN0025	06/05/2010		2	0,08	0,01		7,6
GN0025	03/08/2010	330		0,09		0,09	11,4
GN0025	14/09/2010	49	3	0,06		0,04	7,6
GN0025	09/11/2010		2,8	0,06		0,04	6,8
GN0025	08/02/2011	23	2,4	0,07		0,01	9,6
GN0025	22/02/2011	23	2			0,01	11,8
GN0025	12/04/2011	3.500	3,8	0,09		0,03	10,4
GN0025	25/05/2011	49	4,4	0,06			10,2
GN0025	20/06/2011	33					
GN0025	26/07/2011	230					
GN0025	19/09/2012		2	0,07	0,01	1,06	
GN0025	08/10/2012		2,4	0,05	0,05	0,17	
GN0025	21/11/2012		7,2	0,15	27	0,29	
GN0025	18/12/2012		2	0,10	0,08	0,04	
GN0025	16/01/2013		2,4	0,08	0,07		
GN0025	05/03/2013		3,6	0,18	0,06	0,01	
GN0025	17/04/2013		2,6	0,09	0,1		4,2
GN0025	27/05/2013		2	0,04	0,1	0,08	
GN0025	17/06/2013		2,2	0,14	0,08	0,08	
GN0025	22/07/2013		2	0,06	0,08		
GN0025	14/08/2013						4,94
GN0026	28/11/2007		5,40	0,15			
GN0026	18/12/2007		5,80	0,25			15,0
GN0026	27/03/2008		6,00	0,20	0,06	0,1	7,8
GN0026	28/05/2008	23					
GN0026	08/09/2008	33	2,8	0,10	0,05	0,08	
GN0026	21/10/2008	23	3,0	0,10	0,08	0,2	7,6
GN0026	05/11/2008	23	5,2	0,40	0,01	0,01	15
GN0026	05/03/2009	33					
GN0026	23/02/2010	23	2,0	0,20			17,8
GN0026	06/05/2010		3,2	0,15			8,6
GN0026	03/08/2010	33	2,0	0,08		0,5	9
GN0026	14/09/2010	23	3,2	0,10		0,14	7,8
GN0026	09/11/2010	790	3,2	0,16		0,17	7,6
GN0026	08/02/2011	230	5,2	0,17		0,01	10,6
GN0026	22/02/2011	490	4,0	0,45		0,02	17,8
GN0026	12/04/2011	1.300	6,4	0,34		0,04	14,6

GN0026	25/05/2011	790	3,6	0,70			
GN0026	21/06/2011	79					
GN0026	26/07/2011	23					
GN0026	19/09/2012		2,0	0,09		1,4	
GN0026	08/10/2012		2,8	0,08		0,7	
GN0026	21/11/2012		2,6	0,09		0,73	
GN0026	18/12/2012		4,8	0,14		0,22	
GN0026	16/01/2013		5,8	0,16			
GN0026	05/03/2013		4,8	0,11		0,06	
GN0026	17/04/2013		2,4	0,10			2,3
GN0026	27/05/2013		2,0	0,12		0,29	
GN0026	17/06/2013		2,0	0,08		0,33	
GN0026	22/07/2013		3,2	0,14			
GN0026	14/08/2013						4,48
GN0047	28/11/2007		5,20	0,15	0,01		9
GN0047	18/12/2007	130	4,8	0,20	0,01		8,8
GN0047	27/03/2008		5,2	0,20	0,1		8
GN0047	28/05/2008	23					
GN0047	08/09/2008	49	2	0,10	0,06	0,09	
GN0047	21/10/2008	23	2	0,09	0,08	0,1	7,2
GN0047	05/11/2008	130	4,8	0,15	0,01	0,02	10
GN0047	05/03/2009	49					
GN0047	23/02/2010	23	3,2	0,15	0,01		8,2
GN0047	06/05/2010	23	3,8	0,07	0,01		10,8
GN0047	03/08/2010	46	2	0,07		0,25	7,2
GN0047	14/09/2010	33	2	0,05		0,15	6,6
GN0047	09/11/2010	33	2,8	0,04		0,04	8
GN0047	08/02/2011	33	3,8	0,07		0,01	7,8
GN0047	22/02/2011	23	2	0,07		0,02	11,4
GN0047	12/04/2011	230	4,8	0,12		0,02	10,8
GN0047	25/05/2011	23	6,2	0,12			12
GN0047	21/06/2011	33					
GN0047	26/07/2011	79					
GN0047	19/09/2012		2	0,07	0,88	0,88	
GN0047	08/10/2012		2	0,05	0,12	0,47	
GN0047	21/11/2012		2	0,08	0,04	0,42	
GN0047	18/12/2012		2	0,13	0,32	0,15	
GN0047	16/01/2013		2	0,04	0,07		
GN0047	05/03/2013		2	0,09	0,04	2,39	
GN0047	17/04/2013		2	0,21	0,11		4,7
GN0047	27/05/2013		2	0,06	0,11	0,09	
GN0047	17/06/2013		2	0,06	0,11	0,09	
GN0047	22/07/2013		2	0,04	0,09		
GN0047	14/08/2013						4,97
GN0064	28/11/2007		5,4	0,15			9,4

GN0064	18/12/2007		5,6	0,25			11
GN0064	27/03/2008		5,8	0,20	0,05		8,6
GN0064	28/05/2008	30					
GN0064	08/09/2008	33	2,2	0,10	0,06	0,09	7
GN0064	21/10/2008	23	4,2	0,10	0,09	0,15	8
GN0064	05/11/2008	23	6,6	0,15	0,01	0,02	12
GN0064	05/03/2009	33	5	0,20	0,07		4,8
GN0064	23/02/2010	23	2	0,25			8,4
GN0064	06/05/2010		2	0,06			7,2
GN0064	03/08/2010	130		0,08		0,15	6,8
GN0064	14/09/2010	79	2,4	0,08		0,46	4
GN0064	09/11/2010		2	0,08		0,2	5,2
GN0064	08/02/2011	23	3,6	0,09		0,01	7,4
GN0064	22/02/2011	23	2	0,07		0,02	7,6
GN0064	12/04/2011	23	4,4	0,07		0,05	9,2
GN0064	25/05/2011	230	7,2	0,13			10,6
GN0064	20/06/2011	49					
GN0064	26/07/2011	790					
GN0064	19/09/2012		2	0,07		7,4	
GN0064	08/10/2012		2,6	0,06		0,05	
GN0064	21/11/2012		2	0,07		0,29	
GN0064	18/12/2012		2	0,08		0,01	
GN0064	16/01/2013		2	0,05			
GN0064	05/03/2013		2	0,11		0,01	
GN0064	17/04/2013		2	0,24			5
GN0064	27/05/2013		2	0,12			
GN0064	17/06/2013		2	0,05			
GN0064	22/07/2013		2	0,08			
GN0064	14/08/2013						6,68
GN0093	28/11/2007		4,6	0,10	0,04		8,4
GN0093	18/12/2007	300	5,6	0,25	0,01		10
GN0093	27/03/2008		3,8	0,20	0,01		8,2
GN0093	28/05/2008	23					
GN0093	08/09/2008	23	2,6	0,15	0,04	0,09	6,8
GN0093	21/10/2008	23	4	0,09	0,05	0,2	7,6
GN0093	05/11/2008	23	5,6	0,50	0,02	0,01	13,4
GN0093	23/02/2010	23	2	0,10	0,01		9,8
GN0093	06/05/2010		2	0,02	0,01		7,6
GN0093	03/08/2010	70		0,05		0,1	7
GN0093	09/11/2010		2	0,06		0,15	5,2
GN0093	08/02/2011	23	2	0,04		0,01	7,4
GN0093	22/02/2011	49	2			0,02	6,8
GN0093	12/04/2011	33	2,6	0,09		0,04	7,8
GN0093	25/05/2011	49	2,2	0,08			6,6
GN0093	20/06/2011	490					

GN0093	26/07/2011	23					
GN0093	19/09/2012		2	0,05	0,07		
GN0093	08/10/2012		2	0,04	0,18		
GN0093	21/11/2012		2	0,06	3,9	0,06	
GN0093	18/12/2012		2	0,05	0,19	0,01	
GN0093	16/01/2013		2	0,04	0,06		
GN0093	05/03/2013		2	0,10	0,1		
GN0093	27/05/2013		2	0,09	0,1		
GN0093	17/06/2013		2	0,05	0,05		
GN0093	22/07/2013		2	0,06	0,06		
GN0306	28/11/2007		4,2	0,15	0,01		10,8
GN0306	18/12/2007		6	0,25	0,01		12
GN0306	27/03/2008		4,4	0,15	0,09		8
GN0306	28/05/2008	80					
GN0306	08/09/2008	23	4,6	0,10	0,04	0,07	
GN0306	21/10/2008	23	2,6	0,08	0,05	0,25	7,4
GN0306	05/11/2008		5,4	0,35	0,01	0,01	10
GN0306	05/03/2009	49	7,6	0,20	0,01		13,8
GN0306	23/02/2010	23	2	0,10	0,01		10
GN0306	06/05/2010		2	0,07	0,01		6,2
GN0306	03/08/2010	230		0,05		0,2	7,6
GN0306	14/09/2010	330	7,2	0,06		0,3	4
GN0306	09/11/2010		2	0,07		0,14	5
GN0306	08/02/2011	23	2,8	0,09		0,01	8,2
GN0306	22/02/2011	49	2	0,07		0,03	7,4
GN0306	12/04/2011	23	3,6	0,08		0,01	9,2
GN0306	25/05/2011	79	5,6	0,05			6,6
GN0306	20/06/2011	2.400					
GN0306	26/07/2011	230					
GN0306	19/09/2012		2	0,05	0,07	3,7	
GN0306	08/10/2012		2	0,04	0,15	0,15	
GN0306	21/11/2012		3	0,13	0,3	0,45	
GN0306	18/12/2012		2,2	0,08	0,09	0,04	
GN0306	16/01/2013		2,2	0,05	0,07		
GN0306	05/03/2013		2	0,05	0,08		
GN0306	17/04/2013		2	0,08	0,1		5,9
GN0306	27/05/2013		2	0,08	0,09		
GN0306	17/06/2013		2	0,05	0,08		
GN0306	22/07/2013		2	0,06	0,07		
GN0306	14/08/2013						6,81



## Annex En01.2

### Sand Quality Data

Table 51 Sand Quality for Copacabana and Barra beaches





Year	Station	n°	LM	C/RP	C/BI	C/SL	B/QM	B/PP	B/CB	B/ALV	R/RES
2007	Summer	27									
2007	Summer	28									
2007	Summer	29									
2007	Summer	30									
2007	Summer	31									
2007	Autumn	32									
2007	Autumn	33									
2007	Autumn	34									
2007	Autumn	35									
2007	Autumn	36									
2007	Autumn	37									
2007	Winter	38									
2007	Winter	39									
2007	Winter	40									
2007	Winter	41									
2007	Winter	42									
2007	Winter	43									
2007	Spring	44									
2007	Spring	45									
2007	Spring	46									
2007	Spring	47									
2007	Spring	48									
2007	Spring	49									
2007	Summer	50									
2008	Summer	51									
2008	Summer	52									
2008	Summer	53									
2008	Summer	54									
2008	Summer	55									
2008	Autumn	56									
2008	Autumn	57									
2008	Autumn	58									
2008	Autumn	59									
2008	Autumn	60									
2008	Autumn	61									
2008	Winter	62									
2008	Winter	63									
2008	Winter	64									
2008	Winter	65									

2008	Winter	66	Yellow	Red	Yellow	Red	Yellow	Red	Green	Green	Red
2008	Winter	67	Red	Red	Red	Red	Red	Red	Red	Yellow	Yellow
2008	Spring	68	Red	Red	Red	Red	Red	Red	Red	Red	Red
2008	Spring	69	Red	Red	Yellow	Red	Red	Red	Yellow	Red	Green
2008	Spring	70	Yellow	Red	Red	Red	Red	Red	Red	Red	Green
2008	Spring	71	Red	Red	Red	Red	Red	Red	Red	Red	Green
2008	Spring	72	Red	Red	Red	Red	Red	Red	Red	Red	Green
2008	Spring	73	Green	Red	Red	Red	Red	Red	Yellow	Red	Green
2008	Summer	74	Red	Red	Red	Red	Red	Red	Red	Red	Yellow
2009	Summer	75	Red	Yellow	Red	Red	Red	Red	Yellow	Red	Yellow
2009	Summer	76	Red	Red	Red	Red	Red	Red	Red	Red	Red
2009	Summer	77	Red	Red	Yellow	Red	Red	Red	Yellow	Green	Green
2009	Summer	78	Yellow	Red	Green	Green	Red	Red	Green	Yellow	Yellow
2009	Summer	79	Red	Red	Green	Yellow	Red	Red	Green	Yellow	Yellow
2009	Autumn	80	Red	Green	Green	Yellow	Red	Red	Yellow	Red	Green
2009	Autumn	81	Yellow	Red	Yellow	Yellow	Red	Green	Red	Red	Green
2009	Autumn	82	Yellow	Red	Red	Red	Red	Red	Yellow	Red	Red
2009	Autumn	83	Green	Yellow	Yellow	Yellow	Red	Red	Green	Yellow	Red
2009	Autumn	84	Green	Yellow	Yellow	Green	Red	Red	Red	Yellow	Red
2009	Autumn	85	Red	Red	Red	Red	Green	Yellow	Green	Green	Green
2009	Winter	86	Red	Red	Red	Red	Red	Red	Green	Green	Green
2009	Winter	87	Yellow	Yellow	Red	Yellow	Green	Green	Green	Yellow	Red
2009	Winter	88	Red	Green	White	Red	Yellow	Yellow	Red	Green	Green
2009	Winter	89	Yellow	Red	Yellow	Green	Yellow	Red	Red	Green	Yellow
2009	Winter	90	Yellow	Green	Green	Green	Yellow	Yellow	Red	Green	Green
2009	Winter	91	Red	Yellow	Yellow	Red	Green	Red	Green	Red	Yellow
2009	Spring	92	Red	Red	Green	Red	Yellow	Red	Red	Red	Yellow
2009	Spring	93	Red	Red	Green	Red	Red	Red	Red	Red	Red
2009	Spring	94	Yellow	Red	Red	Red	Red	Red	Yellow	Red	Yellow
2009	Spring	95	Red	Red	Red	Yellow	Green	Yellow	Green	Yellow	Green
2009	Spring	96	Green	Yellow	Yellow	Yellow	Green	Green	Green	Red	Green
2009	Spring	97	White	White	White	White	White	White	White	White	White
2010	Summer	98	Green	Green	Green	Green	Green	Green	Yellow	Green	Green
2010	Summer	99	Green	Green	Green	Yellow	Yellow	Red	Yellow	Red	Green
2010	Summer	100	Green	Green	Green	Yellow	Green	Green	Green	Green	Green
2010	Summer	101	Yellow	Green	Green	Green	Green	Green	Green	Green	Green
2010	Summer	102	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Red	Green	Green
2010	Summer	103	Yellow	Yellow	Yellow	Green	Green	Green	Yellow	Yellow	Green
2010	Autumn	104	Yellow	Yellow	Red	Red	Green	Red	Red	Red	Yellow
2010	Autumn	105	Yellow	Green	Green	Green	Yellow	Yellow	Green	Green	Green
2010	Autumn	106	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green
2010	Autumn	107	Yellow	Yellow	Yellow	Green	Red	Red	Green	Yellow	Green
2010	Autumn	108	Red	Yellow	Yellow	Green	Red	Red	Green	Green	Green
2010	Autumn	109	Green	Red	Red	Green	Yellow	Red	Green	Green	Green
2010	Winter	110	Yellow	Green	Green	Yellow	Green	Yellow	Green	Yellow	Red

2010	Winter	111	Red	Red	Yellow	Red	Yellow	Red	Yellow	Red	Green
2010	Winter	112	Red	Red	Yellow	Red	Green	Red	Yellow	Red	Green
2010	Winter	113	Green	Yellow	Yellow	Yellow	Yellow	Red	Red	Red	Green
2010	Winter	114	Yellow	Red	Green	Green	Yellow	Red	Red	Green	Green
2010	Winter	115	Green	Green	Yellow	Green	Green	Green	Green	Green	Green
2010	Spring	116	Yellow	Green	Green	Yellow	Green	Green	Green	Yellow	Green
2010	Spring	117	Green	Green	Green	Yellow	Green	Green	Yellow	Green	Green
2010	Spring	118	Red	Red	Green	Green	Yellow	Yellow	Green	Green	Green
2010	Spring	119	Yellow	Red	Green	Red	Red	Green	Green	Green	Green
2010	Spring	120	Green	Yellow	Green	Green	Green	Yellow	Green	Green	Green
2010	Spring	121	Red	Red	Green	Yellow	Green	Green	Yellow	Green	Green
2011	Summer	122	Green	Red	Red	Red	Green	Red	Green	Green	Green
2011	Summer	123	Red	Red	Red	Red	Yellow	Yellow	Yellow	Green	Green
2011	Summer	124	Red	Red	Green	Red	Green	Red	Red	Green	Green
2011	Summer	125	Red	Green	Green	Red	Green	Red	Red	Green	Green
2011	Summer	126	Yellow	Red	Red	Green	Yellow	Yellow	Yellow	Green	Green
2011	Summer	127	Red	Yellow	Green	Red	Red	Green	Green	Green	Green
2011	Autumn	128	Red	Green	Yellow	Red	Green	Green	Green	Green	Green
2011	Autumn	129	Yellow	Green	Green	Yellow	Green	Green	Green	Green	Green
2011	Autumn	130	Green	Red	Green	Green	Green	Green	Red	Green	Green
2011	Autumn	131	Red	Red	Green	Green	Red	Red	Green	Green	Green
2011	Autumn	132	Green	Red	Green	Green	Green	Green	Green	Green	Green
2011	Autumn	133	Green	Yellow	Green	Green	Green	Green	Red	Green	Green
2011	Winter	134	Green	Green	Green	Green	Green	Red	Green	Yellow	Green
2011	Winter	135	Green	Green	Green	Green	Green	Green	Green	Green	Green
2011	Winter	136	Green	Green	Green	Green	Green	Green	Green	Green	Green
2011	Winter	137	Green	Green	Green	Green	Green	Green	Green	Green	Green
2011	Winter	138	Green	Green	Green	Green	Yellow	Yellow	Yellow	Green	Green
2011	Winter	139	Green	Green	Green	Red	Green	Green	Green	Green	Green
2011	Spring	140	Yellow	Green	Green	Green	Yellow	Green	Green	Green	Green
2011	Spring	141	Green	Green	Green	Green	Green	Green	Green	Green	Green
2011	Spring	142	Green	Green	Green	Green	Green	Green	Green	Green	Green
2011	Spring	143	Green	Green	Green	Green	Green	Green	Green	Green	Green
2011	Spring	144	Green	Green	Green	Yellow	Green	Green	Green	Green	Green
2011	Spring	145	Green	Yellow	Green	Green	Green	Yellow	Green	Green	Green
2012	Summer	146	Red	Red	Red	Red	Yellow	Red	Red	Red	Green
2012	Summer	147	Red	Green	Red	Red	Red	Red	Green	Red	Green
2012	Summer	148	Green	Green	Green	Green	Red	Red	Green	Green	Red
2012	Summer	149	Green	Green	Green	Green	Red	Red	Green	Yellow	Green
2012	Summer	150	Red	Green	Green	Green	Green	Green	Green	Red	Green
2012	Summer	151	Green	Green	Green	Green	Green	Green	Yellow	Green	Green
2012	Autumn	152	Green	Green	Green	Green	Green	Green	Green	Green	Green
2012	Autumn	153	Green	Green	Green	Yellow	Green	Red	Green	Green	Green
2012	Autumn	154	Yellow	Green	Yellow	Yellow	Yellow	Red	Yellow	Green	Green
2012	Autumn	155	Green	Yellow	Green	Green	Red	Red	Red	Green	Green

2012	Autumn	156	great	good	good	great	regular	not recommended	not recommended	great	good
2012	Autumn	157	not recommended	good	good	not recommended	not recommended	not recommended	not recommended	regular	not recommended
2012	Winter	158	regular	great	regular	regular	not recommended	not recommended	not recommended	good	good
2012	Winter	159	good	great	regular	regular	not recommended	not recommended	not recommended	good	good
2012	Winter	160	great	regular	great	good	great	good	great	regular	great
2012	Winter	161	great	great	not recommended	good	not recommended	great	good	good	great
2012	Winter	162	great	great	good	regular	great	great	great	good	great
2012	Winter	163	great	great	good	not recommended	not recommended	great	great	great	great
2012	Spring	164	good	great	good	good	regular	regular	great	great	great
2012	Spring	165	good	good	not recommended	good	great	good	great	great	great
2012	Spring	166	great	great	good	great	not recommended	great	regular	good	great
2012	Spring	167	regular	regular	good	good	not recommended	good	great	great	great
2012	Spring	168	regular	great	regular	regular	not recommended	not recommended	good	regular	great
2012	Spring	169	great	great	regular	regular	not recommended	not recommended	good	regular	great
2013	Summer	170	great	not recommended	not recommended	not recommended	not recommended	not recommended	not recommended	not recommended	not recommended

Caption: Quality

	not recommended		regular		good		great
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Source: SMAC, 2013

### Annex En01.3

	Carbon Monoxide			Sulfur Dioxide			Respirable Suspended Particles (PM10)			Ozone			Respirable Suspended Particles (PM2.5)			Nitrogen Dioxide			Hidrocarbons		
Station	2010*	2011	2012	2010*	2011	2012	2010*	2011	2012	2010*	2011	2012	2010*	2011	2012	2010*	2011	2012	2010*	2011	2012
Centro	P	T	T	P	P	T	P	T	T	P	T	T	N	N	N	N	N	N	N	N	N
Copacabana	P	T	T	P	T	P	P	T	T	P	T	T	N	N	N	N	N	N	N	N	N
São Cristóvão	P	P	T	P	P	T	P	T	T	P	T	T	N	N	N	N	N	N	N	N	N
Tijuca	P	T	T	P	P	P	P	P	T	P	T	T	N	N	N	N	N	N	N	N	N
Irajá	N	N	T	N	N	P	N	N	T	N	N	T	N	N	T	N	N	T	N	N	P
Bangu	N	N	T	N	N	P	N	N	T	N	N	P	N	N	N	N	N	T	N	N	T
Campo Grande	N	N	T	N	N	T	N	N	P	N	N	P	N	N	N	N	N	T	N	N	P
Pedra de Guaratiba	N	N	N	N	N	N	N	N	P	N	N	T	N	N	N	N	N	N	N	N	N

Legend:

- P – Partial monitoring, when monitoring did not happen in one or more months;
- T – Total, monitoring occurred in all months;
- N – Not monitored.

\* The partial monitoring in some months of 2010 can be attributed to the transition from monitoring the state environmental agency (INEA) for municipal environmental agency (SMAC).

## **Annex En03.1**

### **Annex En03.1.1. Land Use Areas**

#### **Urbanised Areas Groups:**

- Residential Areas – predominant use is residential, including streets, avenues, roads, construction sites, single family and multi-family building, housing complexes (predominantly low-income, constructed for social purposes, and other relevant by length), and even small spaces and buildings, such as shopping, mixed use, trade corridors, industries, lots, empty blocks, ranches, farms. etc..
- Areas not built – inserted in the urban areas, comprising large empty or underutilised spaces, lots in implantation or unconsolidated, EFA (amended physical space) with ruins or abandoned and sparse earth movements.
- Institutional areas and public infrastructure – areas and infrastructure occupied by public administration, government, research, religious and military institutions, prisons, asphalt plants, social work, shelters, barracks, public utilities (water, sewer, garbage, energy, electrical, lighting, gas, telephone, communication, post office etc), telecom towers, pipelines, water mains, etc..
- Areas of trade and services – areas predominantly for commercial use and/or services, including shopping centres, neighborhood centres, city centre, supply centres, hotels and motels, banks, bus companies, container depots, food, department stores, cemeteries, hypermarkets, recording studios, including correlated parking areas.
- Slum – areas identified and recorded as slums in the Settlement System for Low Income IPP (SABREN). This information is produced by the Department of Housing Studies/IPP.
- Recreational areas – areas for recreation, contemplation, sporting and culture, such as squares, parks, Olympic villages, clubs, complexes for sports, thematic, stadiums, museums, libraries, planetarium, observatory, cultural centres, etc, stressing that the green areas expressive within large public parks are represented in their respective topics relating to vegetation.
- Education and health areas – areas occupied by schools, universities, educational institutions, hospitals, health centres, hospitals, kindergartens, clinics, etc.
- Industrial areas – areas occupied by large infrastructure and industrial districts.
- Transport areas – formed by airports, bus terminals, railways, waterways, railway/subway, workshops, subway stations, train stations, ferries, helipads, and large parking lots.
- Areas of mineral exploration – active or not.

#### **Non-urbanised Areas group:**

- Areas with trees and shrubs vegetation cover – forest (broadleaf); sandbanks and mangrove (pioneer formations); poultry in different stages (secondary vegetation), and reforestation.
- Areas with grassy-woody vegetation (field) – areas with low vegetation, graminoids, located in the plains or slopes, used or not for pastoral activities.

- Agricultural areas – areas occupied by agricultural activities, including horticulture, etc.
- Rock outcrops and sedimentary deposits – areas covered by natural rocky outcrops (cliffs, piers, rock shores, boulders), and those occupied by sandy areas, including beaches.
- Water bodies – areas formed by continental waters and estuaries, lagoons, rivers, canals, dams, and reservoirs.
- Areas subject to flooding – areas occupied by marshes, shoals, with vegetation characteristic of these environments.

### Annex En03.1. 2 Area of uses mapped in 2009, 2010, 2011 and difference in period (in hectares)

USE	2009		2010		2011		Variation	
	Area	%	Area	%	Area	%	Area	%
Residential areas	35740.8	29.2	35942.6	29.4	36.154,0	29.5	413.1	1.2
Not built areas	3552.9	2.9	3697.7	3,0	4013.3	3.3	460.3	13,0
Institutional areas and of public infrastructure	2143.6	1.8	2158.9	1.8	2126.8	1.7	-16.8	-0.8
Areas of trade and services	1930.1	1.6	1957.6	1.6	2166.1	1.8	236,0	12.2
Slum	4681.7	3.8	4.643,0	3.8	4599.3	3.8	-82.3	-1.8
Recreational areas	2128.1	1.7	2129.9	1.7	2.133,0	1.7	4.9	0.2
Areas of education and health	1.077,0	0.9	1087.3	0.9	1101.2	0.9	24.2	2.2
Industrial areas	3125.6	2.6	3.125,0	2.6	3022.4	2.6	-103.2	-3.3
Transport Areas	1709.1	1.4	1713.5	1.4	1712.9	1.4	3.9	0.2
Areas of mineral exploitation	640,0	0.5	636.3	0.5	626.5	0.5	-13.4	-2.1
<b>PARTIAL</b>	<b>56728.8</b>	<b>46.3</b>	<b>57091.7</b>	<b>46.7</b>	<b>57655.5</b>	<b>47.1</b>	<b>926.7</b>	<b>1.6</b>
Area with trees and shrubs vegetation	38760.8	31.7	38678.7	31.6	38554.1	31.5	-206.6	-0.5
Areas with grassy-woody vegetation	14752.7	12,0	14.497,0	11.8	14232.2	11.6	-520.5	-3.5
Agricultural areas	4086.6	3.3	4.106,0	3.4	4068.5	3.3	-18.2	-0.4
Rocky outcrops and sedimentary deposits	1984.4	1.6	1991.2	1.6	1972.1	1.6	-12.2	-0.6
Water bodies	2857.4	2.3	2857.1	2.3	2855.6	2.3	-1.8	-0.1
Areas subject to flooding	3.286,0	2.7	3.235,0	2.6	3118.7	2.5	-167.3	-5.1
<b>PARTIAL</b>	<b>65727.9</b>	<b>53.7</b>	<b>65365</b>	<b>53.3</b>	<b>64801.2</b>	<b>52.9</b>	<b>-926.7</b>	<b>-1.4</b>
<b>TOTAL</b>	<b>122456.7</b>	<b>100,0</b>	<b>122456.7</b>	<b>100,0</b>	<b>122456.7</b>	<b>100,0</b>		

Source: IPP, 2013

## Annex En 03.2

### Description of the Categories of Conservation Units

#### GROUP OF INTEGRAL PROTECTION

##### ECOLOGICAL STATION

Area aimed at conserving nature and conducting scientific research. It is only allowed the indirect use of natural resources, for example just use that does not involve consumption, collection, damage or destruction of these resources. It is forbidden to public visitation, except with educational objective, according to the Management Plan or specific regulation of this category of Conservation Unit. The research requires prior authorisation from the *Instituto Chico Mendes* and it is subject to the conditions and restrictions laid down by it. Changing these ecosystems is only permitted in cases of measures to restore ecosystems modified by chance; management of species for the purpose of biodiversity preservation; collecting ecosystem components with scientific purposes, and conducting scientific research.

##### BIOLOGICAL RESERVE

This category of Conservation Unit aims at full preservation of biota and other natural attributes, without direct human interference or environmental changes. The exception is the recovery measures of their altered ecosystems and management actions needed to restore and preserve the natural balance, biological diversity, and its natural ecological processes. Public visitation is prohibited, except for that of educational character, according to the established in the Unit Management Plan. The research requires prior authorisation from the *Instituto Chico Mendes* and it is also subject to the conditions and restrictions laid down by it.

##### NATIONAL PARK

National parks are the most popular and ancient category of Conservation Units. Its goal, according to Brazilian law, is to preserve ecosystems of great ecological significance and scenic beauty, enabling the accomplishment of scientific research, educational activities and environmental interpretation, recreation and ecotourism, through direct contact with nature. The management of parks by the Instituto Chico Mendes takes into account the preservation of natural ecosystems, scientific research, education, recreation and tourism. The system of public visitation is defined in the Management Plan of the respective unit.

##### NATURAL MONUMENT

Category of Conservation Unit that basically aims at the preservation of sites considered rare, singular, natural and/or sites of scenic beauty. It may consist of private property, since there is compatibility between the objectives of the unit with the use of land and natural resources by the owners. If there is no compatibility, the area is inappropriate. It is allowed visitation to natural monuments, and the research requires prior authorisation from the *Instituto Chico Mendes*.

##### WILDLIFE REFUGE

These shelters emerge with the goal of protecting natural environments where conditions to existence and reproduction of species or communities of local flora and fauna, resident or migratory, are ensured. They can consist of particular areas, as for natural monuments, following the same legal requirements.

##### SUSTAINABLE USE GROUP

##### AREA OF ENVIRONMENTAL PROTECTION

Extensive area in general, with some degree of human occupation; biotic, abiotic, aesthetic or cultural attributes importance to the life quality and well-being of human populations. AEPs aim at protecting biological diversity, disciplining the process of occupation, and ensuring the sustainable use of natural resources. It is up



to the *Instituto Chico Mendes* establishing the conditions for research and visitation by the audience.

#### AREA OF RELEVANT ECOLOGICAL INTEREST

In general, area of short extension, with little or no human occupation, unique natural features or even shelter for rare examples of regional biota. It was created to keep these natural ecosystems of regional or local importance, as well as regulate the permissible use of these areas, making it compatible with the objectives of nature conservation.

#### NATIONAL FOREST

Forested area of predominantly native species, established with the basic objective of sustainable multiple use of forest resources and scientific research, focused on the discovery of methods for sustainable use of these native forests. It is forbidden for traditional populations that inhabit the area, at their creation, as determining the management plan for the unit. Public visitation is allowed, but subject to the standards specified in the management plan. The research is permitted and encouraged but subjected to the prior authorisation of the *Instituto Chico Mendes*.

#### EXTRACTIVE RESERVE

Area used by traditional extractive populations whose livelihood is based on the extraction and, additionally, on the subsistence agriculture and farming of small animals. Its creation aims at protecting the livelihoods and culture of these populations, ensuring the sustainable use of natural resources of the unit. People living in these units have concession of real right to use, considering that the area is public domain. Public visitation is allowed, since compatible with local interests and the provisions of the management plan in the unit. The research is allowed and encouraged, since with prior approval from the *Instituto Chico Mendes*.

#### FAUNA RESERVE

A natural area with animal populations of native species, terrestrial and aquatic, migratory or resident suitable for technical-scientific studies on the sustainable economic management of faunal resources. Public visitation is allowed, since compatible with local interests and the provisions of the management plan in the unit. It is prohibited in the area to hunting amateur or professional. But there may be marketing of products and by-products resulting from the research, since satisfying the requirements of Brazilian legislation on fauna. The *Instituto Chico Mendes* has not created any Conservation Unit in this category.

#### RESERVE OF SUSTAINABLE DEVELOPMENT

Natural area that houses traditional people, living mainly on sustainable exploitation systems of natural resources, developed over generations and adapted to local ecological conditions. This category has a fundamental role in protecting nature as well as the maintenance of biological diversity. Such use is governed, as in the Extractive Reserves, by concession of the real right of use, since the area of the RSD is public domain.

#### PRIVATE RESERVE OF NATURAL HERITAGE

Conservation Units established in private areas, recorded with perpetuity, with the goal of conserving its biological diversity. Thus, it has been the engagement of citizens in the protection of Brazilian ecosystems, providing them incentive to its creation, such as tax exemption. The SNUG specifies that conservation of nature in these areas is compatible with sustainable use of share of its renewable environmental resources, as well as essential ecological processes, maintaining biodiversity and ecological attributes. Sustainable use here implies the accomplishment of scientific research and public visitation for tourism, recreation, and education.

## Annex En05.1

### Annex En05.1.1 Route Average Time of the Main Road Corridors per quarter

Main road corridors	2010				2011				2012			
	1st trimester	2nd trimester	3rd trimester	4th trimester	1st trimester	2nd trimester	3rd trimester	4th trimester	1st trimester	2nd trimester	3rd trimester	4th trimester
Barra-Leblon: Via Ivan Lins Ave. e Lagoa Barra Highway	00:15:39	00:18:03	00:15:29	00:16:22	00:15:40	00:20:30	00:17:28	00:17:19	00:16:49	00:22:06	00:18:24	00:19:55
Leblon-Centro: Via Orla	00:21:50	00:24:13	00:24:27	00:23:35	00:24:01	00:22:51	00:22:36	00:22:45	00:23:23	00:23:47	00:22:48	00:21:52
Leblon-Copacabana: Via Ataulfo de Paiva Ave. and N. S. de Copacabana Ave.	00:19:47	00:18:27	00:18:37	00:18:37	00:19:19	00:18:43	00:18:48	00:18:10	00:18:33	00:20:04	00:19:45	00:23:35
Humaitá-Leblon: Via Lagoa	00:10:58	00:12:25	00:11:29	00:11:57	00:12:13	00:13:58	00:12:45	00:11:46	00:11:36	00:13:32	00:11:41	00:12:27
Humaitá-Leblon: Via Jardim Botânico	00:10:29	00:12:19	00:12:30	00:12:18	00:12:28	00:15:56	00:12:35	00:12:36	00:11:54	00:13:43	00:12:53	00:13:30
Barra-Centro: Via Linha Amarela	00:45:41	00:40:27	00:37:44	00:40:23	00:42:06	00:39:59	00:38:30	00:39:42	00:37:01	00:36:34	00:40:54	00:39:42
Ilha-Centro: Via Linha Vermelha	00:21:51	00:22:53	00:25:08	00:23:22	00:23:41	00:16:14	00:22:46	00:19:31	00:26:15	00:27:25	00:25:45	00:26:06
Fundão-Manguinhos: Via Brasil Ave.	00:08:10	00:10:12	00:12:51	00:14:29	00:09:57	00:09:59	00:12:57	00:13:58	00:12:20	00:13:44	00:14:55	00:11:31
Santos Dumont-Manguinhos: Via Perimetral	00:09:47	00:10:20	00:09:13	00:09:39	00:10:40	00:10:15	00:09:18	00:10:14	00:08:28	00:08:19	00:09:11	00:08:45
Santos Dumont-Caju: Via Presidente Vargas Ave.	00:14:44	00:14:17	00:14:34	00:13:56	00:12:53	00:10:19	00:10:49	00:09:14	00:11:04	00:10:40	00:12:00	00:10:05
Botafogo-Centro: Via Aterro do Flamengo	00:07:19	00:08:42	00:08:36	00:07:46	00:09:43	00:07:15	00:06:58	00:07:16	00:07:23	00:07:39	00:09:02	00:06:58
Botafogo-Centro: Via Santa Bárbara Tunnel	00:07:37	00:08:07	00:07:32	00:07:24	00:07:26	00:07:57	00:08:02	00:07:45	00:07:20	00:07:45	00:07:32	00:08:00
Santa Cruz-Penha: Via Brasil Ave., km 54,4 - km 12,8	00:41:09	00:42:05	00:56:13	01:23:16	00:41:16	00:42:09	00:58:02	01:23:47	00:41:16	00:47:21	01:10:28	01:20:20
Campo Grande-Realengo: Via Cesário de Mello Ave. and Santa Cruz Ave.	00:34:28	00:39:20	00:35:37	00:41:36	00:33:32	00:33:22	00:31:13	00:31:24	00:28:18	00:29:46	00:29:53	00:27:20
Saens Pena-Praça da Bandeira: Via Conde de Bonfim St.	00:10:46	00:10:25	00:10:32	00:10:45	00:10:24	00:13:10	00:11:58	00:11:57	00:12:34	00:13:42	00:10:23	00:12:11
Praça da Bandeira-Humaitá: Via Rebouças Tunnel	00:10:33	00:10:09	00:12:27	00:11:30	00:11:12	00:12:40	00:10:30	00:19:00	00:09:15	00:11:40	00:13:00	00:13:28
Madureira-Benfica: Via Dom Helder Câmara Ave.	00:30:20	00:31:47	00:31:33	00:29:28	00:24:25	00:24:26	00:24:03	00:26:35	00:25:56	00:27:29	00:28:23	00:30:50
Méier-Praça da Bandeira: Via Radial Oeste	00:25:59	00:26:08	00:25:11	00:25:52	00:21:35	00:27:45	00:22:40	00:22:25	00:25:20	00:25:50	00:22:25	00:26:23
Cacuiá-Galeão: Via Estrada do Galeão	00:12:23	00:13:32	00:12:25	00:11:38	00:11:56	00:14:01	00:14:00	00:15:03	00:15:44	00:18:20	00:17:06	00:15:58
Taquara-Madureira: Via Praça Seca	00:24:20	00:25:59	00:25:59	00:25:41	00:19:26	00:19:31	00:20:48	00:20:50	00:19:57	00:21:48	00:20:37	00:22:00
<b>Average roue time of the main road corridors per trimester</b>	<b>00:19:11</b>	<b>00:19:59</b>	<b>00:20:24</b>	<b>00:21:59</b>	<b>00:18:42</b>	<b>00:19:03</b>	<b>00:19:20</b>	<b>00:21:04</b>	<b>00:18:31</b>	<b>00:20:04</b>	<b>00:20:51</b>	<b>00:21:33</b>

# **Annex En05.1.2. Route Average Speed of the Main Road Corridors per quarter (Km/H)**

Main road corridors	2011				2012			
	1st trimester	2nd trimester	3rd trimester	4th trimester	1st trimester	2nd trimester	3rd trimester	4th trimester
Barra-Leblon: Via Ivan Lins Ave. e Lagoa Barra Highway	39,02	28,98	34,16	35,73	37,1	26,77	33,17	30,21
Leblon-Centro: Via Orla	40,48	41,28	41,79	41,64	41,68	39,77	41,62	43,14
Leblon-Copacabana: Via Ataulfo de Paiva Ave. and N. S. de Copacabana Av	21,32	22,12	21,96	22,61	22,14	20,56	20,85	17,81
Humaitá-Leblon: Via Lagoa	20,56	17,71	19,62	21,46	22,05	18,38	21,39	19,9
Humaitá-Leblon: Via Jardim Botânico	19,41	15,15	19,3	19,4	20,6	17,53	18,73	17,93
Barra-Centro: Via Linha Amarela	38,89	40,16	40,67	39,78	44,3	42,83	38,45	39,78
Ilha-Centro: Via Linha Vermelha	21,92	34,37	22,7	29,59	19,65	19,66	20,98	19,99
Fundão-Manguinhos: Via Brasil Ave.	50,56	33,65	25,25	23,94	26,52	23,87	24,32	28,27
Santos Dumont-Manguinhos: Via Perimetral	54,36	56,29	61,73	56,4	67,46	68,63	62,55	65,28
Santos Dumont-Caju: Via Presidente Vargas Ave.	41,5	47,98	45,75	53,17	46,46	47,13	40,95	52,06
Botafogo-Centro: Via Aterro do Flamengo	49,64	58,08	60,6	58,57	57,97	55,62	48,6	60,39
Botafogo-Centro: Via Santa Bárbara Tunnel	45,34	42,55	42,1	43,71	46,02	43,49	45,06	43,07
Santa Cruz-Penha: Via Brasil Ave., km 54,4 - km 12,8	50,57	50,05	36,9	24,76	50,57	45,83	29,47	26,76
Campo Grande-Realengo: Via Cesário de Mello Ave. and Santa Cruz Ave.	28,66	29,61	31,01	30,57	33,79	32,16	31,99	34,99
Saens Pena-Praça da Bandeira: Via Conde de Bonfim St.	15,25	12	12,89	13,18	13,06	11,47	14,9	13,66
Praça da Bandeira-Humaitá: Via Rebouças Tunnel	34,97	30,76	37,71	23,28	41,45	33,01	31	32
Madureira-Benfica: Via Dom Helder Câmara Ave.	25,93	25,59	25,99	23,53	25	22,79	22,07	20,26
Méier-Praça da Bandeira: Via Radial Oeste	23,05	17,75	21,61	25,17	21,65	18,5	21,28	18,27
Cacua-Galeão: Via Estrada do Galeão	30,82	26,2	25,89	24,64	24,71	19,59	21,17	22,71
Taquara-Madureira: Via Praça Seca	23,24	22,96	21,7	21,56	22,69	21,03	21,71	20,42
<b>Average Route speed of the main road corridors per trimester</b>	<b>33,77</b>	<b>32,66</b>	<b>32,47</b>	<b>31,63</b>	<b>34,24</b>	<b>31,43</b>	<b>30,51</b>	<b>31,35</b>

# Annex En07.1

City	Treatment	Urban Population served%	City	Treatment	Urban Population served %
Araruama	secondary	49,5	Nova Iguaçu	secondary	2,7
Armação dos Búzios	secondary	36,5	Paracambi	secondary	15,1
Arraial do Cabo	secondary	56		primary	5
Barra do Pirai	primary	1,1	Paty do Alferes	primary	2,4
Barra Mansa	secondary	1,2	Petrópolis	secondary	54,6
	primary	0,6	Pirai	primary	6
Belford Roxo	secondary	18,2	Porciúncula	primary	8,4
CaboFrio	primary	30	Porto Real	secondary	68,1
	secondary	15	Quatis	primary	22,9
Campos dos Goytacazes	tertiary	22,5	Resende	secondary	59,5
Comendador Levy Gasparian	secondary	9,7	Rio das Flores	primary	100
Conceição de Macabu	primary	23,7		marine outfall	5,7
Duque de Caxias	secondary	2,2	Rio das Ostras	secondary	21,8
	primary	2,4		secondary	21,2
Iguaba Grande	secondary	50,3	Rio de Janeiro	marine outfall	34,9
Itaboraí	secondary	3,8		primary	0,1
Italva	primary	36,2	São Gonçalo	secondary	7,5
Japeri	primary	0,1	São João da Barra	secondary	24,3
Macaé	secondary	3,9	São João de Meriti	secondary	5,3
Mangaratiba	secondary	15,1	São Pedro da Aldeia	secondary	60
Maricá	secondary	5	São Sebastião do Alto	secondary	47,6
Mesquita	secondary	3,3	Santa Maria Madalena	secondary	71,1
Natividade	primary	31,2	Saquarema	secondary	24,8
Nilópolis	primary	2,5	Silva Jardim	secondary	50,4
	marine outfall	57,5	Tanguá	primary	9,8
Niterói	secondary	23,4		primary	3,6
	tertiary	8,8	Volta Redonda	secondary	6

Source: Green ICMS – SEA/RJ – Reference year: 2010

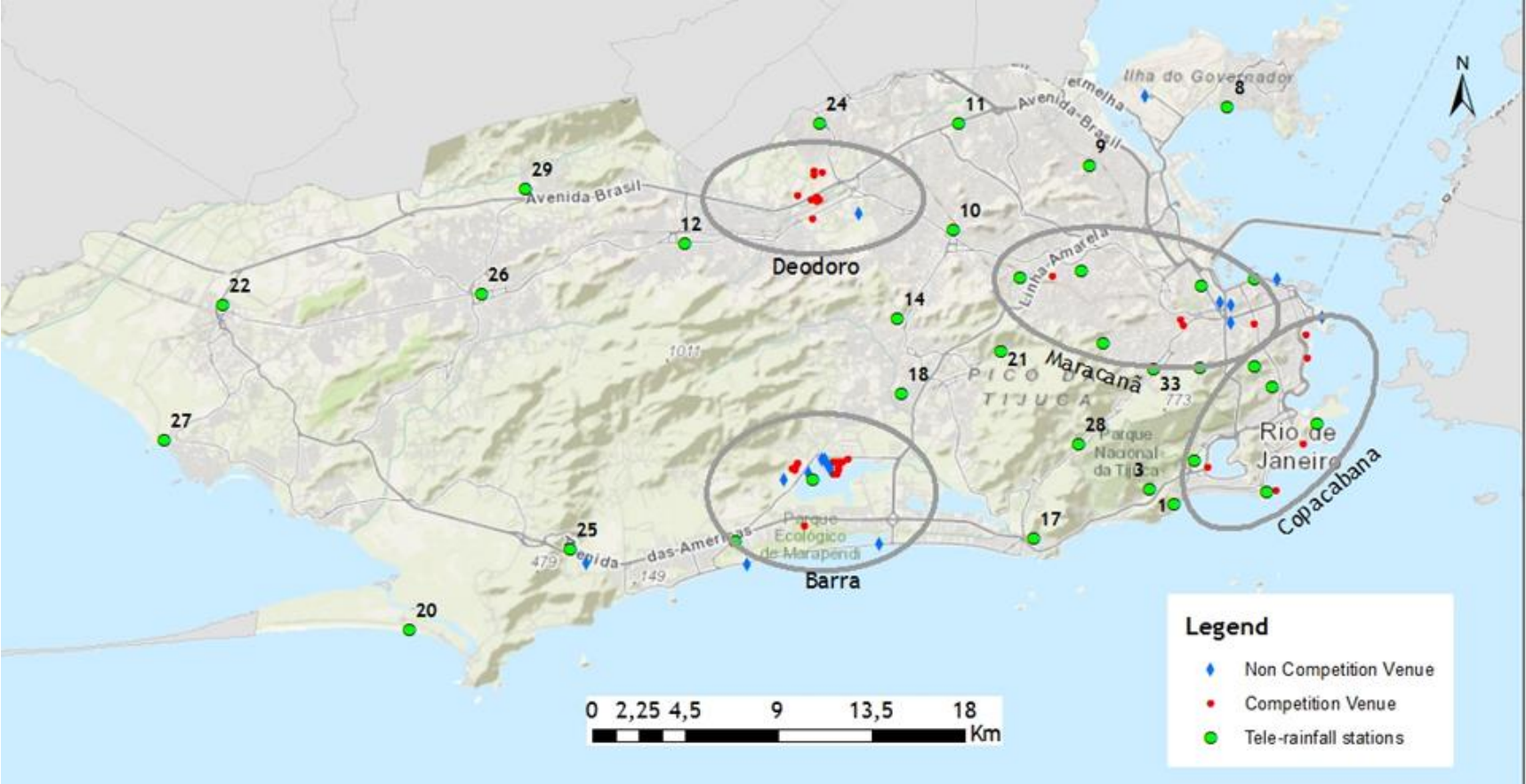
## Annex EN10.1

Criteria to classify a Rainfall event as a Significant Rainfall event, according to the measurements at the telepluviometric stations of Alert Rio in the hydrographic macrobasins in the city of Rio de Janeiro

Hydrographic macrobasin	≥ 10mm/h	Rainfall ≥ 20mm/h	≥ 40 mm/h
Baía de Guanabara	In at least 5 rainfall stations		
South Zone		In at least 2 rainfall stations	In at least 1 rainfall station
Jacarepaguá	In at least 3 rainfall stations		
Baía de Sepetiba			

Source: Alerta Rio System, 2013

Annex EN10.2 - Localization of the 33 Telepluviometric Stations of Alerta Rio in the municipality of Rio de Janeiro. Source: Geo-Rio, 2013



## 8.2 Socio-Cultural Annexes

### Annex So01.1.1

Municipal law No. 5.230/2010, establishing incentives and benefits associated with the implementation of the World Cup 2014 and the Olympic and Paralympic Games in 2016 and other measures;

Municipal law No. 5476/2012, which provides for forgiveness and amnesty related to Tax on Services (ISS) and the Urban and Land Property Tax and land rates, in the case of recreational or sporting associations;

Municipal decree No. 30,379, which provides for the disclosure, through the Transparency Portal of the Federal Executive Power, data and information relating to the Olympic and Paralympic Games in 2016;

Municipal decree No. 31.192/2009, which determines disclosure of information about the projects related to Rio 2016 Games;

Municipal decree No. 32.886/2010, which defines the “*legadômetro*”: assessment tool of the legacies of the proposed interventions.;

Municipal decree No. 33.372/2011, regulating the granting of financial benefit to fund the English course in aid of education, among other issues;

Municipal decree No. 34.524/2011, which provides for the assignment and permission to use the estate municipal government to assist in the organisation, promotion and accomplishment of the Olympic and Paralympic Games in 2016;

Federal Law No. 12.462/2011 establishing the Distinguished Regime of Public hiring (DRC), among other aspects, and

Federal Decree No. 7.033/2009, which provides for the disclosure, through the Transparency Portal of the Federal Executive Power, data and information relating to the Olympic and Paralympic Games in 2016.

With regard to municipal decree No. 32,886, it is important to note that in its 1<sup>st</sup> Article, the priority for investment in some areas of the city is stated:

Art. 1: The planning area 3 (AP3) and the port region in the planning area 1 (AP1), located in the Macro zone of Occupancy Encouraged and the planning area 5 (AP5), located in the Macro zone of Assisted Occupancy, will have priority in both public investment and the location of new infrastructure designed for World Cup 2014 and the Olympic and Paralympic Games in 2016. Single paragraph. The permanent infrastructure referred to the “caput” of this article will be a legacy for the City and shall serve as drivers of local development.

With respect to municipal decree No. 30.379/2009, it is important to pay attention to the provisions of Articles 2, 4, 9, 14, 16, 18, 21 and 22, which establish rules to ensure the traffic flow, order and public safety, social inclusion, and accessibility during the Games besides reinforcing the importance of “legacy [of Games] to the population of the city of Rio de Janeiro” (see **Annex So01.1**).

In addition to creating new rules and regulations, laws and decrees related to the 2016 Games identified by survey also alter the wording of a number of other laws and decrees, prior to the acceptance of Rio de Janeiro as the Host City:

Law No. 9.615/1998, which deals with general rules about the sport;

Law No. 10.891/2004 establishing the Athlete-Grant;

Laws 10.683/2003, 11.182/2005, 5.862/1972, 8.399/1992, 11.526/2007 and 11.458/2007, dealing with the general organisation of the Presidency and the Ministries, the legislation of the National Agency of Civil Aviation (ANAC) and the Brazilian Company of Airport Infrastructure (Infraero);

Laws 9.529/1997 and 11.529/2007 to include certain sectors in the Programme *Revitaliza-BNDES*;

Law No. 6.490/2008 that establishes the National Programme for Public Security and Citizenship (PRONASCI);

Laws 6.521/2008, 6.280/2007, 6.191/2007, 5.743/2006, 5.551/2005, to extend, in exceptional circumstances, the period of relocation of commissioned positions of the Group *Direção e Assessoramento Superiores* – DAS;

Law No. 6.061/2007 approving the Regimental Structure and Framework Statement of Participation in Commission positions and Extra-remunerated of the Ministry of Justice, relocates commission positions; and,

Laws 11.196/2007, 11.196/2005, 7.972/1989, 10.260/2001, 7.827/1989, 10.849/2004, 6.704/1979.

## **Annex So1.1.2**

### **Municipal Decree No. 30.379/2009**

Art. 1. [...] § - This Decree shall be applied in order to ensure that the Olympic and Paralympic Games produce legacy to the population of the city of Rio de Janeiro.

Art. 2. The Executive Branch shall make all necessary efforts to enable the use of property belonging to the municipal government, though occupied by others, indispensable to the attainment of the Rio 2016 Games.

[...]

Art.4. In the period of the Rio 2016 Games and the period prior to and following it, to be defined in regulations, it shall be suspended the advertising and publicity in public area or exposed to the public in the areas of interest of the Rio 2016 Games, to be defined also by regulation, for a period not exceeding that established in the



technical manual of advertising and publicity of the International Olympic Committee.

[...]

Art. 9.º It is prohibited accomplishing large events open to the public from 29 (twenty-nine) and July 25 (twenty-five) of September 2016.

[...]

Art. 14 The city of Rio de Janeiro, in the course of its duties, the adoption and implementation of standards that ensure the functionality of buildings and public roads, avoiding or removing any obstacles to access by people with disabilities to buildings, public parks and transportation.

[...]

Art. 16 The city of Rio de Janeiro, within its competence, will attend to the plan presented in the bid to host the Rio 2016 Games and will develop programmes and projects to further use of the facilities of the Games, in order to ensure its long-term viability and benefit the community.

[...]

Art. 18 The competent agency will propose the inclusion in multiannual plans, laws of budgetary directives and annual budget laws for the fiscal years included between 2009 and 2016, the appropriations for projects contained in the application dossier of the Rio 2016 Games.

Unique Paragraph: The appropriations referred to in the heading of this article will aim at meeting, among others, the investments related to:

I health;

II protection to environment;

III municipal public transportation and roads;

IV accessibility in public parks and public buildings

Art. 21 There will be no classes in public schools in the period between days 5 (five) and 24 (twenty-four) of August 2016 and between 07 (seven) and 18 (eighteen) of September 2016.

Art. 22 The Executive branch will adopt additional rules as may be necessary to achieve the Rio 2016 Games, including concerning to:

I public municipal jurisdiction;

II- the adoption of affirmative actions to ensure the reproduction of Brazilian ethnic diversity in hiring temporary workers for activities related to the Rio 2016 Games;

III the adoption of incentive measures for temporary hiring of people with disabilities.

2009						
Axis	Theme	Number of federal laws approved	Number of municipal laws approved	Number of federal decrees approved	Number of municipal decrees approved	TOTAL
Planet	Transport and logistics	0	0	0	1	1
	Environmental conservation and clean-up	0	0	0	0	0
	Waste management	0	0	0	0	0
People	Involvement and raising awareness	0	0	0	0	0
	Universal accessibility	0	0	0	0	0
	Diversity and inclusion	0	0	0	0	0
Prosperity	Sustainable supply chain	0	0	0	0	0
	Management and transparency	0	0	1	2	3
Others	Others	1	1	0	11	13
TOTAL		1	1	1	14	17

2010						
Axis	Theme	Number of federal laws approved	Number of municipal laws approved	Number of federal decrees approved	Number of municipal decrees approved	TOTAL
Planet	Transport and logistics	0	0	0	0	0
	Environmental conservation and clean-up	0	0	0	0	0
	Waste management	0	0	0	0	0
People	Involvement and raising awareness	0	0	0	0	0
	Universal accessibility	0	0	0	0	0
	Diversity and inclusion	0	0	1	0	1
Prosperity	Sustainable supply chain	0	0	0	0	0
	Management and transparency	0	1	1	0	2
Others	Others	2	3	0	2	7
TOTAL		2	4	2	2	10

2011						
Axis	Theme	Number of federal laws approved	Number of municipal laws approved	Number of federal decrees approved	Number of municipal decrees approved	TOTAL
Planet	Transport and logistics	0	0	0	0	0
	Environmental conservation and clean-up	0	0	0	0	0
	Waste management	0	0	0	0	0
People	Involvement and raising awareness	0	0	0	0	0
	Universal accessibility	0	0	0	0	0
	Diversity and inclusion	1	0	0	1	2
Prosperity	Sustainable supply chain	0	0	0	0	0
	Management and transparency	0	0	0	10	10
Others	Others	4	3	2	2	11
TOTAL		5	3	2	13	23

2012						
Axis	Theme	Number of federal laws approved	Number of municipal laws approved	Number of federal decrees approved	Number of municipal decrees approved	TOTAL
Planet	Transport and logistics	0	0	0	0	0
	Environmental conservation and clean-up	0	0	0	0	0
	Waste management	0	0	0	0	0
People	Involvement and raising awareness	0	0	0	0	0
	Universal accessibility	0	0	1	0	1
	Diversity and inclusion	0	1	1	0	2
Prosperity	Sustainable supply chain	0	0	0	0	0
	Management and transparency	0	0	0	2	2
Others	Others	4	0	3	2	9
TOTAL		4	1	5	4	14

2009 to 2012						
Axis	Thematic topic	Number of federal laws approved	Number of municipal laws approved	Number of federal decrees approved	Number of municipal decrees approved	TOTAL
Planet	Transport and logistics	0	0	0	1	1
	Environmental conservation and clean-up	0	0	0	0	0
	Waste management	0	0	0	0	0
People	Involvement and raising awareness	0	0	0	0	0
	Universal accessibility	0	0	1	0	1
	Diversity and inclusion	1	1	2	1	5
Prosperity	Sustainable supply chain	0	0	0	0	0
	Management and transparency	0	1	2	14	17
Others	Others	11	7	5	17	40
TOTAL		12	9	10	33	64

Municipal Laws		
Law	Menu	Thematic area
Compl. Law n° 104/2009	Establishes the Project for Urban Structuring – PUS of neighbourhoods Vargem Grande, Vargem Pequena, Camorim, and part of the Recreio dos Bandeirantes neighbourhoods, Barra da Tijuca, and Jacarepaguá in the XVI and XXIV Administrative Regions, members of the Spatial Planning Unit numbers 46, 47, 40, 45, and other provisions.	Other
Compl. Law n° 108/2010	Sets Urban parameters and Terms Of Use and Soil Occupation, authorises Interconnected Operations, establishes incentives for hosting capacity expansion in the City of Rio de Janeiro and authorises the Sale of Properties, aiming at the World Cup in 2014 and the Olympic and Paralympic Games in 2016, and other Arrangements.	Other
Compl. Law n°111/2011	Provides for the Urban and Environmental Policy of the Municipality, establishes the Master Plan for Sustainable Urban Development in the Municipality of Rio de Janeiro, and other measures.	Other
Law n° 5.147/2010	Provides for the Multi-Year Plan for the quadrennial 2010/2013.	Other
Law n° 5.229/2010	Authorises the Executive to create the Company Rio 2016 – E-Rio 2016, and other measures.	Other
Law n° 5.230/2010	Establishes incentives and benefits associated with the implementation of the World Cup 2014 and the Olympic and Paralympic Games in 2016, and other measures.	Management and Transparency
Law n° 5.260/2011	Authorises the city of Rio de Janeiro, through the Executive Branch, to integrate, in the form of Public Consortium for	Other

	Special Regime, the Olympic Delivery Authority – ODA, ratifies the respective Protocol of Intent among other provisions.	
Law nº 5.272/2011	Amends the provisions and repeals provisions of Law No. 5260 of April 18, 2011.	Other
Law nº 5.476/2012	Provides for forgiveness and amnesty relative to the Tax on Services of Any Nature – ISS and the Tax on Urban, Land and Property-IPTU and land rates in the case of recreational or sporting associations, under the conditions it lays down.	Diversity and Inclusion

Municipal Decrees		
Decree	Menu	Thematic area
Decree nº 30.478/2009	Recognises as merit the activities performed by municipal employees in preparing the application package from the city of Rio de Janeiro to host the Olympic and Paralympic Games in 2016.	Other
Decree nº 30.379/2009	Provides for measures to be adopted by the municipality of Rio de Janeiro for the Olympic and Paralympic Games Rio 2016, in the city of Rio de Janeiro.	Management and Transparency
Decree nº 30.380/2009	Creates a working group for coordinated organisation of the city of Rio de Janeiro for the visit of the Evaluation Committee of the International Olympic Committee's bid to host the 2016 Olympic Games.	Other
Decree nº 30.418/2009	Creates a working group for preparing technical studies for revitalisation and redevelopment of the area surrounding the runway Professor Darcy Ribeiro (Sambodromo), in view of the accomplishment of the Sporting Events of the Olympic and Paralympic Games in 2016.	Other
Decree nº 30.484/2009	Creates a working group to propose measures to enable a larger number of accommodations in the hotel chain in the city of Rio de Janeiro aiming at World Cup in 2014 and the city's bid to host the Olympic and Paralympic Games in 2016.	Other
Decree nº 30.497/2009	Amends the Decree n. 30.484/2009, as mentioning/creating a working group to propose measures to enable a larger number of accommodations in the hotel chain in the city of Rio de Janeiro, aiming at the world Cup in 2014 and the city's bid to host the Olympic and Paralympic Games in 2016.	Other
Decree nº 30.533/2009	Creates a working group to prepare technical studies and project proposals for the redevelopment around the stadium journalist Mario Filho (Maracanã) aiming at the World Cup 2014 and the city's bid to host the Olympic and Paralympic Games in 2016.	Other
Decree nº 30.650/2009	Provides for the licensing in the delimited area /area surrounding the project for the Olympic Village and the Olympic Park.	Management and Transparency
Decree nº 31.161/2009	Establishes optional holiday in municipal government offices on October 2, 2009.	Other
Decree nº 31.181/2009	Provides for the visual identification of official documents and correspondences within the municipal executive sphere.	Other
Decree	Establishes the “Rio business office” to articulate and	Other

n° 31.182/2009	identify business opportunities and investments in the city of Rio de Janeiro.	
Decree n° 31.185/2009	Determines actions within the municipal scope able to identify and/or measure the resulting legacy of mega-events held in the city of Rio de Janeiro.	Other
Decree n° 31.192/2009	Determines information disclosure of projects related to Rio 2016.	Management and Transparency
Decree n° 31.331/2009	Amends the single Annex in the decree n. 31,181, of October 5, 2009, in the manner it mentions/ provides for visual identification of official documents and correspondences within the municipal executive sphere.	Other
Decree n° 32.886/2010	Defines the “legadômetro” and determines the guidelines to be observed in the assessment of urban interventions and sports equipment and related support to the World Cup 2014 and the Olympic and Paralympic Games in 2016.	Management and Transparency
Decree n° 32.888/2010	Establishes, in the official calendar of events in the city of Rio de Janeiro, the day October 2nd of each year as a day commemorating date for city's rebirth and victory for Olympic bid in the city of Rio de Janeiro.	Other
Decree n° 33.349/2011	Altera dispositivo do decreto n. 31192, de 08 de outubro de 2009. /determina a divulgação de informações dos projetos relacionados aos Jogos Rio 2016.	Management and Transparency
Decree n° 33.372/2011	Regulates the provision of financial benefits to fund English course in aid education and other measures.	Diversity and Inclusion
Decree n° 33.390/2011	Establishes the city legacy council for the purposes mentioned.	Management and Transparency
Decree n° 33.391/2011	Establishes the executive board for the purposes mentioned. Projects related to the World Cup 2014 and the Olympic and Paralympic Games in 2016.	Management and Transparency
Decree n° 33.441/2011	Changes the decree. 33,391 of February 14, 2011, and other provisions. / establishing the executive board for the purposes mentioned. Projects related to the World Cup 2014 and the Olympic and Paralympic Games in 2016.	Management and Transparency
Decree n° 33.763/2011	Regulates the incentives and tax benefits related to the accomplishment of the Confederations Cup 2013, World Cup 2014 and the Olympic and Paralympic Games 2016, dealt in the law n ° 5.230, November 25, 2010, and provide other measures.	Management and Transparency
Decree n° 33.772/2011	Constitutes committee to review and approval of projects of sports equipment and related support to the World Cup 2014 and the Olympic and Paralympic Games in 2016.	Management and Transparency
Decree n° 33.777/2011	Provides for the licensing in the area that delimits. / Area surrounding the João Havelange Olympic Stadium, Engenheiro in the neighbourhood of the Engenho de Dentro – XIIIra.	Management and Transparency
Decree n° 34.050/2011	Amends the decree that mentions. / Decree 33390 of 14 February 2011 establishing the city legacy council.	Management and Transparency
Decree n° 34.051/2011	Amends the decree that mentions. / Decree 31182 of October 5, 2009, establishing the “Rio escritório de negócios” to articulate and identify business	Other

	opportunities and investments in the city of Rio de Janeiro.	
<b>Decree n°34.370/2011</b>	Amends the Decree n. 33,763 of May 5, 2011, in the manner mentioned. / regulates the incentives and tax benefits related to the accomplishment of the Confederations Cup 2013, World Cup 2014 and the Olympic and Paralympic Games in 2016, dealt in the law n. 5230, of November 25, 2010, and other provisions.	Management and Transparency
<b>Decree n°34.524/2011</b>	Provides on the assignment and permission to use the estate municipal government to assist in the organisation, promotion and accomplishment of the Olympic and Paralympic Games in 2016.	Other
<b>Decree n°34.764/2011</b>	Creates a special bidding commission under the Municipal Olympic Company – EOM.	Management and Transparency
<b>Decree n°35.063/2012</b>	Provides on the visual identification of official documents and correspondences within the municipal executive sphere.	Other
<b>Decree n°35.796/2012</b>	Provides on the duties of the audit committee that will monitor the implementation of the administrative concession on the implementation, operation and maintenance of the Olympic Park in the city of Rio de Janeiro to host the Olympic and Paralympic Games 2016.	Management and Transparency
<b>Decree n°35.950/2012</b>	Amends the Decree No. 35,063, of January 25, 2012. / provides on the visual identification of official documents and correspondences within the municipal executive sphere.	Other
<b>Decree n°36.178/2012</b>	Creates a technical committee to advise the bidding committee of the municipal urbanisation company – Rio-Urbe in bidding for procurement of projects management and works and development of architectural projects for deployment of equipment required for the Olympic and Paralympic Games 2016.	Management and Transparency

<b>Federal Laws</b>		
<b>Law</b>	<b>Menu</b>	<b>Thematic area</b>
<b>Law n° 12.035/2009</b>	Establishes the Olympic Act within the federal public administration for the purpose of ensuring guarantees to the application of the city of Rio de Janeiro to host the Olympic and Paralympic Games in 2016 and establish special rules for its implementation, subject to application of the Law to the confirmation of the choice of that city by the International Olympic Committee.	Other
<b>Law n° 12.348/2010</b>	Provides for the borrowing limit of Municipalities in loans to finance infrastructure for the accomplishment of the FIFA World Cup 2014 and the Olympic and Paralympic Games in 2016, on properties arising from the extinct Rede Ferroviária Federal S.A. – RFFSA, on debts relative the real property of the Union and agreements involving real property of the Union; transfers the useful property for Companhia Docas do Rio de Janeiro – CDRJ; alters the Provisional Measure 2185-35, of August 24, 2001, and Laws in 9711, of November 20, 1998, 11,483, of May 31, 2007, 9,702, of November 17, 1998, 10,666, of May 8, 2003, and 9469, of July 10, 1997, and provides other arrangements	Other
<b>Law n°</b>	Estimates the revenue and fixes the Union expenditure	Other

<b>12.381/2011</b>	for the financial year 2011.	
<b>Law n° 12.395/2011</b>	Changes Laws in 9615 of 24 March 1998 establishing general rules on sport, and 10,891, of July 9, 2004, establishing the Athlete Grant; creates the Programmes Athlete Podium and Sports City; revokes the Law 6,354 of September 2, 1976, and other provisions.	People: Games for Everyone
<b>Law n° 12.396/2011</b>	Ratifies the Intentions Memorandum signed between the Union, the State of Rio de Janeiro and the city of Rio de Janeiro, in order to constitute a public consortium called Olympic Delivery Authority – APO.	Other
<b>Law n° 12.462/2011</b>	Establishes the Distinguished Regime for Public Procurement – DRC, alters the Law 10.683 of May 28, 2003, which provides on the organisation of the Presidency and the Ministries, the law of the National Agency of Civil Aviation (ANAC) and legislation of the Brazilian Airport Infrastructure company (Infraero); creates the Department of Civil Aviation, positions of Minister of State d positions on commission and on air Traffic Controller; authorises the hiring of temporary air traffic controllers; amends the Laws in 11,182 of September 27, 2005, 5,862, of December 12, 1972, 8,399, of January 7, 1992, 11,526, of October 4, 2007, 11,458, of March 19, 2007, and 12,350 of December 20, 2010 and the Provisional Measure 2185-35 of August 24, 2001, and revokes provisions of the Law 9649 of May 27, 1998.	Other
<b>Law n° 12.465/2011</b>	Provides on the guidelines for preparation and execution of the Budget Law 2012 and other measures.	Other
<b>Law n° 12.595/2012</b>	Estimates the revenue and fixes the Union expenditure for the financial year 2012.	Other
<b>Law n° 12.638/2012</b>	Establishes the National Day of Fair Play and Fight against Doping in Sport.	Other
<b>Law n° 12.708/2012</b>	Provides on the guidelines for preparation and execution of the Budget Law of 2013 and other provisions.	Other
<b>Law n° 12.712/2012</b>	Changes in the Laws 12,096 of November 24, 2009, 12,453, of July 21, 2011, to extend credit to Banco Nacional de Desenvolvimento Econômico e Social - BNDES, 9529, of December 10, 1997, 11,529 of October 22, 2007, to include in the Programme Revitaliza of BNDES sectors that specifies, 11,196, of November 21, 2005, 7,972, of December 22, 1989, 12,666, of June 14, 2012, 10,260, of July 12, 2001, 12,087, of November 11, 2009, 7,827, of September 27, 1989, 10,849, of March 23, 2004, and 6704, of October 26, 1979, Provisional Measures in 2156-5 of August 24, 2001, and 2157-5 of August 24, 2001, provides on the indirect export financing; authorises the Union to increase the share capital of Banco do Nordeste do Brasil SA and Banco da Amazonia SA; authorises the Executive sphere to create the Brazilian Agency of Fund Management S.A. Guarantors and Guarantees – ABGF; authorises the Union to grant economic subsidy in loans from the Fund for the Development of Amazonia – FDA and Development Fund of the Northeast – FDNE; authorises the Union to participate in dedicated funding to ensure foreign trade operations or large infrastructure projects, revokes provisions of Laws 10.637 of December 30, 2002,	Other



10,865, of April 30, 2004, and 12,545 of December 14, 2011, and other provisions.

Federal Decrees		
Decree	Menu	Thematic area
Decree n° 7.033/2009	Provides on the disclosure, through the Transparency Portal of the Federal Executive Power, data and information related to the Olympic and Paralympic Games in 2016.	Management and Transparency
Decree n° 7.081/2010	Amends the Decree 6490 of June 19, 2008, which regulates the Law 11.530 of October 24, 2007, establishing the National Programme for Public Security with Citizenship – PRONASCI.	Diversity and Inclusion
Decree n° 7.212/2010	Regulates the collection, inspection, collection and administration of the Tax on Industrialised Products – IPI.	Management and Transparency
Decree n° 7.410/2010	Amends the Decree in 6521, of July 30, 2008, 6,359, of January 18, 2008, 6,280, of December 3, 2007, 6,191, of August 20, 2007, 5,743, of April 4, 2006, and 5,551, of September 26, 2005, to extend, exceptionally, the deadline for relocation of commissioned positions in the Group-Management and Advisory Services – DAS.	Other
Decree n° 7.538/2011	Amends the Decree in 6061 of March 15, 2007, approving the Regimental Structure and Framework Statement of Participation in Commission and Gratified Functions of the Ministry of Justice, relocates the commission positions, and other measures.	Other
Decree n° 7.581/2011	Regulates the Differential Regime of Public Hirings – DRC, referred to Law 12.462 of August 5, 2011.	Other
Decree n° 7.682/2012	Amends the Decree No. 7,538 of August 1, 2011, to change the list of major events covered by the competence of the Special Secretariat of Security for Major Events of the Ministry of Justice.	Other
Decree n° 7.784/2012	Approves the Regimental Structure and Framework Statement of Participation of Commission Positions and the Ministry of Sports.	Other
Decree n° 7.801/2012	Amends the Decree 7659 of December 23, 2011, regarding the allocation of temporary commission positions for the Ministry of Defence, and provides representations of the Ministry of Defence in cities hosting major events.	Other
Decree n° 7.802/2012	Amends the Decree in 5342 of January 14, 2005, which regulates the Law 10.891 of July 9, 2004, establishing the Athlete Grant.	Diversity and Inclusion
Decree n° 7.823/2012	Regulates the Law No. 10.048 of November 8, 2000 and Law 10,098 of December 19, 2000, for facilities related to the Olympic and Paralympic Games in 2016.	Universal Accessibility

Norm

Unconstitutionality Representation/ Veto message

<b>Complementary law n°104/2009</b>	Art. 25, Subsections and Caput
<b>Complementary law n°108/2010</b>	Arts. 12 A 23; 27; 30 A 32; 34; 36
<b>Law n° 12.348/2010</b>	Partially vetoes. Presidential message n° 697 de 2.010. <ul style="list-style-type: none"> <li>▪ Art. 8º, § 1º, subsection V of Provisory norm n° 2185-35, de 24/08/01, altered by art. 1º of the Conversion Law Project</li> </ul>
<b>Law n° 12.381/2011</b>	Partially vetoes. Presidential message n° 20 de 2.011. <ul style="list-style-type: none"> <li>▪ Art. 4º, § 7º</li> <li>▪ Schedules in the Annex VII - Actions included inside PPA 2008-2011 by LOA 2011.</li> </ul> Schedules contained in Volume IV - Details of Budgetary Credits - Organs of Executive Power - the Presidency and Ministry (except MEC) Presidential vetoes partially the message n° 69 of 2011 .
<b>Law n°12.395/2011</b>	Vetoes partially the Presidential message n° 69 de 2.011. <ul style="list-style-type: none"> <li>▪ Art. 12-A, Lei n° 9.615, de 24/03/1998, altered by art. 1º of the Conversion Law Project</li> <li>▪ Art. 55, § 5º, Lei n° 9.615, de 24/03/1998, modificated by art. 1º of the Conversion Law Project</li> <li>▪ Art. 91, Lei n° 9.615, de 24/03/1998, alteradopelo art. 1º do projeto de lei de conversão</li> </ul>
<b>Law n°12.396/2011</b>	Partially vetoes the Presidential message n° 78 de 2.011. Art. 7º
<b>Law n°12.465/2011</b>	Partially vetoes the Presidential message n° 312 de 2.011. <ul style="list-style-type: none"> <li>▪ Art. 2º, §§ 3º , 4º, 5º, 6º</li> <li>▪ Art. 3º, § 3º</li> <li>▪ Art. 4º</li> <li>▪ Art. 7º, § 4º, subsection III, letter “c” e § 6º</li> <li>▪ Art. 12, inciso XXVI e §§ 5º e 6º</li> <li>▪ Art. 13, § 1º, subsection III e §§ 2º ao 6º</li> <li>▪ Art. 17, § 1º, subsection I, letter “s” e “t”</li> <li>▪ Art. 21, § 3º</li> <li>▪ Art. 34, subsection I, letter “d” e § 9º</li> <li>▪ Art. 37, §§ 4º, 6º a 8º</li> <li>▪ Art. 110</li> <li>▪ Art. 48, § 3º</li> <li>▪ Art. 54, § 10</li> <li>▪ Art. 66, §§ 3º up 5º</li> <li>▪ Art. 67, § 4º, subsections III and § 12</li> <li>▪ Art. 71, Unique Paragraph</li> <li>▪ Art. 78, § 9º</li> <li>▪ Art. 86, § 7º</li> <li>▪ Art. 88, § 6º e 8º</li> <li>▪ Art. 90, § 6º</li> <li>▪ Art. 124, § 1º, subsections IV and V</li> <li>▪ Art. 128</li> <li>▪ Art. 129</li> <li>▪ Annex II, subsections XXXVII, XXXVIII, XXXIX e XL</li> </ul> Annex IV, Art. 68 e Section II
<b>Law n° 12.708/2012</b>	Partially Vetoes. Presidential message n° 371 de 2.012. <ul style="list-style-type: none"> <li>▪ Art. 2º, § 3º</li> <li>▪ Art. 5º, “caput”, subsections II, III e § 4º</li> <li>▪ Art. 5º, §§ 9º, 10</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Art. 112, § 1º, subsection I, letter “t”</li> <li>▪ Art. 12, § 2º e incisos XXXV e XXXVI do Annex III</li>   <li>▪ Art. 35, §§ 6º e 8º</li> <li>▪ Art. 88, § 7º</li> <li>▪ Art. 90, § 6º, subsection III e §§ 10, 11</li> <li>▪ Art. 91, §§ 2º, 3º, 4º, 7º, 9º</li> <li>▪ Art. 102, §§ 9º, 12</li> <li>▪ Art. 103, incisos VIII, IX e X do “caput” e unique paragraph of art. 104; e arts. 105, 107 e o “caput” do art. 109</li>   <li>▪ Art. 112, § 1º, subsection I, letter “s”</li> <li>▪ Art. 128, 129 e 130</li> <li>▪ Annex III, subsection XXXIV</li> <li>▪ Art. 131, subsection VII e Annex VII - Priorities and Goals</li> <li>▪ Art. 4º, Unique Paragraph</li> <li>▪ Art. 65, § 3º</li> <li>▪ Art. 76, § 10</li> <li>▪ Art. 38, §§ 16, 17</li> <li>▪ Art. 112, § 1º, subsection I, letter “v”</li> <li>▪ Art. 58, §§ 2º, 3º</li> <li>Art. 109, §§ 1º, 2º e arts. 110 e 111</li> </ul>
Law nº12.712/2012	<p>Partially vetoes. Presidential message. nº 388 de 2.012.</p> <ul style="list-style-type: none"> <li>▪ Art. 24</li> </ul> <p>Art. 31, § 2º, Law nº 11.196, de 21/11/2005, altered by art. 1º of the Conversion Law Project</p> <p>Art. 27, subsection V</p>

## Annex So2.1

Infraero's list of rights for passengers with disabilities or reduced mobility:

- Passengers are entitled to priority seating at check-in and boarding.
- Passengers have the right to adapted telephones inside airports public areas.
- Passengers have the right to information on the Brazilian Sign Language (Libras) for passengers with hearing impairment, or in Braille (in at least two languages, when dealing with an international airport) for passengers with visual disabilities.
- As airlines require an accompanying person for a person with disability or reduced mobility, this must be stated in writing and the second ticket must be sold with a discount of 80 percent of a normal fare.
- Passengers should inform the airline company about their needs at the time the ticket is purchased.
- Passengers should have preferential service at check-in and boarding, but at landing they are the last to disembark.
- Passengers may use a wheelchair or other assistive devices (canes, crutches, walkers, etc.) to move around to the door of the plane, once the infrastructure has been submitted to airport security inspection. The passengers who need to request technical assistance and/or supplemental oxygen, must contact the airline company at least 72 hours in advance.

All these rights are set by the National Association of Civil Aviation (ANAC), but airlines and airports have still not entirely met them.<sup>158</sup>

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<sup>158</sup> Resolution N° 9 of ANAC / 2007.

## Annex So07.4

Number of medals won in Beijing 2008 Olympic Summer Games, by sport and gender

Sport	Gender	Olympic Games			Paralympic Games		
		Gold	Silver	Bronze	Gold	Silver	Bronze
Athletics	Female	1				2	1
Athletics	Male				1		2
Beach Volleyball	Male		1				
Beach Volleyball	Male			1			
Football	Female		1				
Football	Male			1			
Judo	Female					2	2
Judo	Male			3	1		
Sailing	Female			1			
Sailing	Male		1				
Swimming	Male	1		1	6	3	1
Taekwondo	Female			1			
Volleyball	Female	1					
Volleyball	Male		1				
Boccia	Male				1		1
Equestrian							1
Rowing							1
Sub Total		3	4	8	9	7	9
TOTAL			15			25	

Number of medals won at London 2012 Olympic Summer Games, by sport and gender

Sport	Gender	Olympic Games			Paralympic Games		
		Gold	Silver	Bronze	Gold	Silver	Bronze
Athletics	Female				3	2	1
Athletics	Male				4	6	2
Beach Volleyball	Female			1			
	Male		1				
Boxing	Female			2			
Boxing	Male		1				
Soccer	Male		1				
Gymnastics	Male	1					
Judo	Female	1		1	0	1	2
Judo	Male			2			1
Modern Pentathlon	Male			1			
Sailing	Male			1			
Swimming	Female					1	1
Swimming	Male		1	1	9	3	
Volleyball	Female	1					
Volleyball	Male		1				
Boccia	Male				3		1
Wheelchair Fencing	Male				1		
Football 5 a side	Male				1	0	0
Goalball	Male				0	1	0
Sub Total		3	5	9	21	14	8
TOTAL			17			43	

Number of medals won in the 2007 Pan American Games, by modality

Modality	Gender	Pan American Games			Parapan American Games		
		Gold	Silver	Bronze	Gold	Silver	Bronze
Athletics	Female				7	12	8
	Male				18	17	15
Beach Volleyball	Female			1			
	Male		1				
Boxing	Female			2			
	Male		1				
Soccer	Male		1				
Gymnastics	Male	1					
Judo	Female	1		1	2	1	2
	Male			2	1	1	3
Modern Pentathlon	Male			1			
Sailing	Male			1			
Swimming	Female				4	5	8
Swimming	Male		1	1	35	25	31
Volleyball	Female	1					
	Male		1				
Football 5 a side	Male				1		
Football 7 a side	Male				1		
Table tennis	Female				2	1	1
Table tennis	Male				9	5	5
Volleyball (sitting)	Male			1			
Weight Lifting	Female						1
Weight Lifting	Male				1		1
Wheelchair Basketball	Male						1
Wheelchair tennis	Female						1
	Male				1		1
Sub Total		3	5	9	83	68	77
TOTAL			17			228	

Source: Own elaboration

**Number of medals won at the 2011 World Military Games**

<b>Modality</b>	<b>Gender</b>	<b>Gold</b>	<b>Silver</b>	<b>Bronze</b>
Athletics	Female	5	2	1
Athletics	Male	3		2
Basketball	Male	1		
Boxing	Male	3	1	2
Football	Female	1		
Football	Male			1
Equestrian	Female	1		
Equestrian	Male	2	2	1
Judo	Female	2		
Judo	Male	2		
Swimming	Female	1	5	2
Swimming	Male	9	5	3
Orienteering	Female			1
Parachuting	Female			1
Aeronautical Pentathlon	Male	2	1	1
Military Pentathlon	Female			1
Military Pentathlon	Male			1
Modern Pentathlon	Female	1	1	
Modern Pentathlon	Male		2	
Naval Pentathlon	Female			2
Naval Pentathlon	Male			2
Taekwondo	N/A			
Shooting	N/A			
Triathlon	Female		1	1
Triathlon	Male			1
Sailing	N/A			
Volleyball	Female	1		
Volleyball	Male	1		
Beach Volleyball	Female	1		
Beach Volleyball	Male	1		
<b>Sub Total</b>		<b>37</b>	<b>20</b>	<b>23</b>
<b>Total</b>			<b>80</b>	



### 8.3 Economic Annexes

#### Annex Ec01

General Indicators of Employment – Brazil	2007	2008	2009	2010	2011	2012
<i>People in active age (PAA) – thousand people</i>	39.619	40.252	40.847	41.364	41.883	42.379
<i>Economically Active People(EAP) – thousand people</i>	22.535	22.934	23.148	23.611	23.898	24.295
Activity rate (PEA/PIA)	56.9%	57.0%	56.7%	57.1%	57.1%	57.3%
Occupied people (PO) – thousand people	20.435	21.122	21.276	22.019	22.473	22.957
Occupancy rate (PO/PEA)	90.7%	92.1%	91.9%	93.3%	94.0%	94.5%
Registered occupied people – thousand people	9.621	10.263	10.504	11.221	11.917	12.329
Unregistered occupied people – thousand people	4.231	4.157	4.034	3.966	3.757	3.640
Precarious work (PO unregistered/PO)	20.7%	19.7%	19.0%	18.0%	16.7%	15.9%
Unemployment rate						
Total	9.3%	7.9%	8.1%	6.7%	6.0%	5.5%
Men	7.4%	6.1%	6.5%	5.2%	4.7%	4.4%
Women	11.6%	10.0%	9.9%	8.5%	7.5%	6.8%

Source: PME/IBGE, 2013

General Indicators of Employment – Rio de Janeiro (metropolitan region)	2007	2008	2009	2010	2011	2012
<i>People in active age (PAA) – thousand people</i>	9.996	10.093	10.174	10.277	10.379	10.457
<i>Economically Active People(EAP) – thousand people</i>	5.352	5.446	5.420	5.543	5.643	5.765
Activity rate (PEA/PIA)	53.5%	54.0%	53.3%	53.9%	54.4%	55.1%
Occupied people (PO) – thousand people	4.969	5.076	5.088	5.233	5.349	5.478
Occupancy rate (PO/PEA)	92.9%	93.2%	93.9%	94.4%	94.8%	95.0%
Registered occupied people – thousand people	2.209	2.268	2.298	2.452	2.580	2.659
Unregistered occupied people – thousand people	925	926	910	907	868	872
Precarious work (PO unregistered/PO)	18.6%	18.2%	17.9%	17.3%	16.2%	15.9%
Unemployment rate						
Total	7.2%	6.8%	6.1%	5.6%	5.2%	5.0%
Men	5.3%	4.9%	4.5%	3.8%	3.7%	3.8%
Women	9.4%	9.2%	8.1%	7.7%	7.0%	6.5%

Source: PME/IBGE, 2013

<b>Female Work</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
<b>Economically Active Female Population</b>						
<b>Brazil</b> <i>thousand people</i>	<b>10.254</b>	<b>10.488</b>	<b>10.646</b>	<b>10.913</b>	<b>11.020</b>	<b>11.240</b>
<i>Total participation in the PEA</i>	<i>45.5%</i>	<i>45.7%</i>	<i>46.0%</i>	<i>46.2%</i>	<i>46.1%</i>	<i>46.3%</i>
<b>Rio de Janeiro</b> <b>(metropolitan region)</b> <i>thousand people</i>	<b>2.382</b>	<b>2.434</b>	<b>2.443</b>	<b>2.514</b>	<b>2.550</b>	<b>2.618</b>
<i>Total participation in the PEA</i>	<i>44.5%</i>	<i>44.7%</i>	<i>45.1%</i>	<i>45.4%</i>	<i>45.2%</i>	<i>45.4%</i>
<b>Employed Female Population</b>						
<b>Brazil</b> <i>thousand people</i>	<b>9.065</b>	<b>9.435</b>	<b>9.590</b>	<b>9.984</b>	<b>10.195</b>	<b>10.474</b>
<i>Total participation of PO</i>	<i>44.4%</i>	<i>44.7%</i>	<i>45.1%</i>	<i>45.3%</i>	<i>45.4%</i>	<i>45.6%</i>
<b>Rio de Janeiro</b> <b>(metropolitan region)</b> <i>thousand people</i>	<b>2.158</b>	<b>2.211</b>	<b>2.245</b>	<b>2.320</b>	<b>2.371</b>	<b>2.448</b>
<i>Total participation of PO</i>	<i>43.4%</i>	<i>43.6%</i>	<i>44.1%</i>	<i>44.3%</i>	<i>44.3%</i>	<i>44.7%</i>
<b>Employed Female Population / Economically Active Female Population</b>						
<b>Brazil</b>	<b>88.4%</b>	<b>90.0%</b>	<b>90.1%</b>	<b>91.5%</b>	<b>92.5%</b>	<b>93.2%</b>
<b>Rio de Janeiro</b> <b>(metropolitan region)</b>	<b>90.6%</b>	<b>90.9%</b>	<b>91.9%</b>	<b>92.3%</b>	<b>93.0%</b>	<b>93.5%</b>

Source: PME/IBGE, 2013

<b>Workers with Disabilities by Gender and Type of Disability</b>						
People	Rio de Janeiro (state)			Rio de Janeiro (city)		
	Total	Male	Female	Total	Male	Female
<b>2007</b>	<b>17.421</b>	<b>11.932</b>	<b>5.488</b>	<b>11.422</b>	<b>7.729</b>	<b>3.692</b>
Auditory	3.521	2.306	1.215	2.234	1.422	812
Physical	10.699	7.454	3.244	7.048	4.885	2.162
Intellectual (mental)	379	302	77	264	206	58
Multiple	260	172	88	126	82	44
Rehabilitated	1.362	942	420	840	573	267
Visual	885	593	292	685	447	238
Not classif.	315	163	152	225	114	111
<b>2008</b>	<b>18.202</b>	<b>12.283</b>	<b>5.918</b>	<b>11.754</b>	<b>7.795</b>	<b>3.958</b>
Auditory	4.430	2.954	1.476	3.072	2.040	1.032
Physical	10.361	7.054	3.306	6.442	4.317	2.124
Intellectual (mental)	353	276	77	192	146	46
Multiple	257	180	77	110	84	26
Rehabilitated	1.540	1.018	522	1.084	689	395
Visual	1.079	707	372	751	469	282
Not classif.	182	94	88	103	50	53
<b>2009</b>	<b>18.849</b>	<b>12.240</b>	<b>6.608</b>	<b>11.642</b>	<b>7.385</b>	<b>4.256</b>
Auditory	3.796	2.361	1.435	2.286	1.403	883
Physical	11.522	7.573	3.948	7.086	4.568	2.517
Intellectual (mental)	473	357	116	261	192	69
Multiple	310	215	95	150	106	44
Rehabilitated	1.615	978	637	1.059	600	459
Visual	1.133	756	377	800	516	284
<b>2010</b>	<b>20.509</b>	<b>13.515</b>	<b>6.993</b>	<b>12.519</b>	<b>8.112</b>	<b>4.406</b>
Auditory	4.302	2.726	1.576	2.503	1.539	964
Physical	11.853	7.971	3.881	7.260	4.849	2.410
Intellectual (mental)	580	442	138	320	238	82
Multiple	383	235	148	164	110	54
Rehabilitated	2.074	1.275	799	1.382	806	576
Visual	1.317	866	451	890	570	320
<b>2011</b>	<b>25.345</b>	<b>16.960</b>	<b>8.384</b>	<b>15.976</b>	<b>10.674</b>	<b>5.301</b>
Auditory	5.193	3.324	1.869	3.067	1.934	1.133
Physical	14.745	10.155	4.589	9.608	6.665	2.942
Intellectual (mental)	854	651	203	443	333	110
Multiple	482	290	192	211	134	77
Rehabilitated	2.171	1.345	826	1.396	830	566
Visual	1.900	1.195	705	1.251	778	473

Source: RAIS/MTE, 2013

Green Jobs						
Thousand people	People employed in green sectors					
	Brazil	Var. %	Rio de Janeiro (state)	Var. %	Rio de Janeiro (city)	Var. %
2007	2.485	-	323	-	189	-
2008	2.653	6.8%	343	6.0%	198	4.7%
2009	2.720	2.5%	348	1.7%	199	0.8%
2010	2.907	6.9%	368	5.7%	210	5.6%
2011	3.105	6.8%	381	3.4%	215	2.3%

Source: RAIS/MTE, 2013

Average Wage (Nominal Values)									
R\$	Brazil			Rio de Janeiro (state)			Rio de Janeiro (city)		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
2007	1.241	1.334	1.106	1.418	1.521	1.265	1.642	1.841	1.421
2008	1.357	1.463	1.205	1.562	1.686	1.376	1.807	1.919	1.644
2009	1.461	1.570	1.307	1.689	1.822	1.490	1.954	2.069	1.784
2010	1.589	1.712	1.415	1.838	1.993	1.606	2.131	2.270	1.930
2011	1.733	1.872	1.541	2.002	2.178	1.742	2.316	2.477	2.086

Source: RAIS/MTE, 2013

Ratio between Men and Women's Wages									
%	Brazil			Rio de Janeiro (state)			Rio de Janeiro (city)		
	Men versus national mean	Men versus Women	Women versus National mean	Men versus national mean	Men versus Women	Women versus National mean	Men versus national mean	Men versus Women	Women versus National mean
2007	7.5	20.6	-10.9	7.3	20.2	-10.7	12.2	29.6	-13.5
2008	7.8	21.4	-11.2	7.9	22.6	-11.9	6.2	16.7	-9.0
2009	7.5	20.1	-10.5	7.9	22.3	-11.8	5.9	16.0	-8.7
2010	7.7	21.0	-11.0	8.4	24.1	-12.6	6.5	17.6	-9.4
2011	8.0	21.5	-11.1	8.8	25.1	-13.0	6.9	18.7	-9.9

Source: RAIS/MTE, 2013

Average Wage of People with Disabilities (Nominal Values)						
R\$	Rio de Janeiro (state)			Rio de Janeiro (city)		
	Total	Men	Women	Total	Men	Women
2007	1.297	1.369	1.141	1.379	1.434	1.282
2008	1.352	1.418	1.215	1.479	1.521	1.356
2009	1.379	1.464	1.222	1.505	1.584	1.352
2010	1.531	1.626	1.348	1.639	1.725	1.460
2011	1.747	1.866	1.507	1.895	1.980	1.690

Source: RAIS/MTE

Ratio between Men and Women's Wages (Among People With Disabilities)						
%	Rio de Janeiro (state)			Rio de Janeiro (city)		
	Men versus national mean	Men versus Women	Women versus National mean	Men versus national mean	Men versus Women	Women versus National mean
2007	5.5	20.0	-12.1	4.0	11.8	-7.0
2008	4.9	16.7	-10.1	2.9	12.2	-8.3
2009	6.2	19.9	-11.4	5.3	17.1	-10.1
2010	6.2	20.7	-12.0	5.3	18.2	-10.9
2011	6.8	23.8	-13.7	4.5	17.1	-10.8

Source: RAIS/MTE, 2013

Average Wage of Green Sectors (Nominal Values)			
R\$	Brazil	Rio de Janeiro (state)	Rio de Janeiro (city)
2007	1.634	1.928	2.039
2008	1.795	2.121	2.293
2009	1.967	2.302	2.603
2010	2.146	2.494	2.873
2011	2.312	2.627	3.004

Source: RAIS/MTE, 2013

Average Monthly Wage of Workers with Disabilities (Nominal Values)						
R\$	Rio de Janeiro (state)			Rio de Janeiro (city)		
	Total	Men	Women	Total	Men	Women
2007	1.297	1.369	1.141	1.386	1.434	1.282
Auditory	1.646	1.819	1.316	1.888	2.034	1.611
Physical	1.091	1.137	985	1.168	1.207	1.080
Intellectual (mental)	542	535	568	575	559	636
Multiple	1.067	971	1.253	1.225	955	1.751
Rehabilitated	2.092	2.365	1.479	1.913	2.066	1.570
Visual	1.409	1.366	1.497	1.476	1.428	1.572
Not classif.	1.747	1.830	1.658	1.737	1.801	1.668
2008	1.352	1.418	1.215	1.468	1.521	1.356
Auditory	1.502	1.610	1.288	1.650	1.725	1.500
Physical	1.213	1.277	1.076	1.326	1.386	1.200
Intellectual (mental)	634	644	597	728	735	705
Multiple	1.137	1.153	1.100	1.237	1.056	1.661
Rehabilitated	1.904	1.995	1.728	2.000	2.120	1.766
Visual	1.499	1.498	1.501	1.574	1.552	1.616
Not classif.	1.760	1.919	1.590	1.691	1.810	1.564
2009	1.379	1.464	1.222	1.503	1.584	1.352
Auditory	1.472	1.662	1.160	1.647	1.820	1.362
Physical	1.300	1.369	1.168	1.412	1.481	1.281
Intellectual (mental)	613	614	612	661	650	692
Multiple	1.202	1.160	1.297	1.347	1.146	1.802
Rehabilitated	1.818	1.939	1.632	1.952	2.124	1.688
Visual	1.612	1.672	1.492	1.692	1.745	1.585
2010	1.531	1.626	1.348	1.635	1.725	1.460
Auditory	1.593	1.786	1.258	1.701	1.864	1.420
Physical	1.440	1.527	1.261	1.541	1.632	1.352
Intellectual (mental)	685	664	752	739	691	893
Multiple	1.300	1.203	1.454	1.531	1.243	1.988
Rehabilitated	2.043	2.166	1.846	2.118	2.262	1.889
Visual	1.791	1.854	1.671	1.927	2.011	1.766
2011	1.747	1.866	1.507	1.884	1.980	1.690
Auditory	1.711	1.925	1.331	1.763	1.900	1.520
Physical	1.663	1.766	1.436	1.777	1.865	1.581
Intellectual (mental)	772	755	827	864	816	1.017
Multiple	1.328	1.413	1.200	1.643	1.610	1.693
Rehabilitated	2.157	2.256	1.996	2.222	2.327	2.051
Visual	2.576	2.829	2.147	3.182	3.509	2.628

Source: RAIS/MTE

Occupancy rate in 2012, according to the category of AU's						
	General	5*	4*	3*	2*	Flat
Mean 2012	76.95%	74.97%	79.43%	78.66%	65.69%	74.30%
January	82.08%	86.01%	83.58%	81.28%	61.41%	76.00%
February	78.30%	73.61%	84.43%	81.57%	53.53%	72.73%
March	83.51%	86.62%	85.76%	81.58%	69.60%	76.59%
April	80.69%	80.53%	80.45%	82.89%	77.39%	73.78%
May	72.91%	72.01%	71.75%	76.26%	71.72%	67.53%
June	75.05%	73.70%	74.34%	78.57%	68.69%	73.97%
July	75.25%	70.55%	78.59%	78.60%	61.35%	76.01%
August	75.62%	64.42%	82.05%	79.34%	79.80%	72.33%
September	74.30%	67.18%	82.44%	73.90%	51.04%	89.72%
October	75.65%	75.69%	79.61%	74.15%	63.81%	70.68%
November	78.96%	78.57%	79.85%	78.56%	78.65%	78.12%
December	71.15%	70.81%	70.36%	77.23%	51.26%	64.10%

Fonte: ABIH-RJ / Fecomércio-RJ, 2013

Average length of stay (days)						
Month	2007	2008	2009	2010	2011	2012
January	3	3	3	4	4	3
February	3	3	3	4	4	4
March	3	3	3	4	3	3
April	3	2	3	3	3	3
May	3	3	3	4	3	3
June	2	2	3	3	3	4
July	4	3	3	4	4	3
August	3	3	3	3	3	4
September	3	3	3	4	3	3
October	3	3	3	3	3	4
November	3	3	3	4	3	4
December	3	3	3	3	3	3

Source: ABIH-RJ / Fecomércio-RJ, 2013

Mean Occupancy rate	
Year	Rate
2007	62.98%
2008	65.86%
2009	68.79%
2010	73.75%
2011	79.08%
2012	76.95%

Source: ABIH-RJ / Fecomércio-RJ, 2013

Occupancy rate / quarter				
Year	quarter			
	I	II	III	IV
2007	61.28%	57.49%	65.07%	68.07%
2008	68.50%	59.79%	65.30%	69.86%
2009	70.41%	63.33%	68.70%	72.70%
2010	77.94%	68.03%	73.67%	75.37%
2011	79.31%	74.97%	79.54%	82.49%
2012	81.29%	76.22%	75.05%	75.25%

Source: ABIH-RJ / Fecomércio-RJ



# Annex Ec03 Prices

FipeZAP Index for the City of Rio de Janeiro									
	2008		2009		2010		2011		2012
January	59.8	-	67.6	-	82.8	-	116.3	-	154.6
February	60.0	0.4%	68.4	1.2%	84.4	1.9%	119.6	2.8%	156.6
March	60.4	0.6%	69.2	1.1%	86.3	2.3%	123.3	3.2%	158.9
April	60.9	0.9%	69.9	1.1%	88.6	2.7%	127.4	3.3%	161.1
May	61.4	0.9%	70.7	1.1%	91.1	2.7%	131.3	3.0%	162.8
June	62.1	1.1%	71.5	1.2%	93.9	3.1%	135.2	3.0%	164.5
July	62.7	0.9%	72.7	1.7%	96.8	3.2%	138.8	2.6%	166.3
August	63.0	0.5%	74.1	2.0%	100.0	3.3%	142.2	2.5%	168.3
September	63.6	1.0%	75.8	2.2%	103.1	3.1%	145.7	2.5%	170.3
October	64.5	1.5%	77.3	2.0%	106.2	3.1%	148.5	1.9%	172.2
November	65.8	1.9%	79.2	2.5%	109.9	3.4%	151.0	1.7%	173.8
December	66.8	1.6%	81.1	2.3%	113.2	3.0%	152.7	1.1%	175.6
Var.% Jan/08- Dec/12	<b>193.8%</b>								

Source: FIPE, 2013

## Annex Ec04

Organising Committee Budget (In Thousands)											
A - Revenue	2008	2008	2016	2016	%	B - Expenses	2008	2008	2016	2016	%
1. COI contribution	1.16 4.00 0	582. 000	1.56 2.52 7	675. 000	21 %	B1. Capital investments					
2. TOP sponsorship	577. 689	288. 844	775. 476	335. 000	10 %	13. sports facilities	-	-	-	-	0 %
3. Local sponsorship	540. 000	270. 000	724. 884	313. 144	10 %	13.1 Olympic Village and other villages	-	-	-	-	0 %
3. Official suppliers	486. 000	243. 000	652. 395	281. 830	9%	13.2 MPC	-	-	-	-	0 %
4. Ticket sales	721. 642	360. 821	968. 716	418. 478	13 %	13.3 IBC	-	-	-	-	0 %
5. Licensing	90.0 00	45.0 00	120. 814	52.1 91	2%	13.4 Other (please specify)	-	-	-	-	0 %
5.1 Licensed Products	90.0 00	45.0 00	120. 814	52.1 91	2%	B2. Operations					
5.2 Program for Coins	-	-	-	-	0%	14. sports facilities	635.030	317 .51 5	852 .45 0	368 .25 2	1 1 %
5.3 Philately / Stamp Program	-	-	-	-	0%	14. Olympic Village and other villages	565.002	282 .50 1	758 .44 7	327 .64 3	0 0 %
6. Lotteries	-	-	-	-	0%	14. MPC	42.508	21. 254	57. 062	24. 650	1 %
7. Donations	60.0 00	30.0 00	80.5 43	34.7 94	1%	14. IBC	45.116	22. 558	60. 562	26. 162	1 %
8. Disposal of assets	65.5 67	32.7 84	88.0 16	38.0 22	1%	14. Other non-competitive facilities	82.321	41. 161	110 .50 6	47. 738	1 %
9. Subsidies	1.38 4.13 2	692. 066	1.85 8.02 8	802. 654	25 %	15. Workforce	683.914	341 .95 7	918 .07 1	396 .60 0	0 0 %
9.1 Federal Government	461. 377	230. 689	619. 343	267. 551	8%	16. Information Systems	569.766	284 .88 3	764 .84 2	330 .40 6	1 0 %
9.2 State Government	461. 377	230. 689	619. 343	267. 551	8%	16. Telecommunications and other technologies	356.011	178 .00 5	477 .90 1	206 .45 0	6 %
9.3 Municipal Government	461. 377	230. 689	619. 343	267. 551	8%	16. Internet	50.825	25. 412	68. 226	29. 473	1 %
10. Other	541. 273	270. 636	726. 592	313. 882	10 %	17. Ceremonies and culture	250.000	125 .00 0	335 .59 4	144 .97 4	0 0 %
						17.1 Opening Ceremony	110.000	55. 000	147 .66 2	63. 789	2 %
						17.2 Closing Ceremony	40.000	20. 000	53. 695	23. 196	1 %
						17.3 Award Ceremonies	10.000	5.0 00	13. 424	5.7 99	0 %
						17.4 Cultural Program	40.000	20. 000	53. 695	23. 196	0 %
						17.5 Torch Relay	40.000	20. 000	53. 695	23. 196	1 %
						17.6 Other programs	10.000	5.0 00	13. 424	5.7 99	0 %

						18. Medical Services	40.172	20.086	53.926	23.296	1%
						19. Feeding	152.174	76.087	204.275	88.245	3%
						20. Transport	329.614	164.807	442.467	191.142	6%
						21. Security	46.691	23.345	62.676	27.076	1%
						22. Paralympic Games	340.127	170.063	456.578	197.238	6%
						23. Advertising and Promotion	282.972	141.486	379.855	164.095	5%
						24. Administration	338.867	169.434	454.888	196.508	6%
						25. Events and Pre-Olympic coordination	89.105	44.553	119.613	51.672	2%
						26. Other	730.088	365.044	980.053	423.376	13%
						<b>11. DEFICIT</b>	-	-	-	-	0%
						<b>27. SURPLUS</b>	-	-	-	-	0%
						<b>12. TOTAL</b>	5.630.303	2.815.151	7.557.992	3.264.996	100%
						<b>TOTAL</b>	5.630.303	2.815.151	7.557.992	3.264.996	100%

Source: Rio 2016<sup>TM</sup>, Candidature File. 2009

Non-Organising Committee Budget (In Thousands)								
C - capital investment	2008 (R\$)		2008 (US\$)		2016 (R\$)		2016 (US\$)	
	Incremental costs of the Games	Total costs	Incremental costs of the Games	Total costs	Incremental costs of the Games	Total costs	Incremental costs of the Games	Total costs
Airports, Ports	-	2.002.500	-	1.001.250	-	2.688.111	-	1.161.244
Roads and railways	2.141.285	8.902.974	1.070.643	4.451.487	2.874.413	11.951.152	1.241.725	5.162.808
Accommodations	111.625	111.625	55.813	55.813	149.843	149.843	64.731	64.731
Sports facilities								
- Competition facilities	485.900	958.600	242.950	479.300	652.261	1.286.803	281.772	555.889
- Training facilities	21.900	21.900	10.950	10.950	29.398	29.398	12.700	12.700
Olympic Village	-	854.115	-	427.058	-	1.146.545	-	495.299
Media Village in the Barra	-	1.624.752	-	812.376	-	2.181.031	-	942.189
Electricity infrastructure	-	1.540.000	-	770.000	-	2.067.261	-	893.041
Environmental Management Systems	890.028	2.409.593	445.014	1.204.797	1.194.754	3.234.584	516.125	1.397.316
Health	20.000	20.000	10.000	10.000	26.848	26.848	11.598	11.598
Security	731.662	1.625.915	365.831	812.958	982.166	2.182.592	424.288	942.863
Network and telecommunications infrastructure (1)	-	-	-	-	-	-	-	-
IBC / MPC	405.864	405.864	202.932	202.932	544.823	544.823	235.359	235.359
Urban legacy	1.454.712	1.640.411	727.356	820.206	1.952.773	2.202.051	843.583	951.269
Subtotal C - Capital Investments	6.262.976	22.118.249	3.131.488	11.059.125	8.407.278	29.691.041	3.631.881	12.826.306
D - Operations								
security	874.693	874.693	437.347	437.347	1.174.168	1.174.168	507.232	507.232

Transport (2)	-	-	-	-	-	-	-	-
Health (2)	-	-	-	-	-	-	-	-
Environmental Management Systems (2)	-	-	-	-	-	-	-	-
Cultural program	45.212	45.212	22.606	22.606	60.692	60.692	26.218	26.218
City decoration	24.000	24.000	12.000	12.000	32.217	32.217	13.918	13.918
Special Projects	173.200	173.200	86.600	86.600	232.500	232.500	100.438	100.438
Subtotal D - Operations	1.117.105	1.117.105	558.553	558.553	1.499.577	1.499.577	647.806	647.806
Non-OCOG BUDGET Total (C+D):	7.380.081	23.235.354	3.690.040	11.617.677	9.906.855	31.190.617	4.279.687	13.474.112