



# Megacities Alliance for Water and Climate (MAWAC) | Regional Conference "Latin America: Megacities, Water and Climate Change" Event Summary

7-8 May 2019, Sao Paulo of Brazil

The two-day conference took place at the **São Paulo City Hall - Edifício Matarazzo in São Paulo, on 7 and 8 May 2019**. It was co-organized by **UNESCO's Headquarters and Offices in Montevideo and Brasília**, together with its partners **ICLEI, ARCEAU Ile-de-France and SIAAP**, with the generous support of the **National Water Agency (ANA) of Brazil**. The event involved 97 participants from multi-disciplinary backgrounds in urban waters, with representation from **5 Latin America and the Caribbean (LAC) megacities** (Bogotá, Buenos Aires, Rio de Janeiro, Santiago and São Paulo) and **São Paulo Municipality and State**. The megacity representatives for this LAC event have covered 3 main types of water stakeholders - **policy makers, water utilities and academia**, as well as **basin committees** of the region.



The LAC Conference has effectively sensitized the megacities' water stakeholders, who demonstrated their commitments, and provided constructive feedback on setting up an alliance, tailored to the needs of megacities in local context.

Furthermore, it also facilitated the cross-sectorial interaction among the participants. Some of them started to engage in the projects conducted by other stakeholders, cities and MAWAC partners, and likewise, their activities obtained more exposure after the conference in May.

## Public Session

*The first day was the public session opening for all participants, which widely involved officials, regional networks, media and general public.*

- The conference was commenced by the **Opening Speech** from the representatives of MAWAC co-founders and local co-organizers in City, State and National levels (Municipality and City Council of São Paulo; State Government and State Company of São Paulo; Water Authority of Brazil). **The speakers raised the concern of water challenges intensified by climate change in big cities of Latin America, thus necessitating the bridging of water cooperation at all levels, and in various dimensions.**
- The **Keynote Speech**, delivered by UNESCO-IHP, presented **a global outlook about a variety of water elements related to sustainable development in cities**: water distribution, disasters, efficiency, awareness, urban management systems etc... These elements exhibit complicated inter-connections with the global change in social, economic, and environmental settings. The speech further included **a set of related research results from other UN agencies, global partners and IHP's publications.**

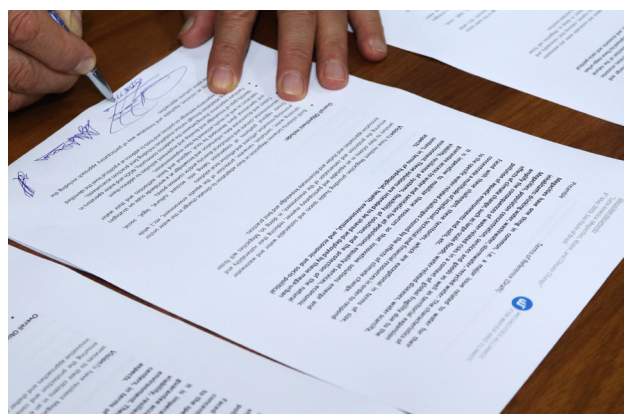


- The afternoon session was dedicated to the **Megacities' Presentations**. Representatives of the megacities of São Paulo, Rio de Janeiro, Buenos Aires, Santiago and Bogotá presented **the current and future climate change impacts on the water security of their megacities, the risks to their economic activity and social stability, and introduced their plans for sustainable water management in the future.**
- The presentations also showcased an impressive diversity of challenges emphasized by 5 cities, such as the quality of life for informal settlements (Buenos Aires), water insecurity in the face of climate change (Santiago), integrated metropolitan management (São Paulo), collective reaction beyond administrative territories (Rio de Janeiro), academic contribution to interdisciplinary planning (Bogotá).
- **Question and Answer (Q&A) sessions** followed each presentation. **Many constructive ideas were raised by the participants, which augmented the debate on water elements** (such as water pricing, green infrastructure etc.), and water related topics (such as gender, food security and financing). **Young experts and PhD students** were actively engaged in the dialogues.

## Working Session

*The second day was a working session among a closed group of stakeholders, which mainly discussed about the architecture of the regional chapter of the global platform. Main points of discussion were the following:*

- The general framework of setting up the regional alliance for Latin America was drafted by the working group members through the **Terms of Reference (TOR)**, which were agreed in principal by 5 cities and MAWAC Secretariat. An official agreement was signed by São Paulo City Hall and UNESCO, which acknowledged the establishment and a long-standing cooperation of LAC regional alliance.
- The **drafted TOR** identified the following items:
  - **Visions, overall and specific objectives** that LAC members cities are striving for;
  - **Governance model** that can ensure effective participation among LAC cities, MAWAC local partners and UNESCO Headquarters and Field Offices;
  - **Local external partners and networks in LAC** to pursue in multi-disciplinary manner;
  - **Funding mechanism** to sustain the operation of regional platform;
  - **Roadmap** ahead prior to the formal establishment of global alliance in 2020.
- A **survey** was undertaken to **identify the needs of megacities stakeholders, participation and governance model of the global platform, and the approaches of interction on global, regional, country and city levels.**
- The **proposed themes and call for papers** for the 2<sup>nd</sup> International Conference were discussed in order to receive the feedbacks from the participants, and to reflect the key points of which LAC cities are particularly concerned. These include the elements of **gentrification, service provision in the sense of expansion and renew, holistic water management by taking basin level into consideration, and raising citizens awareness.**
- The **new water monographies of megacities to be launched in 2020:** following the current 16 cities water monographies, a new publication is envisioned to be launched in 2020 with the water monographies of more megacities. This will allow for **a comparative analysis on different water aspects in megacities and propose solutions.** The template of such monographies was introduced during the working session, while a revised version is under circulation to receive technical feedbacks after the event.







**Luiz Álvaro**  
Executive secretary of International Relations  
of the city of São Paulo, representing the mayor  
(Bruno Covas)

"Because it is far from the sea, lakes and rivers, São Paulo is a great laboratory for ideas and experience to provide safe water to the population. We hope São Paulo can play a role and commit to the megacities alliance".



**Alexandros Makarigakis**  
Programme Specialist, International Hydrological  
Programme of UNESCO

"Water resources in megacities are already scarce. Climate change is becoming even more challenging. We are here today to establish a cooperation platform among megacities so that cities can find together the solutions for water resources management and the provision of related services, and face the challenges which are exacerbated due to climate change".



**Benedito Braga**  
President of Water and Sanitation Company of São  
Paulo State (SABESP), representing the governor  
(João Doria)

"Climate change is now having deeper impacts on water resources in a negative and extreme tendency, whether by floods or droughts. This alliance is extremely important when it comes to urbanization".



**Jean-Claude Deutsch**  
Director, Association for Research and Local  
Governments on Water (ARCEAU Île-de-France)

"Beyond the specificities of each megacity, there are some macro points in common, and the preoccupation with water resources is one of them. The stakeholders in megacities are much more diversified, yet more complexed. But we see the large cities having research, human resources and so on, as the positive face of this alliance. So it can promote cooperation in various areas".



**Marco Antonio Palermo**  
Executive secretary of the São Paulo City's Water  
and Sewage Services Management Committee

"Despite the different municipalities we have, we share the same problems, and some problems can trigger one to another. The megacities alliance is an intelligent initiative for the challenges we face in relation to water in the face of climate change".



**Joaquim Giacconi-Vincent**  
Head of Public and International Affairs, SIAAP

"All countries share similar problems when we talk about water and climate change. For 10 years we have been talking about climate change as a future problem, and now we have to deal with it. We have strived to make agreement with Paris, Beijing, Jakarta, Manila, Mexico and others for adaptation of climate change".



**Oscar Cordeiro Netto**  
Director of National Water Authority of Brazil (ANA)

"Brazil has at least 3 challenges in water: 44 million people depend on water transfer from water basin; 55% cities depend on the superficial water; conflicts among agriculture, youth and power use cannot be neglected. But the most difficult one is to get different administration harmonious".



**Gilberto Natalini**  
City Councilor of São Paulo City Hall

Much of the devastation in São Paulo today is irreversible. The disposal of industrial wastewater and the connection of individual sewage remain problematic. Cities like São Paulo are now developing fast but bearing a lot of green costs, and we need to think about our next generation.



**Rodrigo de Oliveira Perpétuo**  
Director, ICLEI South America

"Multi-level and multi-stakeholder cooperation is the way to solve the issues related to water resources. For this, we are looking for new forms of cooperation among cities, to mobilize civil society and to develop multi-level management, because they have very deep impacts today. MAWAC can influence local and national guidelines".

### São Paulo

Marco Antonio Palermo, Executive Secretary, Water and Sanitation Steering Committee of São Paulo Municipality

The City of São Paulo is situated in the Hydrographical Region of Parana, among the 12 Hydrographical Regions (HR) in Brazil. Covering 10% of national territory with 1,507 municipalities. HR Parana represents meanwhile one of the highest economic cluster today, and the highest demand for water resources (industrial use in particular) of the country. Zooming in São Paulo State, 22 hydrological units are further divided to manage water resources.



#### Evolving Water Plans in São Paulo

The presentation started with the introduction of São Paulo's characterful industrialization history - Jesuits arrival, gold mining, coffee chain etc... These stories mark an important footnote for making São Paulo now home to over 20 million inhabitants of social diversity. The urbanization process sped up significantly, accompanied by a triple demographic growth and massive geographical expansion before and during 20<sup>th</sup> century. With this, urban livelihood has been threaten by flood risks and sanitation problems.

Urban water plans and programs since 1970s have been serving as valuable historical policy and institutional assets for São Paulo.

The first attempt to address water services was initiated with the construction of a private canal service in 1744, until the State took over in 1892 with an official set-up of the Sanitation Commission of São Paulo State. The Metropolitan Integrated Development Plan (PMDI), especially better known as the 1971 PMDI, established water stations infrastructure that still serves effectively today. The creation of Water and Sanitation Company of the State of São Paulo (SABESP) in 1973 was also a main output during this period. The SABESP merged 6 state water companies, and has contributed to a significant improvement in operating water and sanitation services to meet the speeding demand for the territory in the long run.

The SANEGRAN Program (1978-1991) refers to the "Sewage Collection and Treatment Master Plan for the Greater São Paulo Metropolitan Area". Funded by National Housing Bank (BNH) and World Bank, the program involved the construction of 3 large treatment plants and the establishment of integrated sewage systems (550,000 household connections, 60 km interceptors etc.) that can benefit 4-7.5 million inhabitants within and beyond the State. In 2000, the SANEGRAN Program

was further upgraded with the construction of 3 systems, which can cover 88% of the sewage collection and treatment of São Paulo Metropolitan Region (RMSP).

The Tietê Project was an ambitious river clean-up project led by the State Government since 1990s. The project was a vital step for improving quality of life, and it involved a large scale of social campaign, where 1.2 million signatures were collected to jointly defend the depollution and environment restoration of Tietê River. The project had substantial impacts through its three progressive phases (1992-1998, 2002-2008, 2010-2016), and a potentially fourth phase planned by SABESP towards 2026. In particular, the Tietê Project addresses not only basic sanitation, but also a wider management and investment in reducing organic load being discharged into the river, enhancing sewer collection efficiency, improving water quality, preservation of aquatic environments and promoting environmental education for future generations.

#### A Call for Integrated Metropolitan Management

*"São Paulo has 37 neighboring cities sharing the same problems. The city or company which creates the problem is not the one to deal with it... we need integrated metropolitan management".*

The presentation thoroughly demonstrated the importance and current practices of integrated management and systematic planning in RMSP, taking into account water supply and treatment, land use, flood control, irrigation and energy production. Flood and water quality controls have been main water concerns in RMSP throughout its urbanization trajectory. It was also suggested that the infrastructural solutions (e.g. canalization, public thoroughfares, water reservoirs) should be integrated into urban setting.

Currently, São Paulo is carrying out the Strategic Master Plan (PDE-SP)<sup>1</sup>, which aims to address the social dimension of urban life and rebalance the city regarding economic, environmental, social and spatial development. This plan is aligned with urban development models and takes contemporary environmental variables into consideration.

<sup>1</sup> [https://gestaourbana.prefeitura.sp.gov.br/wp-content/uploads/2015/02/Master\\_plan\\_english\\_version.pdf](https://gestaourbana.prefeitura.sp.gov.br/wp-content/uploads/2015/02/Master_plan_english_version.pdf)



## Bogotá

Juan Pablo Rodríguez Sánchez, Associate Professor of Environmental Engineering Research Center, Universidad de los Andes, Colombia

Colombia is currently home to 45.5 million inhabitants, among which 77.8% of people live in urban area. Bogotá D.C. has the population of 7.15 million in 2018 according to national census, making it the most populous city in the country. Nevertheless, Bogotá is not the only emerging metropolitan area, surrounding the metropolitan region are many other cities keep expanding demographically or spatially, such as Funza, Mosquera and Soacha. These cities practically maintain a close connection with Bogotá through road networks, and sharing transboundary natural water systems.



### Current Water Supply, Wastewater and Natural Drainage System

In general, the urban planning of Bogotá city consists of a three-level planning framework - Municipal/Master Plan, Zone/Partial Plans at zonal level and the local implementation. Water Master Plan<sup>1</sup> at municipal level was introduced thoroughly through 3 main aspects - water supply system, stormwater and sewage system, and natural drainage system.

Water supply in Bogotá is mainly served by the Tunjuelo System (south), Chingaza System (east), Bogotá River System (northwest). As the systems expanded, the water supply capacity has been enhancing as well. While the current water supply service has covered 98% of household units in 2012, water use efficiency remains at 55.87%, and Water Loss stands at 43.99% in 2012. Compared to other LAC cities, Bogotá has a lower water consumption per capita while taking a high cost.

For the stormwater and wastewater system, Bogotá has been divided into 4 sanitary sub-catchment areas, in which both combined system and separated system are applied. Statistics indicate the significant decreasing number of breakdown in sanitary sewage system and pluvial drainage system from 2016 to 2018. The Salitre wastewater treatment plant is projected to expand its current capacity to meet a higher demand.

The 4 streams of Bogotá river (from North to South: Torca River, Salitre River, Fuchu River, Tunjuelo River) and wetlands (such Humedal Tibabuyes o Juan Amarillo wetland) are served as important natural drainage systems in the city of Bogotá. Regardless, they are bearing high risks of floods and contamination.

### Urban Resilience

Since 1940s, the territory of Bogotá has expanded enormously and sped up afterwards, characterized by unplanned urban sprawl. On the other hand, the spatial expansion over the last century, with a number of infrastructure and urbanization projects being conducted has come at the high expense of wetland and water networks.

Thomas Van der Hammen Forest Reserve Project<sup>2</sup> is a case in point to demonstrate this tension. It was proposed in 2000 dedicated to expanding forest and wetland area and public space, and provide ecosystem services with links to rivers. However, the private land ownership and the high cost of land for preservation made this green promise challenging, plus, under the context of northern urbanization for housing (Ciudad Paz project), which intended to accommodate more people in the coming 30 years.

Urban life and environment will become increasingly difficult due to the negative impact of climate change, especially the changes of precipitation and temperature in Bogotá in the coming decades<sup>3</sup>. Therefore, it will call for effective and accountable water management and environment preservation in Bogotá. The Secretaria Distrital de Ambiente (SDA), an environmental agency, and the Empresa de Acueducto de Bogotá (EAB), a water operator, are two key players to perform water services on municipal level; whereas involving different water-related entities to facilitate water management are getting increasingly important.

The presentation also highlighted that contribution from academia - scientific modeling and spatial analysis can guide significantly towards proactive and preventative water management. Still, the current challenges lie in the difficulties to articulate their responsibilities, level of intervention, cooperation forms and so on.

1 [http://www.sdp.gov.co/sites/default/files/anexo\\_2-planosdiagnostico.pdf](http://www.sdp.gov.co/sites/default/files/anexo_2-planosdiagnostico.pdf)  
 2 <http://www.sdp.gov.co/gestion-socioeconomica/operaciones-estrategicas/estrategias>  
 3 <https://www.idiger.gov.co/rcc>

### Buenos Aires

Pablo José Bereciartua, Secretary, Secretariat for Infrastructure and Water Policy of the Argentine Republic

*"Water is the main asset of Argentina, and then transport and energy... We have to plan the 'quality of life'"*

Argentina in general bears the great deficit on urban water: 3.3 million inhabitants are lacking in continuous and reliable access to drinking water, while 20 million (approximately 40% of population) is not covered by sewage connection. In Buenos Aires, the idea of "quality of life" is embedded in various water infrastructure projects targeted to specific neighborhoods, especially those who are underserved in water and sanitation services.

In this context, the Argentina's National Water Plan has been developed since 2016, which positioned water resource to be a key factor for sustainable development in line with SDGs. This massive infrastructural plan has been divided into 4 components – the primary component for "drinking water and sanitation" (half of the investment) aims to provide 100% coverage in drinking water and 75% in sewage, with overall goal to generate 40 billion dollars and 300 thousand jobs.



#### Challenges

While the Greater Buenos Aires has expanded spatially much for the past decades, there are a number of populous neighborhoods, which are clustered by slums and informal settlements. In fact, these areas are the most vulnerable to natural hazards as the result of climate change, and in need of water infrastructures to ensure equitable access to water and sanitation services.

Statistics suggested that global water demand will grow by 55% with global temperature increasing by 1°C on average, while water-related risks will increase as well. In the case of Buenos Aires, increasing rainfall in an extreme way has been observed, in particular since 1970.

Beyond climate change, the occurrence of large-scale storms and floods become undeniable truth. There are accumulated consequences attributed to insufficiency in drainage network, impermeable building encroachment, and lack of maintenance. Bio-chemical contamination is yet another challenge to different (sub-)basins in Buenos Aires due to their industrial, residential and hydrological particularities. However, the flooding issues make this situation even worse in accessibility of clean groundwater.

#### Taking Actions

The city has first embarked on the process of registering, mapping and profiling the underserved neighborhoods throughout Buenos Aires since 2015, in order to understand where these needs lay.

Within a group of plans, one infrastructural-based project at north part of city has been implemented since 2018. It directs the underground streams (collected from several entrance wells) through an 8.4 km tunnel to the Plata River, while able to maintain the existing underground service and preserve the urban communities. This project will benefit the area of 1,712 hectares, which is home to 315,000 people.

To some river basins, management is decentralized to (sub-) Basin Committees, such as Luján River Basin Committee. the development plan on basin levels has grounded well on existing programmes. A good example in this regard is the executive project of Hydraulic Master Plan for Arroyo Maldonado River Basin<sup>1</sup>. In addition, the Inter-jurisdictional Committee of Arroyo Medrano Basin is a particular case in point of human rights and public claiming - where a local resident defends his family with evidence of contamination to the justice court in 2016.

On the national level, as one of the largest water and sewage companies, Agua y Saneamientos Argentinos (AySA)<sup>2</sup> is striving for a wider coverage on drinking water supply and wastewater treatment. It is projected to cover more neighborhoods in both services (133 in 2019 compared to 33 of current situation) in Greater Buenos Aires Region – 17.2% (current 6.3%) for drinking water and 5.7% (current 1.2%) for wastewater.

Moreover, technology is highlighted as key component with infrastructures in managing water resources. The ongoing Sinarama National Project is introduced to develop meteorological radar system (RMA) for storms and floods monitoring and alarms. 11 spots of RMA has been planned nationwide. It has involved broadly the collaboration from national and provincial organizations, and will also benefit the works multi-disciplinarily in terms of water, agriculture, meteorology, navy and air force.

1 <http://documents.worldbank.org/curated/en/540391468741670990/pdf/E10421rev10v111LCR1EA1P088624V1.pdf>  
 2 <https://radares.mininterior.gob.ar/>



### Santiago

Carlos Berroeta Bustos, Head of R & D Águas Andinas, Regional Coordinator LAC Urban Water Programme UNESCO-IHP

*"Water plays a fundamental role in the development of countries, being a basic resource to meet the growing demand of the population in drinking water, food and energy".*

The presentation focused on "Water Security", the Eighth Phase of the Thematic Strategy of UNESCO-IHP, with a special emphasis on water supply and sanitation. A general review of current water situations in megacities around the world, such as Sao Paulo, Jakarta, Cairo and Beijing, revealed the complexed situations experienced recently due to the water contamination and lack of water provision.

Santiago, capital of Chile, is the largest city in the country with 7 million population. While not being a megacity according to the UN definition (over 10 million), it is nevertheless facing the same challenges as megacities.

The presentation gives an account of how Santiago and Chile in general can achieve full coverage in drinking water and treatment of sewage - an experience that can be inspiring reference and bring values to other cities in the continent.



At the beginning of this century, Chile has advanced in achieving close to 100% coverage in drinking water. But the treatment of wastewater was practically null, leading to river pollution. The contaminated river water has triggered a negative chain reaction, from irrigation to food and subsequently public health. As such, a "country decision" was finally made to move forward in treating wastewater effectively.

The presentation gives an account of how Santiago, like the rest of the cities in the country, implemented the Sanitation Plan by constructing three treatment plants, thus able to reach an around 100% coverage in wastewater treatment within a decade. While many cases in cities tend to take advantage of rivers to remove wastewater from metropolitan region, the cleanliness of rivers and benefit of wastewater treatment in Santiago suggests the multi-dimensional benefits especially on public health.

The "Mapocho Urbano Limpio" project within the Sanitation Plan is a case in this point. It was implemented by the water utility Aguas Andinas, and it allowed a significant elimination of wastewater discharges into Mapocho River through a large "collector- interceptor", which directed all the wastewater to the treatment plants. The project has improved the blue environment by getting rid of bad smell. Moreover, it has integrated the Mapocho River into urban environment with the recovery of the recreational life related to water.

#### Climate Change

The climate change impacts are intensifying, such as the prolonged drought happening in Santiago in recent years (2010-2018), the increase in temperature in the Andean zone leading to the occurrence of high turbidity events in the Santiago main source of drinking water, Maipo river. Such climate related events are leading to the unsustainable and decreasing provision of water, while taking account of the higher water demand because of urban transformation.

It should be noted that as of 2008, the extreme turbidity events presented in the Maipo River have caused service cuts in potable water supply, since the turbidity events last longer than the autonomy operation of the supply system as the result of forced closure of the treatment plants. A possible cause of these high turbidity events can be associated with the increase in average temperature in the mountain range by raising the 0 ° isotherm, which means that there is a greater surface been exposed to erosion when receiving liquid precipitation instead of snow precipitation.

For 18 years long during 1990-2007, among 6 high turbidity events, one was related to a cut of supply. For 5 years during 2008-2012, the number of events increased to 8, one of which related to a service cut. However, when it came to the most recent period between 2013-2017, another 5 years, there were 29 episodes with 5 supply cuts happening. In reaction, Santiago, manipulated by its responsible water utility Aguas Andinas, has placed investment in infrastructure in order to expand the autonomy operation of the system from 4 to 32 hours.

In many cases ahead in the future related to climate and water, it is stressed that big city as Santiago, together with its water practitioners, have to enhance infrastructure resilience so that the city is able to foreseeably avoid service interruption in the face of any possible high turbidity events.

### Rio de Janeiro

Marcos Sant'Anna Lacerda, Director-President, Guanabara Bay Basin Committee

The presentation situated Rio de Janeiro within the whole basin context, which necessitated a call for collective water solutions, environment preservation and resource mobilization beyond the administrative boundaries.



#### Megacity, Metropolitan and Basin

The Rio de Janeiro Metropolitan Region (RMRJ) is the second largest industrial hub in Brazil, which involves the city of Rio de Janeiro in its west with over 13 million population, harboring Guanabara Bay to the east. The Guanabara Bay Basin ranks as the second largest Basin in Brazil, and is one of the 9 hydrological regions in the State (accounting for 11 out of 16.2 million of State population). It fully and partly covers 17 municipalities including the city of Rio de Janeiro (70% of city inhabitants), which has been enjoying high reputation in economic potential and natural landscape.

Yet, the high demand in residential and industrial water, and large amount of sewage production are leading RMRJ and Guanabara Bay towards a deteriorating water environment, which far outweighs the reaction of government plans. A set of global events since 1990s - United Nations Conference on Environment and Development (1992), FIFA World Cup (2014) and Olympic Games (2016), have (in)directly stimulated the city of Rio de Janeiro and the Basin to undertake more effective solutions to the situation.

#### Water Supply, Sanitation and Wastewater Treatment

Five public water supply systems are in place to serve the metropolitan region within the Basin – Acari, Guandu and Ribeirão das Lajes for the west, while Imunana/Laranjal and Sistemas Isolados for the east. The Guandu-Lajes-Acari System, from which Rio de Janeiro obtains most of its water, continually serves around 9 million inhabitants along its way.

However, Rio de Janeiro and its neighbors rely heavily on the Guandu River (responsible for 92% of water supply), and Guandu Water Treatment Station (serve 42,000 out of 49,400 l/s in total), suggesting that the current water supply mechanism tends to be very unsustainable. Meanwhile, a majority of

rivers in this region are categorized in Water Quality Index as parameter “class 2”, meaning high degradation. Although some plans have been designed to encourage multi-level investment since 2011, partnership and resource mobilization remain the most challenging part to develop the self-sustained program in order to meet long-term demand.

In terms of sanitation, with the aim to generalize the basic sanitation and environmental restoration, the Environmental Sanitation Programme for Municipalities Surrounding the Guanabara Bay (PSAM) was developed in 2010 with political commitment and financial support – coordinated by the State Secretariat of Environment (SEA) and co-funded by Inter-American Development Bank (IDB). The Alegria System, one of the three systems, is constructed in the city of Rio de Janeiro to improve sanitation facilities.

Compared to other municipalities within RMRJ, in 2013, Rio de Janeiro is assessed to have covered 66.2% service provision in wastewater collection and treatment. This index is even higher in Niterói (85.7%), located at the east by the Bay. Still, a number of other municipalities had a low index of less than 10%. Statistics also suggested that around 53% of people in Rio de Janeiro State discharge wastewater untreated to the Basin.

The comparison indicates that these issues are not limited within the territory, nor can be tackled by the city alone. The setting up Metropolitan Chamber of Rio de Janeiro in 2014 can be one of these attempts to strengthen water governance, where municipalities used to take ownership of the public services like sanitation. But the modality of the Metropolitan Chamber is still under debate.

As for the Guanabara Bay Basin, 5 on-going projects are highlighted during the presentation. In particular, academic contributions from the universities and research institutes are perceived to be indispensable part for this collaboration. Their scientific and technological expertise can be leveraged on the application of Geographic Information System, in order to advance hydrological monitoring and management, meanwhile, to transcend the conventional way of taking water system as “physical”, but to be smart and innovative.





### Representatives and Speakers

Benedito Braga (SABESP)  
 Carlos Berroeta Bustos (Santiago)  
 Gilberto Natalini (São Paulo)  
 Juan Pablo Rodriguez Sanchez (Bogotá)  
 Luiz Álvaro (São Paulo Municipality)  
 Marco Antonio Palermo (São Paulo)  
 Marcos Sant'Anna Lacerda (Rio de Janeiro)  
 Pablo José Bereciartua (Buenos Aires)

Alexandros Makarigakis (UNESCO)  
 Jean-Claude Deutsch (ARCEAU)  
 Joakim Giacomoni-Vincent (SIAAP)  
 Oscar Cordeiro Netto (ANA)  
 Rodrigo Perpétuo (ICLEI)

### Organizers and Partners

Fabiana Sousa (UNESCO)  
 Kaixin Lin (UNESCO)  
 Marcela Lang (UNESCO)  
 Massimiliano Lombardo (UNESCO)

Anna Carolina Marco (ICLEI)  
 Beatriz Tsunouchi Pagy (ICLEI)  
 Katia Fenyves (ICLEI)  
 Tristan Milot Edoward (SIAAP)

### Inivitees and Participants

Alexia Gobrecht  
 Antônio Carlos dos Santos  
 Arlindo Manuel Esteves Rodrigues  
 Clayton Ferreira Lino  
 Delmar Mattes  
 Edson Cezar Wendland  
 Fabrizia de Marco  
 Gabriela Otero Sabini  
 Giulia de Souza Ivo Reis  
 Grace Ladeira Garbaccio  
 Graciela Schneier-Madanes  
 Guilherme Amstalden Valarini  
 Guilherme Checco  
 Hiago Francisco Schiavo Silva  
 Iago Schiano  
 Isabela de Souza Salgueiro  
 Jacqueline Guerreiro

João Alberto Antues Ribeiro  
 João Paulo Azevedo  
 José Armenio Brito Cruz  
 José Cezar Saad  
 José Paulo Azevedo  
 Julia Rodrigues Leite  
 Karina Simone Sass  
 Laura Lucia Vieira Ceneviva  
 Leonardo Maglio  
 Luciano Paez  
 Luiz Ricardo Viegas  
 Majory Mie Imai  
 Marcelo Aversa  
 Marília Carvalho de Melo  
 Markus Stephan Wolfjdunkell Budzynkz  
 Matilde da Costa  
 Mayara Savergini Martins

Miriam Falótico  
 Mônica Porto  
 Nathalie Badaoui  
 Nilo de Oliveira Nascimento  
 Otto Corrêa Rotunno Filho  
 Raphael Guardabassi Guerrero  
 Rayssa Cortez  
 Regina Maria Valletta  
 Regina Monteiro  
 Reinaldo de Almeida Marques  
 Rodrigo Udenal  
 Rosane Fukuoka  
 Taynara Fernandes  
 Thamara Costa Resende  
 Thor Saad Ribeiro  
 Walter Tesch



### More Information about the Event

LAC Event Package [\(link\)](#)

### Conference Partners





## About Megacities Alliance for Water and Climate (MAWAC)

The Megacities Alliance for Water and Climate (MAWAC) was launched at the 1<sup>st</sup> International Conference on “Water, Megacities and Global Change” (EauMega 2015) during COP21 in Paris, France, in December 2015. The Conference brought together more than 300 experts from water utilities, academic and research institutions, politicians and NGOs. The official establishment of the Alliance will take place at the 2<sup>nd</sup> International Conference “Water, Megacities and Global Change” (EauMega 2020), scheduled in December 2020 in Paris, France.

The roadmap leading to EauMega 2020 includes regional meetings that will support the establishment of regional chapters of the Global Alliance. The LAC conference that took place on 7 and 8 May 2019 is the first regional MAWAC conference.

**The Megacities Alliance for Water and Climate (MAWAC)** was founded by UNESCO-IHP in collaboration with SIAAP, ICLEI and ARCEAU-IdF. It is part of the overall framework of the Global Alliances for Water and Climate (GAWaC), and highlights the impact of such global changes as the urban growth and climate change on the megacities and their resources, and equally on their water services.

Building on the database of IHP-WINS, the MAWAC aims to:

- (1) Collect and disseminate information at a worldwide scale on strategies and operational plans developed by local authorities and their water operators as well as results achieved by their implementation.
- (2) Facilitate experience sharing between the academic community and water operators in improving adaptation through ARCEAU Model.
- (3) Identify means and mechanisms for funding the adaptation of megacities to the impacts of climate change on urban water.

### More Information and Contact

**MAWAC Website:** <https://en.unesco.org/mawac>

#### **MAWAC Secretary at UNESCO Headquarters**

Mr. Alexandros Makarigakis ([a.makarigakis@unesco.org](mailto:a.makarigakis@unesco.org))

#### **Latin America and the Caribbean UNESCO Montevideo and Brasilia Office**

Mr. Doria Miguel ([d.miguel@unesco.org](mailto:d.miguel@unesco.org))

Mr. Massimiliano Lombardo ([m.lombardo@unesco.org](mailto:m.lombardo@unesco.org))

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Fabio Andrade, Sao Paulo City Hall - for MAWAC-LAC regional meeting (May 7-8 2019) organized by UNESCO-IHP

