

## Excursion Report Coastal Sanitation Project: Clean Wave

Wednesday September 22nd we headed to Santos for the Coastal Sanitation project, we were invited by Logos Engenharia a Brazilian company that is owned by Arcadis, a Dutch consultancy company. Logos Engenharia is taking care of the clean wave program initiated by the state of Sao Paulo, goals of the project are to decrease the incidence of waterborne diseases, and so to improve the life of 3.5 million people living in the Baixada Santista Metropolitan area. Santos used to have a infant mortality of 33.7 per 1000 babies born alive, Sao Paulo state as a whole had a rate of 24.6. Main cause for this, was the pollution. Nowadays this is respectively 18.4 and 13.1, mainly due to already implemented measures. The area is also benefiting from tourists who come for the beaches and the famous Mata Atlantica, as a result of lack of sewage beaches are polluted and unattractive for tourists going to this area.

The man giving the presentation worked at a technical institute at Delft, Holland. First we got a presentation of all activities that Logos has realized and is going to realize in Brazil. It appeared that the company worked in many different technical sectors, and they'd finalized quite a lot of big projects in Brazil. Logos Engenharia is mainly taking care of the project management in the various projects, as in Onda Limpa, the clean wave program.

Coming to this project, the project manager explained about the difficulties arising from the 'size' of the project, as the Baixada Santista Metropolitan area is 150 km wide. Therefore the company used several information systems to monitor the project. Technicians have to monitor treatment plants in this area. Largest challenge in this project was and is to convince people living in the poor neighborhoods to connect to the sewage system. The government and Sabesp use several promotional methods, as television and radio commercials to convince these people to connect to the sewage system.

The project is financed with relatively cheap loans from the Japanese organization JICA, because they want to support the sustainable development of the area. The total investment is R\$1.9 billion, as a result the sewage collection index in Santos should rise from 53% to 95%, where all 100% of the sewage is at least being treated. The project manager assumed to reach 80%, but that new investments were needed to reach 95%. He thought it would take another 30 to 40 years to connect everyone in the area to sewage. The goal is reach 100% sewage collection, as if this is reached Sao Paulo will be the only Brazilian state to have this.

The next numbers of things being built illustrates the scale of the project:

- 22 sewage treatment stations
- 3 sewage preconditioning stations
- 149.000 new sewage connections
- 256 sewer pumping stations
- 3 submarine outfalls
- 1.500 new plumbing

Logos is responsible for the project until the pre-operation phase, they are not responsible for the maintenance.

