
Case study: Aguas Andinas Water Cycle management

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Short summary

Aguas Andinas manages the entire water cycle, from production and distribution of drinking water to collection and treatment of wastewater in the Metropolitan region of Chile which includes the Greater Santiago and surrounding areas with an approximate population of 6,5 million inhabitants. The past decade has been marked by a strong rain deficit in a semi-arid geographical area and the development of climatic events related to the global warming phenomenon of our planet.

On the drinking water side, these conditions have generated strong pressures on the availability in quantity and quality of the water resource used, due to:

- On one hand, the obligation to use water resources with quality problems that have required the development of pre-treatment specific techniques (Arsenic, Nitrates);
- And on the other, when facing the climatic events mentioned, that have generated from rainfall in height in the mountain, turbidity levels in the river that supplies the main treatment plants, impossible to treat on periods exceeding the reserves designed on historical conditions basis. These events forced to increase, significantly, the volume of water reserve in the pond, to re-think the raw water transport design, to incorporate into the production scheme a raw water reserve which enables to avoid to extract water from the river in events periods of high turbidity levels and to start an ambitious efficiency hydraulic plan of the transport and distribution network.

In relation to the waste waters disposal, thanks to the waste water treatment plan of the Metropolitan region and, in particular, of Greater Santiago, launched in 2001 and finished with the 100% of the urban waste water treated at the end of 2012, the health statistics of the Chilean population has improved, in spite of these droughts adverse conditions in the

traditional use for irrigating the crops of river waters and in particular of the Mapocho river, in which all the waste water was discharged and which receives today, the treated and y disinfected waters.

Key words:

Increase water use efficiency accross sectors ; Ensure sustainable withdrawals ; Ensure supply of freshwater to address water scarcity ; Implement IWRM ; Reducing pollution ; Eliminating dumping of hazardouse waste ; Minimising release of hazardous chemicals and materials - achieve sound management of chemicals through their life cycle ; Reducing untreated wastewater ; Increasing recycling and safe reuse ; Protect, restore and sustainable use of inland freshwater related ecosystems ; Reduce number of deaths and number of affected people ; Reduce economic losses ; Protection of the poor and vulnerable

Issues addressed:

Water resources management (water-use efficiency, integrated water resources management, transboundary cooperation, sustainable extraction and supply of freshwater)

Installation of specific treatment devices of certain parameters on ground waters.

Design and construction of the works that allow them to face the turbidity events.

Associated with the climate change experienced.

Development of the efficiency hydraulic plan in transport and water distribution

Complete implementation of the waste water treatment plan of Greater Santiago and Metropolitan region in 12 years.

Water quality (pollution, dumping of toxic materials, wastewater management, recycling, reuse, restore ecosystems and aquifers)

Remarkable improvement of river quality in the Metropolitan region and consequently, of the water used for irrigation.

Risks (mortality, economic losses caused by natural and human-induced disasters)

Reduction of the diseases linked to the use of polluted waters for irrigation obtained thanks to the development of the Comprehensive Sanitation Plan mentioned.

Tools for implementation:

Financing / economic instruments: Aguas Andinas has permanent access to the financial markets, due to at least 3 reasons:

- 1) The Chilean water and sewage sector is characterized by a well-designed and time-tested regulatory framework, an objective and technical mechanism for tariff-setting and high predictability of its future cash flows.
- 2) Chile has a small but quite developed financial market, with long term investors like pension funds and life insurance companies.
- 3) Aguas Andinas has an active controlling shareholder with large experience in the business

Lessons Learned:

Triggers: To insure the continuity of service in quantity and quality in drinking water supply as well as in wastewater disposal treated to the level required by the regulations in force.

Drivers: The sanitation company and the administrative bodies in charge of the control (Superintendence of sanitary services / SISS) Ministry of Health)

Barriers: The main challenge in the implementation has been the period referred: for example, the sanitation plan implemented has enabled to move from an annual average of 0,25 m³.s⁻¹ of waste water treated in 2000 to 15,4 m³.s⁻¹ treated in 2013, with the parallel development of sustainable alternatives of disposing of the biosolids generated that didn't exist in 2000.

What has worked well? Security of drinking water supply. 100% treatment of urban waste water generated in the Greater Santiago area and in the Metropolitan Region

What can be improved?

The way forward:

Links: