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The Sustainable Development Strategy of the Municipal Government of Rio de Janeiro

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Abstract: *The purpose of this article is to describe the conception of sustainable development and its associated model of urban revitalisation, enshrined in the strategic development plan of the municipal government of Rio de Janeiro. Good governance, economic, social and environmental development were included in the plan as pillars of municipal development. Indicators of performance in each of these dimensions are analyzed, and an examination is made of the hypothesis that good governance is an indispensable requirement for sustainable municipal development. Based on international and local evidence, the article proposes that achieving sustainable development goals is facilitated substantially by multi-sector partnerships with mechanisms for citizen participation.*

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Rio de Janeiro's Vision for Sustainable Development and its Municipal Strategic Plan³

By many accounts the municipal government of Rio de Janeiro has become one of the leaders of local governments in the global South for discussions on sustainable development. In 2012, the city hosted the most important sustainable development summit, the United Nations Conference on Sustainable Development (Rio+20). The outcome document of the conference, “The Future We Want”⁴, established a common global vision that has framed Rio de Janeiro's development agenda and the policies of the municipal government. This vision conceives poverty eradication as one of the most important overarching objectives and essential requirements of sustainable development, along with the need for profound changes in patterns of consumption and production, and the protection of natural resources.

The economic, social and environmental pillars of sustainable development outlined by the Brundtland Commission in 1987 were reasserted at the Rio+20 Conference. The United Nations Sustainable Development Solutions Network (SDSN)⁵ and the United Nations Development Programme (UNDP)⁶ propose a fourth pillar, good governance, not only of public administration but also of the alliances established between people, governments, civil society and the private sector, including those prescribed by the Rio+20 outcome document. Reflecting this global agenda, the municipal government of Rio de Janeiro implemented a results-based public management model based on four-year strategic plans, fostering meritocratic culture, efficiency and the accomplishment of developmental goals⁷. Many of the targets and indicators of the 2013-2016 municipal plan, particularly those related to public management, were influenced by good governance guidelines proposed by the global sustainable development community. In order to improve practices related to governance, municipal officials take part in several global networks of policy experts and development stakeholders, such as the multi-sector UN-SDSN. Following the global inauguration of the SDSN by UN Secretary-General Ban Ki Moon in 2012, a Brazilian session was launched in Rio de Janeiro in March 2014. The Brazilian SDSN is co-hosted by the municipal government of Rio de Janeiro, represented by the Pereira Passos Institute (IPP-Rio), Conservation International, the Federal Rural University of Rio de Janeiro and the Federal University of Rio de Janeiro. Taking part in these networks has helped members to mobilize resources and rapidly exchange information, methodologies and technologies.

A Window of Opportunity for Urban Revitalization

The municipal strategic plan for Rio de Janeiro implemented between 2009 and 2012 was launched in the midst of a global financial crisis, but local political and economic conditions presented a window of opportunity for accelerated growth and sustainable development. Several indicators of municipal

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⁴ UN General Assembly Resolution 66/288, *The Future We Want*, UN Doc A/RES/66/288 (27 July 2012), https://rio20.un.org/sites/rio20.un.org/files/a---conf.216l---1_english.pdf

⁵ Leadership Council of the Sustainable Development Solutions Network, *An Action Agenda for Sustainable Development: report for the UN Secretary-General* (2014), <http://unsdsn.org/wp-content/uploads/2013/06/140505-An-Action-Agenda-for-Sustainable-Development.pdf>

⁶ UNDP, *Governance for Sustainable Development: Integrating Governance in the Post-2015 Development Framework* (2014), <http://www.undp.org/content/dam/undp/library/Democratic%20Governance/Discussion-Paper--Governance-for-Sustainable-Development.pdf>

⁷ Evans, P. & Rauch, J. E., “Bureaucracy and Growth: A Cross-National Analysis of the Effects of ‘Weberian’ State Structures on Economic Growth” *American Sociological Review* (1999), 64(5): 748–65, <http://homepage.ntu.edu.tw/~kslin/macro2009/Evans%20and%20Rauch%201999.pdf>

economic output reinforced optimism, as well as the prospect of a potentially huge oil production increase off the coast of Rio de Janeiro state⁸. Shortly after the election of Mayor Eduardo Paes in 2009, a new period of political alignment began between the three spheres of government, federal, state and municipal, bolstering urban regeneration⁹. The city has also benefited from global visibility, strengthened branding and an increase in capabilities to influence agendas in international arenas¹⁰. In 2010 the city hosted the 5th World Urban Forum, in 2011 it hosted the World Economic Forum on Latin America, in 2012 Rio+20, in 2013 the FIFA Confederations Cup and World Youth Day, in 2014 the FIFA World Cup, in 2015 the city celebrates its 450th year, and in 2016 the Summer Olympics will be held.

Mega-event impacts have been categorized as short-term or long-term, and visible or invisible¹¹. Among the most visible short-term benefits are World Cup and Olympic employment, community development, upgrading of sports infrastructure and revenue from the actual games. Long-term benefits include urban infrastructure, sports facilities, housing, an increase in tourism and the expansion of volunteering organizations. However, long-term visible impacts can also include significant increases in the cost of living, which can be detrimental for the most vulnerable communities. In addition to visible impacts, invisible impacts, both positive and negative, affect mega-event legacies. In the short-term, city and regional branding and political will for deeper urban transformations can be strengthened, but resources have to be displaced from other demands in order to underwrite mega-game investments. Social legacies depend on the effective management of these displacements and of the impact of inflation on lower income groups. Revenues from mega-events usually cover operational costs, but expenditures on infrastructure might not be recovered if demand is much lower than the supply, therefore legacies have to be designed in harmony with long-term city development plans¹².

Public perceptions regarding displacement of expenditures caused by mega-events contributed to social unrest in Rio. In June 2013 over 1.5 million people took to the streets in Brazil with several demands relating to sustainable development. Public transport, health and education services were among the main grievances, but more than 30 percent of protestors interviewed by researchers mentioned the World Cup legacy¹³. In the national media, there were many reports that the streets of

⁸ Governo do Estado do Rio de Janeiro. *Pré-sal: de quanto estamos falando? Uma Análise macroeconômica da produção potencial dos campos do Pré-sal brasileiro*, Subsecretaria de Estudos Econômicos do Estado do Rio de Janeiro (2010), <http://www.fazenda.rj.gov.br/sefaz/content/conn/UCMServer/uuid/dDocName%3A1724036>

⁹ Souza, Alessandra Augusta; La Rocque, Eduarda & Boavista, José Marcelo Souza, "Revitalizando a Economia do Município do Rio de Janeiro: O Mercado Financeiro" *Texto Preliminar para Discussão* (No. 03, Maio), Secretaria Municipal da Fazenda do Rio de Janeiro (2011), pp.3, <http://www.rio.rj.gov.br/dlstatic/10112/1753111/DLFE-228114.pdf/TDSMF.pdf>

¹⁰ Federal University of Rio de Janeiro/COPPE/SAGE, *Olympic Games Impact (OGI) Study - RIO 2016: Relatório inicial (R1) do Estudo dos impactos e do legado dos Jogos Rio 2016*. Rio de Janeiro: Comitê Organizador dos Jogos Olímpicos e Paralímpicos Rio 2016 (2014), pp.20, http://www.brasil2016.com/sites/default/files/parceiros/ogi_rio_2016_r1_br2_0.pdf

¹¹ Poynter, Gavin, "From Beijing to Bow Bells: Measuring the Olympics Effect" *London East Research Institute - Working Papers in Urban Studies* (March 2006), <http://www.uel.ac.uk/londoneast/research/FromBeijingtoBowBells.pdf>

¹² Solberg, Harry Arne & Preuss, Holger, "Major Sport Events and Long-Term Tourism Impacts" *Journal of Sport Management* (2007), 21, 213-234, <http://wspahn.camel.ntupes.edu.tw/ezcatfiles/t063/download/attdown/0/event%20long%20term%20tourism%20JSM%202007.pdf>

¹³ IBOPE Inteligência, *Pesquisa de opinião pública sobre os manifestantes*, 20 de Junho (2013), <http://especial.g1.globo.com/fantastico/pesquisa-de-opiniao-publica-sobre-os-manifestantes/>

Rio de Janeiro attracted over 300,000 people, one of the largest protests in Brazilian history. Rio de Janeiro is a national capital, its citizens are highly politicised and civil society is very active. These characteristics represent an opportunity for multi-sector sustainable development alliances to benefit from citizen participation.

Good Governance: Foundation of Sustainable Development

Governance has been described as a fourth pillar of sustainable development but also as its foundation and pre-requisite. The United Nations Human Settlements Programme (UN-Habitat) has suggested that the following are components of good governance: citizen participation, results-based management, decentralisation, accountability and transparency, gender equality and inter-municipal cooperation, both national and international¹⁴. In 2012, Rio de Janeiro Mayor Eduardo Paes began a revision of the 2009-2012 strategic plan, an important instrument for transparency and results-based management. It was concluded that more than 80 percent of targets had been met and a new 2013-2016 strategic plan was formulated, with a vision for 2030. Transforming Rio into the best city in the southern hemisphere to live and work is the overarching objective of the new plan, which aims to eradicate extreme poverty and inequality in Rio, while turning the city into the state capital in Brazil with the best public education and health systems.

A survey of the opinions of one thousand citizens was carried out and approximately one hundred municipal civil servants invested more than 2000 hours of work, in collaboration with the professional services firm McKinsey, to formulate the new strategic plan for 2013-2016. The plan is comprised of 56 targets, including an ambitious one for housing deficit reduction, and a four-year investment budget of BRL 38.6 billion, equivalent to approximately USD 17 billion. The municipal treasury will provide around 60% of the budget. The remainder is being met with external sources, such as concessions, public private partnerships (PPPs), intergovernmental transfers and loans. As part of the municipal system for project management and target monitoring (SMGPM), a results-based management model, analysts were stationed in each department of the executive to feed the system coordinated by the Chief of Staff's Office.

An important mechanism for citizen participation established in Rio de Janeiro in 2011 was the central city services telephone contact centre and online site 1746. In 2013, 3.5 million requests were received and the target set in the strategic plan for the year 2016 was surpassed. Nonetheless the integration of remote and walk-in citizen contact services remains a challenge. The strategic plan also addresses decentralisation, aiming to turn all of the city's 33 regional administration headquarters into fully equipped self-service contact centres.

The city is active in several inter-municipal cooperation mechanisms, most notably as chair of the C40 Cities Climate Leadership Group. It also sponsors the BRICS Policy Centre, one of the top think tanks in the world for research on governance in emerging economies. Very few local governments in Brazil have dedicated planning institutes. The city planning Pereira Passos Institute (IPP-Rio) has a mandate to monitor and formulate several of Rio de Janeiro's development indicators and to update official geographical data. Working collaboratively with the United Nations Human Settlements Programme (UN-Habitat) and with organizations from many sectors, IPP-Rio collects, processes and analyses information on local sustainable urban development.

¹⁴ UN-Habitat, *State of Latin American and Caribbean cities: towards a new urban transition*, United Nations Human Settlement Programme (2012), <http://mirror.unhabitat.org/pmss/getElectronicVersion.aspx?nr=3386&alt=1>

Peace and Security: Key Components of Governance

There is a worldwide growing recognition that good governance requires peace and security, which should be a priority for all levels of government and a target of multi-sector strategies¹⁵. The UN System Task Team on the Post-2015 UN Development Agenda¹⁶ called for the inclusion of peace and security as major components of development. This call has been echoed by public security specialists in Brazil¹⁷. Urban insecurity has become a major impediment for effective governance, particularly in slums and informal settlements that have been dominated by criminal gangs over the past decades. In many favelas gangs targeted resident associations and local leaders, restricting community mobilization, mobility and the provision of services.

In December 2008, the state government of Rio de Janeiro inaugurated in Santa Marta favela the first pacifying police unit (UPP) of the new community and proximity policing model for slums. The pacification policy receives financial support from the municipal government and from the private sector. According to the online database of the Institute of Public Security of Rio de Janeiro (ISP-RJ), the number of homicides decreased substantially in the city of Rio de Janeiro following the introduction of the UPP model, from 2,336 in 2007 to 1,206 in 2012. The homicide rate decreased -25 percent from 2009 to 2010. From 2010 to 2012 the declining trend continued at a slower pace. The trend was reverted in 2013 by a 10 percent rise in murders, but despite recent increases in crime, pre-pacification levels were undeniably worse. Specialists estimate that around 5,000 murders were prevented since the inauguration of the pacifying police units¹⁸. Many people believe that security improvements have had spill over effects on the quality of governance and of life conditions.

Rio+Social: Good Governance of Favelas with UPP Police Stations

With the objective of helping the state government to consolidate pacification policing, the municipal government of Rio de Janeiro, represented by IPP-Rio, established an international technical cooperation project with UN-Habitat. The UPP Social project was piloted in 2010, formally launched in 2011, and renamed Rio+Social in 2014. During its inception, the project was influenced by UN-Habitat's Safer Cities Programme, which has been in operation since 1996 and was recently expanded into a Global Network of Safer Cities. This network emphasises the need for a holistic notion of safety that draws attention to four key factors of contemporary crime prevention strategies: (1) the degree of social cohesion, (2) the extent of urban inequalities, (3) the risks of the built environment, and (4) the scope of inclusiveness in urban governance¹⁹.

¹⁵ World Bank, *Making Brazilians Safer: analyzing the dynamics of violent crime*. Washington, D.C.: World Bank (2013), http://www.wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2013/03/15/000442464_20130315123229/Rendered/PDF/707640ESW0REVI0ics0of0Violent0Crime.pdf

¹⁶ UN System Task Team on the Post-2015 UN Development Agenda, *Realizing the Future We Want for All*, Report to the Secretary-General (2012), http://www.un.org/en/development/desa/policy/untaskteam_undf/untt_report.pdf

¹⁷ Ricardo, Carolina et al., "Promoção da paz, segurança, justiça e governança na agenda de desenvolvimento pós-2015: declaração de especialistas em segurança pública", Fórum Brasileiro de Segurança Pública (2014), [http://www.forumseguranca.org.br/storage/download/post2015%20narrative%20\(portuguese\)%20july14%202014-ef2.pdf](http://www.forumseguranca.org.br/storage/download/post2015%20narrative%20(portuguese)%20july14%202014-ef2.pdf)

¹⁸ Zachhi, José Marcelo; Strozenberg, Pedro & Ramos, Silvia, "Nova etapa nas UPPs: É preciso consolidar uma polícia democrática" *O Globo* (21/05/2014), <http://oglobo.globo.com/opinia0/nova-etapa-nas-upps-12549078>

¹⁹ Velasquez, Elkin, "Prolegomena: urban development as urban safety" in UN-HABITAT (Ed.) *Urban Safety through Slum Upgrading*. Nairobi: United Nations Human Settlements Programme (2012).

The Rio+Social program has a territorial management team that operates in the pacified favelas of municipal Rio de Janeiro on a permanent basis, strengthening networks, social cohesion and social capital. By late 2014, around 770,000 people lived in communities with Rio+Social coverage, corresponding to 12 percent of the city population, just over half of the city's slum residents. The territorial team is comprised of field workers that produce data and engage residents, community based organisations and public administrators in multi-sector partnerships. It includes a mobilizations and partnerships unit, to incubate sustainable development projects with civil society and the private sector, and a network development working group that carries out research and promotes collaboration and knowledge transfer in the territories.

Reducing urban inequalities, particularly of access to public services, is a primary concern of all three core units of Rio+Social, the territorial, information and institutional management teams. The information management team processes data on public services collected by the territorial team, updating the city's publicly available maps and databases. The institutional management team coordinates relations and facilitates connections and partnerships between the various municipal government departments in order to improve the quality and efficiency of public expenditures in favelas. The City Information Department of IPP-Rio, with the support of the Rio+Social information and institutional management teams, updates the official map of municipal investments and facilities in favelas and surrounding areas, which in 2014 included interactive tags, contact details and statistical data of 549 schools, hospitals and other municipal services²⁰. Another important component of the inequality reduction strategy is training for local residents. In order to offer this service, multi-sector partnerships have been established with several government departments, companies and academic centres.

The program generates data on risks related to the built environment, which affect living conditions, social cohesion and urban inequalities. A rapid participatory mapping (MRP) methodology is employed annually to generate information on public infrastructure and the quality of the built environment in pacified slums. Indicators are compiled on landslides and geological risks, drainage and sanitation infrastructure, street lighting and other components of the built environment. The program supports slum upgrading policies by providing the housing, civil defence and dozens of other departments with data on favela settlements and with access to networks and partnerships.

Cooperating with the state government of Rio de Janeiro, the utility company Light and several other organizations, IPP-Rio took part in the creation of a multi-sector participatory governance mechanism called *Travessias* for the community-led management of sports facilities in favelas. The partnership established to implement this mechanism, improve the urban environment and reduce inequality of access to healthy activities leveraged investments from the public and the private sectors. Inclusive governance and community participation are among the most important objectives and methods of Rio+Social. They are reflected in the territorial and participatory nature of implemented projects.

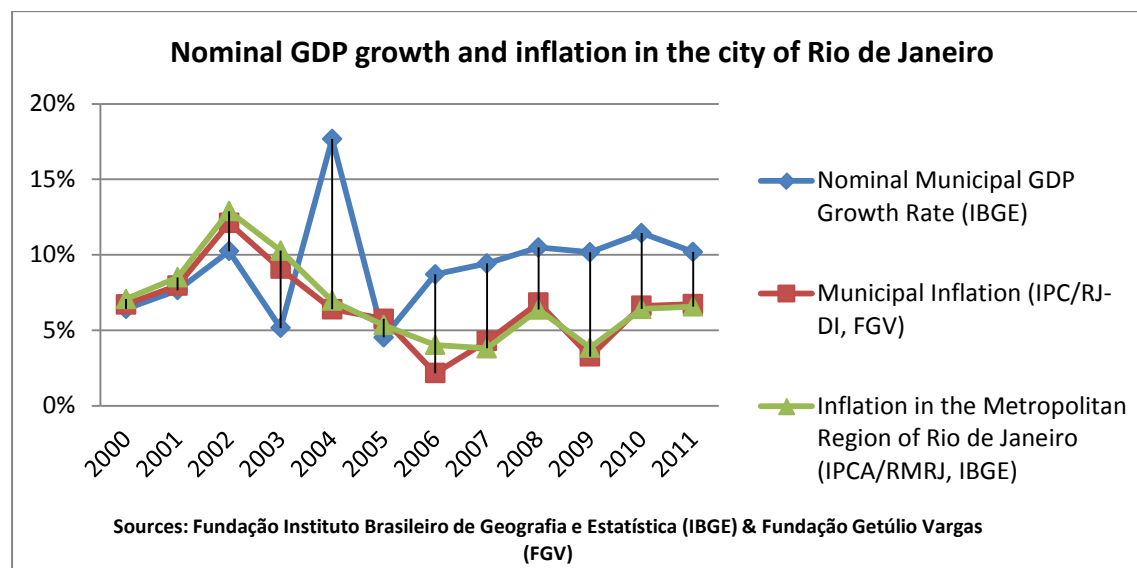
The Economic Pillar of Sustainable Development

Until recently, the municipality of Rio de Janeiro did not perform well in traditional economic terms. An important leader of the city's business community highlighted that from 1976 to 2006 real GDP was stagnant²¹. In 1999 the city of Rio de Janeiro accounted for 6.8 percent of the national economy,

²⁰ Rio+Social: Mapa Interativo de Equipamentos Públicos em Favelas Pacificadas e Entorno (2014), <http://www.rio.rj.gov.br/web/ipp/riomaisocial>

²¹ Alqueres, José Luiz, "A evolução do ambiente de negócios no Rio de Janeiro" in Urani, André & Giambiagi, Fabio (Eds.) *Rio: a hora da virada*. Rio de Janeiro: Elsevier (2011), pp. 60-72.

compared to 5.4 percent in 2006, and 5.1 percent in 2011²². However, a comparison of nominal municipal GDP growth rates with both municipal and metropolitan inflation rates indicates very significant real GDP growth since 2006.



The services sector has been the predominant share of the municipal economy for decades, accounting in 2011 for 85.6 percent of GDP²³, with similar percentages during the previous decade. Back in 1997, Sonia Rocha argued that the positive effect produced by monetary stability on income in the services sector would come to an end, and would have to be replaced by an increase in public investments, in order to absorb workers with fewer qualifications, who could otherwise inflate the proportion of poor households²⁴.

Fiscal and Urban Regeneration Strategies

One of the first initiatives of Mayor Paes was to improve fiscal conditions for public investment. In the midst of a global financial crisis in 2009, the municipality cut costs and investments to guarantee an annual primary surplus of 12 percent of revenues. Savings in the first year facilitated funding in the following years. In 2010, the municipal Secretariat of Finance received a USD 1.045 billion Fiscal Consolidation for Efficiency and Growth Development Policy Loan from the World Bank. The municipality then recapitalised the pension system, reduced the growth rate of personnel costs and replaced expensive federal government debt with lower interest credit and longer maturities. The proportion of expenditures allocated to service debt fell from 13.7 percent in 2010, to 8.9 percent in 2011, 3.7 percent in 2012 and 4.2 percent in 2013. Restructuring debt freed additional resources for

²² “Participação das Grandes Regiões, Unidades da Federação do Sudeste e suas capitais no Produto Interno Bruto a preço de mercado corrente - 1999-2011 (Tabela Nº 1467)”. Armazém de Dados do Instituto Pereira Passos (Data table),

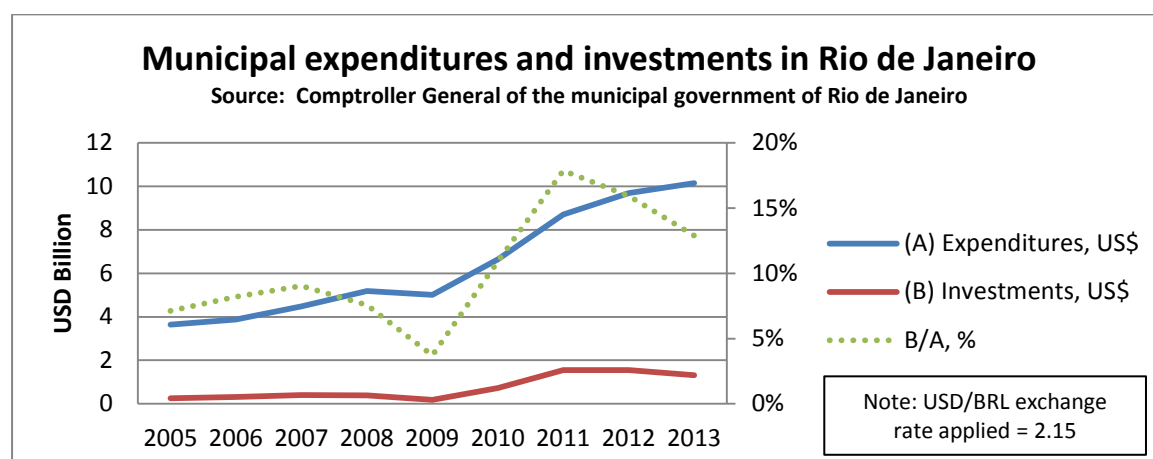
http://www.armazemdedados.rio.rj.gov.br/arquivos/1467_participa%C3%A7%C3%A3o%20das%20grandes%20regi%C3%B5es,%20uf%60s%20do%20sudeste%20e%20suas%20capitais%20no%20pib_1999%20-2011.XLS

²³ “Participação das atividades econômicas no valor adicionado bruto, segundo as capitais – 2011 (Tabela Nº 1465)” Armazém de Dados do Instituto Pereira Passos (Data table),

http://www.armazemdedados.rio.rj.gov.br/arquivos/1465_pib%20das%20capitais%20por%20setores%20econ%C3%B4micos_2011.XLS

²⁴ Rocha, Sonia, “Tendência Evolutiva e Características da Pobreza no Rio de Janeiro” *Texto para Discussão do IPEA*, No. 536 (1997).

investments, which increased from an average of 8 percent of expenditures from 2005 to 2008, to 14.4 percent from 2010 to 2013.



The Secretariat of Finance also increased municipal revenues by implementing the Nota Carioca electronic tax invoice system²⁵, which led to an estimated BRL 686 million of extra revenues from ISS services tax, equivalent to around 6 percent of ISS tax levied in the 3 years between July 2010 and June 2013. The real growth of ISS tax collection stabilised around 7 percent annually from 2010 onwards²⁶. These measures increased fiscal autonomy and market confidence, reducing dependency on intergovernmental transfers and improving the city's credit ratings²⁷.

The regeneration of the port district is one of the most important investments of the Mayor Paes administration. The Porto Maravilha waterfront regeneration project is implemented by a public-private partnership comprised of the consortium of companies Porto Novo and the municipal Rio de Janeiro Port Region Urban Development Company (CDURP), which was created in 2009. With an estimated cost of BRL 7.6 billion, or roughly USD 3.4 billion, the project is financed to a large extent through the sale of Certificates of Additional Construction Potential (Cepacs), 3 percent of which will be allocated to the preservation of heritage and local social development projects²⁸. Most waterfront regeneration projects are affected by an inherent tension between two objectives, increasing competitiveness and increasing life quality of affected inhabitants. For example, London's Canary Wharf model, which has influenced Rio, has been criticised for strengthening the city's financial sector without solving many of the local communities' deprivations²⁹. The Porto Maravilha area of impact includes the pacified slum Morro da Providência, a territory with 4,889 people, with great historical significance as the first favela community in Brazil. This pacified community has been

²⁵ Boavista, José Marcelo Souza & Silva, Fabio dos Santos, "Nota Carioca: Impactos Financeiros Diretos Após 3 anos de Implantação" Nota Técnica no. 3, Agosto, Secretaria Municipal da Fazenda (2013), <http://www.rio.rj.gov.br/documents/91253/fd448404-6250-41ec-9fc3-f98480e17cb1>

²⁶ Instituto Pereira Passos, "Arrecadação de ISS em 2012" *Notas Conjunturais*, 15, (Estudo: 3271, 2012), http://www.armazemdedados.rio.rj.gov.br/arquivos/3271_n15_arrecada%C3%A7%C3%A3o_iss_2012.PDF

²⁷ La Rocque, Eduarda & Souza, Alessandra, "Finanças do município do Rio de Janeiro: o desafio de preparar a cidade para um salto nos investimentos" in Urani, André & Giambiagi, Fabio (Eds.) *Rio: a hora da virada*. Rio de Janeiro: Elsevier (2011), pp. 24-39.

²⁸ Prefeitura da Cidade do Rio de Janeiro, "Prospecto de Registro da Operação Urbana Consorciada da Região do Porto do Rio de Janeiro", 14 de Junho (2012), <http://portomaravilha.com.br/conteudo/canalInvestidor/prospecto.pdf>

²⁹ Brownhill, Sue, "Just add water: waterfront regeneration as a global phenomenon" in Leary, Michael & McCarthy, John (Eds.) *Companion to Urban Regeneration*. Abingdon, Oxon & NY: Routledge (2013).

served since 2010 by UPP Social and Rio+Social, which seeks to reduce the tension between those two objectives.

Poverty and Inequality

In spite of investments and real income growth, the municipal economy of Rio de Janeiro has been characterised in the most recent years by diminishing but substantial poverty and mounting income inequality. According to the Atlas of Human Development in Brazil³⁰, poor people and extremely poor people in Rio de Janeiro represented, respectively, 5 percent and 1.25 percent of the total population in 2010, compared to 8.85 percent and 2.2 percent in 2000, or 14.1 percent and 4 percent in 1991. However, 4.3 percent of households declared in 2010 that they did not have any sources of income other than government cash-transfer programs³¹. Although many households are likely to have omitted income, this indicates that the extremely poor population in 2010 could be larger than 1.25 percent. Moreover, the Pereira Passos Institute (IPP-Rio)³² highlights that 20.7 percent of the population in Rio de Janeiro lived in households with per capita income of less than half the minimum wage, roughly equivalent to \$6 a day considering the World Bank's Purchasing Power Parity conversion factor for 2010. Earning half of that, 9.2 percent of the population in 2010 survived on less than a quarter of the Brazilian minimum wage per capita, or \$3 a day, compared to 16.2 percent in Brazil and 9.6 percent in São Paulo. The median poverty line for all developing countries is approximately \$2 a day³³. In the slums of Rio de Janeiro non-work related income and distribution policies such as the *Bolsa Família* and *Cartão Família Carioca* play an important role in poverty reduction³⁴.

While poverty is undeniably shrinking, inequality in the municipality has risen slightly. According to the Brazilian federal government³⁵, between 1990 and 2011 the Brazilian Gini coefficient fell from 0.607 to 0.527, reaching its lowest point since 1960, to a large extent due to cash transfer policies such as the Bolsa Família program. By contrast, from 1991 to 2000 the Gini coefficient for the city of Rio de Janeiro increased from 0.6092 to 0.6150, and then to 0.6391 in 2010, placing it among the most unequal cities in the country³⁶. Inequality is very evident comparing slums to the rest of the city. In 2010, 12.8 percent of households in pacified slums earned less than \$3 per capita a day and 34.5

³⁰ United Nations Development Programme, Institute for Applied Economic Research & João Pinheiro Foundation, "Profile: Rio de Janeiro, RJ" in *Atlas of Human Development in Brazil*. Brasília: PNUD, IPEA & FJP (2013), http://www.atlasbrasil.org.br/2013/en/perfil/rio-de-janeiro_rj.

³¹ "Domicílios particulares permanentes por classes de rendimento nominal mensal domiciliar per capita, segundo as Áreas de Planejamento, Regiões Administrativas e Bairros - Município do Rio de Janeiro - 2010, (Tabela 3148)". Armazém de Dados do Instituto Pereira Passos (Data table), http://www.armazemdedados.rio.rj.gov.br/arquivos/3148_domic%C3%ADlios%20por%20classes%20de%20rendimento.XLS

³² Instituto Pereira Passos, "Renda e Posse de Bens" *Cadernos do Rio*, Junho, (2013), http://www.armazemdedados.rio.rj.gov.br/arquivos/3293_distribuicao_renda_posse_bens.PDF

³³ Chen, Shaohua & Ravallion, Martin, "An update to the World Bank's estimates of consumption poverty in the developing world". Development Research Group, World Bank (2012), http://siteresources.worldbank.org/INTPOVCALNET/Resources/Global_Poverty_Update_2012_02-29-12.pdf

³⁴ Paes de Barros, Ricardo & Pero, Valéria, "Pobreza no Rio de Janeiro: tendências recentes e desafios para o futuro" in Urani, André & Giambiagi, Fabio (Eds.) *Rio: a hora da virada*. Rio de Janeiro: Elsevier (2011), pp 191-212.

³⁵ IPEA, "A década inclusiva (2001-2011): desigualdade, pobreza e políticas de renda" *Comunicados do IPEA*, No. 155, 25 de Setembro, (2012), http://www.ipea.gov.br/agencia/images/stories/PDFs/comunicado/120925_comunicadodoipea155_v5.pdf

³⁶ IBGE Censo Demográfico, "Índice de Gini da renda domiciliar per capita – Rio de Janeiro", IBGE (2010).

percent earned less than \$6, compared to 7.7 percent and 18.5 percent, respectively, in the rest of the city³⁷.

The connection between the pacification policy and house prices in Rio de Janeiro demonstrates the linkages between the different dimensions of sustainable development. Frischtak and Mandel suggest that the arrival of UPPs account for 15 percent of price growth in the formal property markets in Rio de Janeiro between 2008 and mid-2011³⁸. Data on property price growth in favelas was not included in their study but was expected to be even greater than in adjacent neighbourhoods. The Gini coefficient for house prices in their model fell from 0.280 to 0.265 from the end of 2008 to mid-2011, indicating a reduction in price inequality across the city. They suggest that properties with the lowest prices could benefit comparatively more from the valuation effect but highlight a wide range of price responses, contrasting an increase of 6 percent in Batan UPP, in the West Zone, with 21 percent in Chapéu-Mangueira UPP in the wealthier South Zone. There are clear benefits for many property owners but public administrators must also consider the impact of pacification on gentrification and on the purchasing power of tenants. Over the course of a decade, renting residential property replaced buying and selling as the predominant transaction in the housing market of Rio de Janeiro's favelas³⁹. This structural shift could limit the positive effect of pacification on wealth in favelas.

The Social Pillar of Sustainable Development

Rio de Janeiro's municipal profile in the Atlas of Human Development in Brazil has improved substantially over the course of the last two decades. The city ranks 45th out of 5600 municipalities measured by the national Municipal Human Development Index (M-HDI), which considers three dimensions: longevity, education and income. Rio de Janeiro emerged from a medium level of human development of 0.639 in 1990 to 0.799 in 2010, on the verge of being included in the category of very high human development, above 0.8. Over the course of those two decades, Brazil went from a very low to a high level of human development.

In order to enable local precision in planning, researchers in IPP-Rio devised a Social Development Index (IDS), which identified variations from 2000 to 2010 of 19,258 territorial units of the municipality⁴⁰. The IDS index is based on national census micro-data and combines indicators of literacy, access to sanitation and waste collection, housing conditions and income. Three areas are clearly distinguishable in the social development map of the city. The South Zone mostly has very high levels with very few spots of lower social development. The North Zone predominantly has households with intermediary and some with lower levels of development. The West Zone is divided fairly equally between two halves, one with predominantly intermediary and the other with lower IDS ratings. The West Zone had the fastest positive variation from 2000 to 2010, while the North Zone deteriorated substantially over that decade.

³⁷ UPP Social / IPP-Rio & UN-Habitat, "Tabela compilada UPP Social: Total e Percentual de Domicílios Particulares por Rendimento Nominal Mensal Domiciliar Per Capita" (2014), http://www.uppsocial.org/wp-content/uploads/2014/07/Tabela_compilada.xls.

³⁸ Frischtak, Claudio & Mandel, Benjamin, "Crime, House Prices, and Inequality: The Effect of UPPs in Rio" *Federal Reserve Bank of New York Staff Reports*, no. 542 (2012), http://www.newyorkfed.org/research/staff_reports/sr542.pdf

³⁹ Pulici, Andrea et al., *O Impacto do Programa Favela-Bairro (PROAP III) na valorização imobiliária e na mobilidade residencial nas favelas da cidade do Rio de Janeiro: Relatório Final*. OIPSOLO/IPPUR/UFRJ & BID (2012)

⁴⁰ Cavalierri, Fernando & Lopes, Gustavo, "Índice de Desenvolvimento Social (IDS) da Cidade do Rio de Janeiro (2000 – 2010)" *Notas Técnicas do IPP-Rio*, 27, Fevereiro (2014), http://www.armazemdedados.rio.rj.gov.br/arquivos/3350_nt_27_ids0010.PDF

Municipal expenditures increased from BRL 10.8 billion in 2009 to BRL 21.8 in 2013 (around USD 9.7 billion)⁴¹. During that period, expenditures on education increased from 20 percent to 22.4 percent of the total budget, health decreased slightly from 18.8 percent to 18.2 percent, while urbanization, housing and sanitation increased from 12 percent to 20.8 percent. From 2009 to 2013, around USD 800 million was invested in pacified slums, primarily for urbanization and housing, but also in health and education. Further investments of almost USD 400 million were announced for 2014-16 and allocated primarily for education⁴².

Education, Health and Housing

In 2000, 18 percent of children between the ages of 0 and 3 attended nursery school in Rio de Janeiro, compared to 40 percent in 2010, whereas the total number of children in nursery schools funded by the municipality increased from 43,300 in 2008 to 63,200 in May 2012⁴³. In addition, between 2000 and 2010 the percentage of 4 and 5 year old children who went to preschool increased from 70 percent to 88 percent. However, many thousands of children are still on waiting lists to attend schools, and some families do not even register their children on lists. Children from households identified in surveys as black or of African-Brazilian descent have lower levels of preschool and secondary school attendance than the city average, and secondary school attendance is lower in low-income neighbourhoods. The rate of adult illiteracy among the black population is more than double that of the white population, almost 4 percent compared to 1.8 percent in 2010. Alarming, illiteracy among black children of the 8-9 age group was 8 percent, compared to 4 percent among white children of the same age. Reflecting economic and ethnic inequality, illiteracy in public schools is higher than in private schools. In relation to the 10-14 age group, the municipal government managed to reduce functional illiteracy from 14 percent in 2008 to 4.1 percent in 2012. In addition to focusing on illiteracy, the municipality implemented a meritocratic educational governance model throughout the city and created the Schools of Tomorrow Program (*Escolas do Amanhã*), offering full-time education, social services and new teaching methods in 151 schools in pacified communities⁴⁴.

The Atlas of Human Development in Brazil indicates that life expectancy in Rio de Janeiro increased from 67.9 years in 1991 to 75.7 in 2010. Improvements in access to water and sanitation have had an impact on health conditions in Rio de Janeiro. Many favelas had already undergone government urbanization programs before pacification. According to the 2010 census 93.8 percent of households in pacified areas had adequate sanitation, not much less than the 94.9 percent city average⁴⁵. Rio+Social provides the municipal housing policy makers with research, analysis and strategic coordination of stakeholders to form sustainable and enduring multi-sector partnerships. Another significant improvement has been the infant mortality rate, which fell from 36.1 per thousand live

⁴¹ Prefeitura da Cidade do Rio de Janeiro, *Prestação de Contas 2013*. Rio de Janeiro: Controladoria Geral do Município (2014)

⁴² Instituto Pereira Passos, "Rio+Social: Ações municipais em áreas pacificadas", (2014), <http://www.rio.rj.gov.br/dlstatic/10112/4677271/4125271/AcoesMunicipaisemareaspacificadas.pdf>

⁴³ Instituto Pereira Passos, "Educação" *Cadernos do Rio*, Junho (2013), http://www.armazemdedados.rio.rj.gov.br/arquivos/3290_educacao.PDF

⁴⁴ Schwartzman, Simon, "Melhorar a educação no Rio de Janeiro: um longo caminho" in Urani, André & Giambiagi, Fabio (Eds.) *Rio: a hora da virada*. Rio de Janeiro: Elsevier (2011), pp. 227-241.

⁴⁵ UPP Social / IPP-Rio & UN-Habitat, "Tabela compilada UPP Social: Total e Percentual de Domicílios Particulares Permanentes por Tipo de Esgotamento Sanitário", (2014), http://www.uppsocial.org/wp-content/uploads/2014/07/Tabela_compilada.xls

births in 1980 to 13.6 in 2009⁴⁶. Road safety improvements and the reduction of homicide rates previously discussed also helped to increase life expectancy in recent years⁴⁷. Due to the connections between different dimensions of development, the expansion of coverage of the family health strategy (ESF), from 7 percent of the population in 2009 to 40 percent by the end of 2012, contributed not only to reduce death rates, but also to increase school attendance and employment⁴⁸. Increasing coverage to 70 percent was included as one of the targets of the strategic municipal plan for 2016. The city target was already met in pacified slums in 2014, when ESF coverage reached 73 percent and 100 percent in several communities. Nonetheless weak governance and lack of coordination between different levels of government remains a major challenge to improvements in public health⁴⁹.

The Environmental Pillar of Sustainable Development

On a global scale, there is mounting evidence that the current economic growth model based on fossil fuels and on unsustainable consumption patterns clashes with planetary environmental limits. There is also evidence that beyond a certain level of income necessary to fulfil basic needs, extra income does not substantially improve quality of life and wellbeing. Rapidly growing wealth multiplies the environmental impacts of consumption and investments without providing proportionate benefits in terms of wellbeing⁵⁰.

In Rio de Janeiro, climate change is a vulnerability associated with greater flood risks due to rising sea levels, landslides due to more frequent and intense rain fall, and the spread of climate related diseases such as dengue⁵¹. In 2011, the municipal government prepared, in collaboration with the British government, a Climate Vulnerability Map that revealed environmental, social, infrastructure and economic vulnerabilities⁵². Rising sea levels and meteorological tides require complex disaster risk mitigation strategies to address the drainage system and public health. Twenty four hours a day, the Rio Operations Centre monitors streams of data to increase municipal resilience and support public administration. Security forces, traffic managers, fire brigades and disaster response authorities can plan emergency responses and use a videoconference crisis room for rapid reaction. In partnership with the state government, civil society and the private sector, the municipal government of Rio de

⁴⁶ Carneiro, Alcides; Iozzi, Rosanna & Santos, Lucia, "Causa Mortis: um panorama das doenças por faixa etária na Cidade do Rio de Janeiro - 1980 a 2009" *Coleção Estudos Cariocas*, No. 20130201 (2013), http://portalgeo.rio.rj.gov.br/estudoscariocas/download/3270_CausaMortis_panorama_1980_2009.pdf.

⁴⁷ "Indicadores de Saúde de Residentes no Município do Rio de Janeiro 2000-2011" Armazém de Dados do Instituto Pereira Passos, http://www.armazemdedados.rio.rj.gov.br/arquivos/3365_indic_nascimento%20mortalidade_mrj.PDF

⁴⁸ Harzheim, Erno; Lima, Karine & Hauser, Lisiane, *Reforma da atenção primária à saúde na cidade do Rio de Janeiro - avaliação dos primeiros três anos de clínicas da família: Pesquisa avaliativa sobre aspectos de implantação, estrutura, processo e resultados das Clínicas da Família na cidade do Rio de Janeiro*. Porto Alegre, RS: OPAS, (2013).

⁴⁹ "Munoz, Flavia Poppe de, "A saúde no Rio de Janeiro: o velho compromisso pendente" in Urani, André & Giambiagi, Fabio (Eds.) *Rio: a hora da virada*. Rio de Janeiro: Elsevier (2011), pp. 213-226.

⁵⁰ Resende, André Lara, *Os limites do possível: a economia além da conjuntura*. São Paulo: Portfolio-Penguin (2013).

⁵¹ Carbon Disclosure Project, *CDP Cities 2013 Report for the City of Rio de Janeiro*. London: CDP (2013), http://c40productionimages.s3.amazonaws.com/other_uploads/images/78_CDP_Cities_2013_Rio.original.pdf?1401840553

⁵² Franco, Nelson Moreira, "A cidade do Rio de Janeiro no contexto das mudanças climáticas e na transição para economia verde" *Cadernos Adenauer*, 13 (Edição Especial 2012), 109-124, <http://www.kas.de/wf/doc/6999-1442-5-30.pdf>

Janeiro helped to create an Environmental Exchange to support environmental protection with tradable instruments such as environmental reserve and emission quotas⁵³.

The Municipal Climate Change Policy

In 2011, Mayor Eduardo Paes approved the Municipal Climate Change and Sustainable Development Policy, which includes a municipal plan, a forum, fiscal incentives and a dedicated fund. The policy also sets targets to reduce greenhouse gas emissions, compared to 2005, by 8 percent in 2012, 16 percent in 2016 and 20 percent in 2020. It creates incentives for the growth of renewable energy and Clean Development Mechanisms such as carbon credits. The action plan was revised in December 2013 by the municipal government and the Federal University of Rio de Janeiro, which coordinated the formulation of the third greenhouse gas inventory of the municipality⁵⁴. This inventory was one of thirty around the world devised in collaboration with the World Resources Institute, C40 and ICLEI – Local Governments for Sustainability, to pilot the Global Protocol for Community-scale Greenhouse Gas Emissions.

According to the inventory, emissions in Rio de Janeiro doubled from 2005 to 2012, reaching 24,269 Gg CO_{2e}. The majority of the increase in emissions came from the energy sector, which had 105 percent more emissions in 2012 than in 2005, increasing its total share of emissions from 75 percent to 79 percent. Transport is the most polluting energy subsector. From 2005 to 2012 transport emissions increased 23 percent, although their share of total emissions actually fell from 47 percent to 30 percent. Emissions from industrial processes, excluding those resulting from energy supplies, increased 475 percent over the course of seven years. They accounted for almost 11 percent of city emissions, compared to 4 percent in 2005. By contrast, emissions from waste in 2012 accounted for 10 percent of city emissions, compared to 19 percent in 2005.

Climate Change Mitigation and Adaptation Strategies

Reforming the transport sector is one of the strategies included in the municipal plan to reduce emissions. An increase in the number of users of mass transit systems is planned, from 18 percent of the population in 2011 to 60 percent in 2016, corresponding to 4 million people. Addressing the transport system is the largest contribution towards reaching the emissions target. Other projects include the expansion of cycling routes, from 150km to 450km by 2016, the Bairro Maravilha program, which is upgrading public lighting and reducing energy use, the 500,000 new trees initiative and the reforestation program, which is set to complete 1,700 hectares by 2016.

In terms of waste management, the strategic plan includes a significant expansion of sanitation in planning area five (AP5), the West Zone, and aims to collect 25 percent of all recyclable waste by 2016. The municipal conservation department and its urban waste company Comlurb often cooperate with the Pereira Passos Institute (IPP-Rio) to plan garbage collection and maintenance logistics in favelas. The waste management policy *Vamos Combinar* was implemented as a multi-sector partnership and originated from collaboration between Rio+Social, at the time called UPP Social,

⁵³ Rio de Janeiro Environmental Exchange, *Operational Report 2011-2013*. Rio de Janeiro: BVRio (2014), http://www.bvrio.org/site/images/publicacoes/relatorio2013_ing_04.pdf.

⁵⁴ Centro Clima, *Inventário das emissões de gases do efeito estufa da cidade do Rio de Janeiro em 2012 e atualização do plano de ação municipal para redução de emissões: resumo técnico*. Rio de Janeiro: Municipal Secretariat of the Environment & The Centre for Integrated Studies on Climate Change and the Environment of the Federal University of Rio de Janeiro (2013), http://www.rio.rj.gov.br/dlstatic/10112/1712030/4114528/CRJ_InventarioGEE2012_resumo_tecnicoPORTUGUESFINAL.pdf.

community activists and grassroots organisations. The public spaces maintenance policy *Sou + Minha Comunidade* also uses the participatory information systems of IPP-Rio for planning⁵⁵. The Morar Carioca urban upgrading and housing program aims to improve sanitation, waste collection and public lighting for 156,000 households by the end of the plan. These investments clearly have a positive environmental impact, but a more significant contribution towards greenhouse gas emissions would require a significant expansion of the still nascent municipal capability to capture biogas. Environmental development and the other pillars of sustainability require sustainable governance, accountability, consensual performance indicators and the adequate measurement of social and environmental costs⁵⁶.

Multi-Sector Partnerships for Effective Governance of Sustainable Development

As demonstrated by Rio+Social and several other initiatives, the municipal government of Rio de Janeiro has been experimenting with new models of interaction between the public, the private and the not-for-profit sectors to address democratic and governance deficits. The advantages of multi-sector governance models by comparison to more traditional and isolated government initiatives have not yet been systematically evaluated in Rio de Janeiro, but several of the city's opinion leaders have concluded that multi-sector partnerships are more efficient in the long-run, albeit harder to implement in the short-term. In 2002, at the Johannesburg World Summit on Sustainable Development, the Type II Partnership was launched, a new voluntary multi-stakeholder model for sustainable development initiatives. At the Rio+20 Summit, around 700 of these voluntary commitments were made. To guide the implementation of these commitments a voluntary accountability framework was proposed by the United Nations Department of Economic and Social Affairs based on annual reporting of progress, a registry of initiatives, public access to performance indicators and shadow-reporting, i.e. independent third-party reviews⁵⁷. The Rio+20 outcome document "The Future We Want" prescribes the integration and periodical updating of internet-based registries as a principle of governance for sustainable development. The Sustainable Development Solutions Network follows this recommended framework.

In Brazil, several organisations support multi-sector cooperation. The Inter-American Development Bank (IADB) and the Brazilian Institute of Municipal Administration (IBAM) carried out research and capacity building to promote public-private alliances for local development⁵⁸. Vale Foundation has proposed Public-Private Social Partnerships, multi-stakeholder projects that aim to strengthen human development, the reach of public policies, citizen participation and the effectiveness of social

⁵⁵ Allis, Joana & Franca, Monique, "Environmental Education in Integrative Waste Management: Case Study of Favelas in Rio de Janeiro" in Medeiros, Rodrigo & Swaruk, Larry (Eds.) *Sustainable Development Practice: Advancing Evidence-Based Solutions for the Post-2015 Agenda, Proceedings of the 2013 International Conference on Sustainable Development Practice*. New York: Global Association of the Master's in Development Practice Programs (2013), p. 286 – 294.

⁵⁶ Besserman, Sérgio; Rosa, Rodrigo & Lins, Clarissa, "Sustentabilidade é competitividade: para o Rio e para o Brasil" in Urani, André & Giambiagi, Fabio (Eds.) *Rio: a hora da virada*. Rio de Janeiro: Elsevier, pp. 123-136.

⁵⁷ UNDESA (2014) *Sustainable Development in Action: special report on Voluntary Commitments and Partnerships for Sustainable Development*, July (2011), [http://sustainabledevelopment.un.org/content/documents/1479SD%20in%20Action%20Report%20final%20\(1fv\).pdf](http://sustainabledevelopment.un.org/content/documents/1479SD%20in%20Action%20Report%20final%20(1fv).pdf)

⁵⁸ Programa Alianças Público Privadas, *A cooperação entre os setores público, privado e o terceiro setor nos municípios: um balanço das ações do Programa Alianças Público-Privadas*. [coordenação de] Karin Segala; [redação de] Alexandre Carlos de Albuquerque Santos – Rio de Janeiro: IBAM; Fomin/BID, (2014). (Coletânea Alianças Público-Privadas para o Desenvolvimento Local, v.1), http://www.aliancaspUBLICOPRIVADAS.org.br/app/wp-content/uploads/2014/07/01txt_introducao-v.editada.pdf

investments made by the private sector⁵⁹. While the majority of Type II Partnerships had arguably less private sector involvement than expected⁶⁰, in Rio de Janeiro private sector social investments are common. IPP-Rio has incubated several of these, often employing Rio+Social methodologies, including *Travessias*, the community-managed sports facilities project financed by the utility company Light S.A., and *Agentes da Transformação*, a training program for young household researchers to survey youth issues in favelas funded by Telecom Italia Mobile (TIM).

Concerns have been raised that by handing public sector obligations to businesses Public-Private Partnerships and Social Investment Funds could weaken welfare policies⁶¹. The Porto Maravilha regeneration in Rio de Janeiro has been criticised for promoting gentrification and social exclusion due to private property speculation⁶². Multi-sector alliances equipped with participatory planning tools that engage citizens and civil society can do the opposite, strengthening welfare and inclusion. Participatory and multi-sector planning can also increase the legitimacy of democratic representation, especially if information technologies and group decision support systems are used⁶³. Each sector of society has unique comparative advantages that can be combined to produce sustainable development. The private sector can be an efficient social investor. Academia can provide monitoring tools. Civil society and end-users can facilitate and help to supervise project implementation. Most importantly, the public sector must retain a coordinating role in multi-sector partnerships as the legitimate representative of the public interest and the best suited actor to foster networks for sustainable development.

⁵⁹ Fundação Vale, *Parcerias intersetoriais: Perspectivas e desafios*. Rio de Janeiro: Vale (2013), http://www.fundacaovale.org/ptbr/artigos/ultimosartigos/Documents/fundacaoPSPP_completo.pdf

⁶⁰ Bäckstrand, Karin, “Multi-stakeholder partnerships for sustainable development: rethinking legitimacy, accountability and effectiveness European Environment” *European Environment*, (2006)16(5), 290–306.

⁶¹ Mendes, Alexandre Fabiano, “Entre choques e finanças: a “pacificação” e a “integração” da favela à cidade no Rio de Janeiro” *O Social em Questão*, (2014)18(31), 237 – 252.

⁶² Sanchez, Fernanda & Broudhoux, Anne-Marie, “Mega-events and urban regeneration in Rio de Janeiro: planning in a state of emergency” *International Journal of Urban Sustainable Development*, (2013)5(2), 132–153.

⁶³ Majamaa, Wisa, *The 4th P – People – in urban development based on public-private-people partnership*. Dissertation for the degree of Doctor of Science in Technology, Faculty of Engineering and Architecture of Helsinki University of Technology (2008).