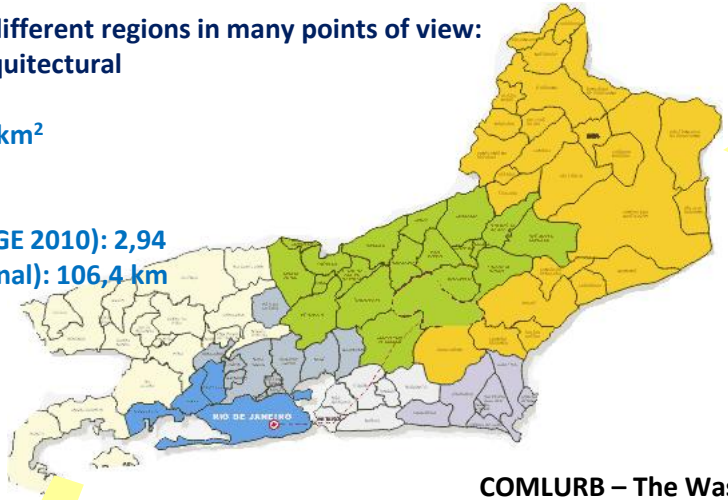
Remediation without investments:

Converting an open dump into a sanitary landfill in Rio, Brazil

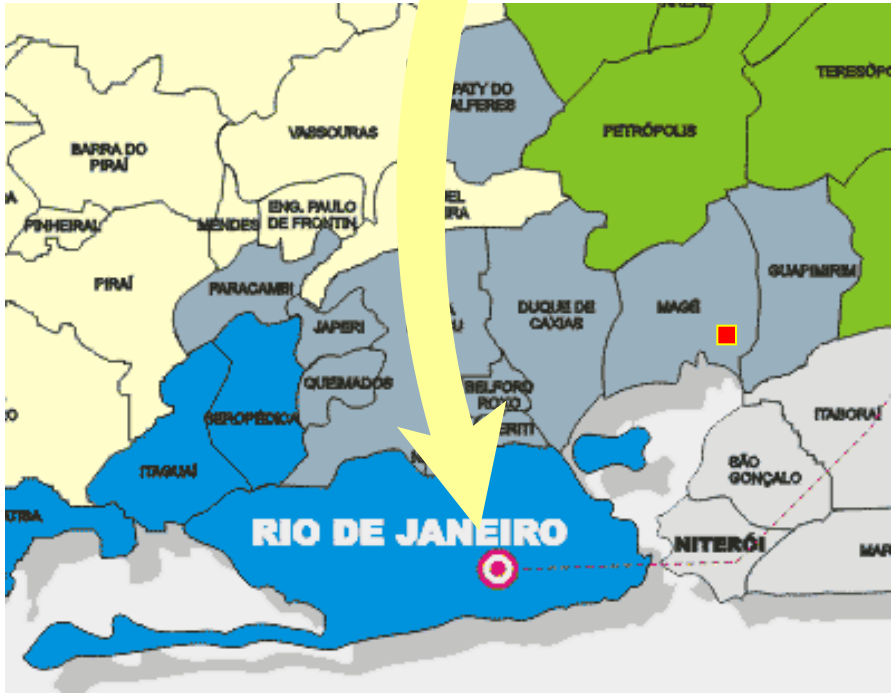
COMLURB – The Waste Management Municipal Company of the City of Rio de Janeiro

- **The City of Rio: a mosaic of many different regions in many points of view: urbanistic ; social; topographic; arquitectural**

Total Area: 122.456,07 ha / 1.224,56 km²
Population (IBGE 2010): 6.320.446
Households (IBGE 2010): 2.146.340
Number of People per Household (IBGE 2010): 2,94
Beaches extension (oceanic and internal): 106,4 km
Lakes and lagoons: 17,6 km²
Planning Areas: 5
Neighborhoods: 161
Tropical Climate
Average annual temperature: 23,7 ºC



Rio de Janeiro



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- 22.000 employees
- Annual budget: US$ 600 millions
- **Services under its responsibility:**

- Household collection and street cleansing (10,000t/day)
- Collection on islands of the Jacarepagua lagoon
- Free collection of bulk goods and household debris
- Collection and street cleansing in low-income communities with special equipment
- Transfer and final disposal of waste
- Treatment: composting and RDF production

- **Services under COMLURB but not related to waste management**

- Cleaning and disinfection of 5 main hospitals of the municipal network
- Final disposal of hospital waste from the municipal public network (incineration and autoclave)
- Internal and external cleaning of 1,051 municipal schools
- Meal preparation for 350 municipal public schools
- Cleaning of the water surface of lakes and lagoons
- Cleaning of 58 km of beaches
- Trimming of 600.000 public trees
- Maintenance of the 1,200 public squares and parks
- Cleaning of public buildings (City Hall)
- Vectors Control (rodents and African snail)
- Manufacture of sweepers, tools and urban equipment (toys, slides, seesaws, comfort station, etc.)

- Rio de Janeiro City has dumped its 9,000 t/day household waste in an open dump since 1978, contaminating the soil, the atmosphere and the Guanabara bay. In 1995 a newly-elected mayor, in a political decision, decided to turn it into a sanitary landfill, but with no investment costs. And COMLURB technicians were able to do it

- A that time, there was a strong pressure from the environment protection agency and from the Public Prosecutor´s Office on COMLURB for the open dump to be remediated

- Until then the open dump operation had been in total disagreement with the current legislation and environmental standards

- There were about 1,800 waste pickers working in it – a difficult social challenge to be faced

- COMLURB had no choice other than to recover and keep the open dump receiving the household waste as there was no other area in the city where a new landfill could be set up. And this had to be done with no investment costs

- There was no other area relatively close to the city suitable for installing a new sanitary landfill or economic resources for this initiative

- The key to address the challenge: COMLURB technicians prepared a Term of Reference detailing all the services that should be done during a five years contract (longest period of time allowed by Brazilian law). Each service had a specific deadline for its execution. A public bid was issued based in this Term of Reference.

- The winner of the public bid would be the company that offered the lowest tipping fee. This tipping fee should support all investment necessary to recover the open dump and to cover all operating costs.

- The public bid had five participants and the winner offered a tipping fee of (at that time) 4 US dollars/ton.
- The services included:
- Complete recovery of the landfill, converting an open dump into a sanitary landfill in compliance all environmental standards. This included covering the whole landfill; building a collection system for the leachate, a leachate treatment plant, a biogas collection and burning system, and:
- Covering all the waste disposed in the open dump (130 ha of area);
- Install a barrier against leakage of the leachate and building a leachate treatment plant (700 m3/day);
- Improving the access road to the landfill (3 km);
- Construction of an integrated health center, school and complete sports court;
- Construction of an Environmental Training Center;
- Construction of a recycling center for the waste pickers;
- Installation of a weighbridge;
- Construction of a service road around the landfill (5 km long);
- Construction of special cells for hospital waste;

- Any possible solution for a specific problem of the waste management system has to be analyzed according to the social, economic, environmental and technical peculiarities of the region and the city

- There is no common solution for different cities, regions and countries

- The simplified recycling plant was not able to absorb all waste pickers from the landfill. The income obtained from work on the landfill was much higher than that perceived in the recycling plant. The unemployment caused by an open dump closure is an unsolved problem in developing countries.

- The leachate treatment plant was unable to treat all leachate generated in the landfill and the cost of this treatment was too high. COMLURB is still looking for a cheaper way to treat leachate.