



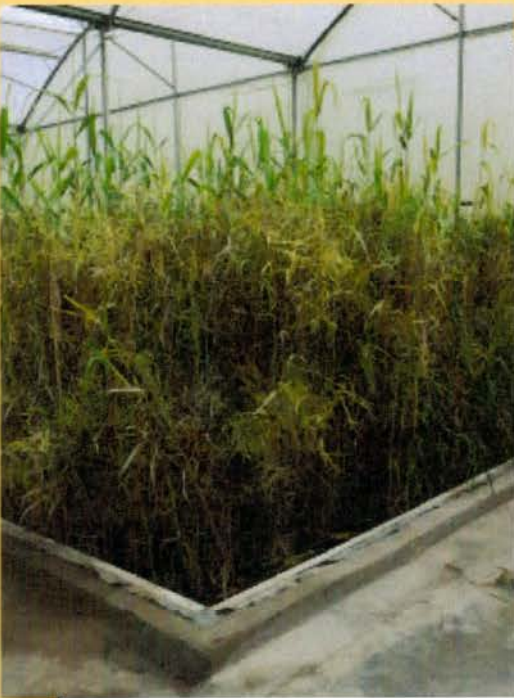
### **Sher Ethiopia's next step: sustainable watertreatment in 2015 !**

Additionally to being certified for sustainable management (MPS-A, Fair Trade, ECP-gold level) and being active in biological pest control, Sher Ethiopia wants to purify its wastewater to be beyond any doubt when it comes to sustainability.

In 2014 a pilot system for treating the effluent waste water from the farm in Ziway was tested. This system was designed, engineered and supervised by Ecofyt and Alterra Wageningen University. The implementation as in 2013 and the system - being a living system - had to mature for about a year long.

In close cooperation with specialists Frank van Dien (Ecofyt) and Pieter Boone (Alterra Wageningen University) the use of constructed wetlands as a possible solution for water purification was investigated. The main idea was to realise a water treatment system based on the principles of a natural wetland.

The question was not if it would work, the question was how good it would work..... in december 2014 independent analysis and assessment showed and still suprised us; the results were very, very good! See next pages!

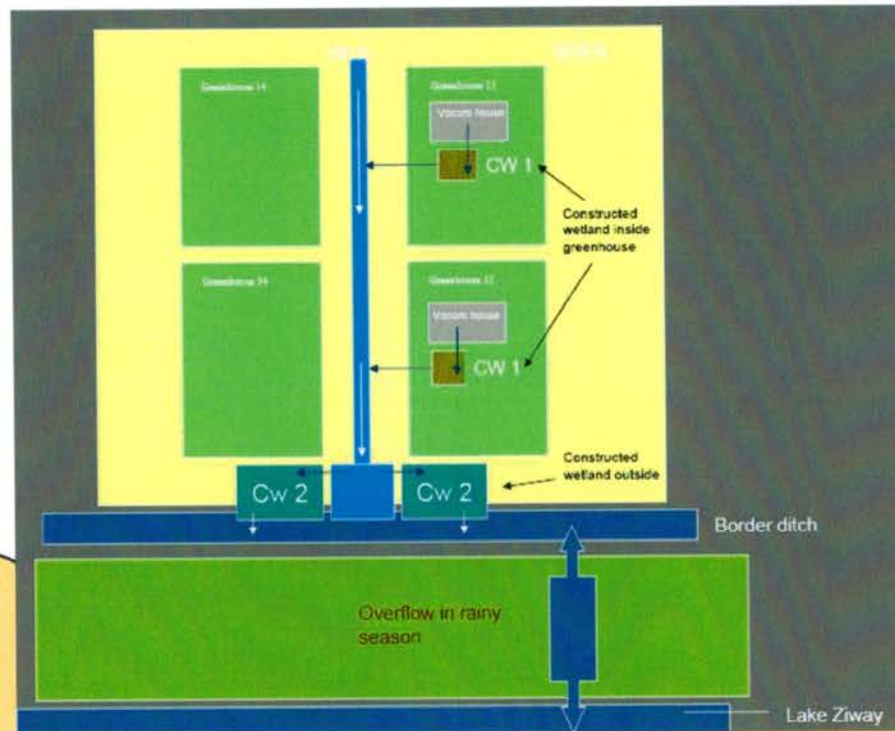
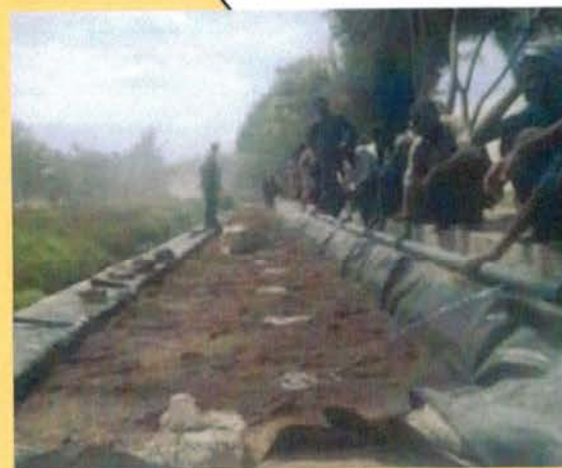




## How does a constructed wetland work !

A constructed wetland works in a natural way. Plants are used in a certain natural substrate and the roots (with bacteria) take out elements in the water. Not only nutrients like Nitrate, Calcium, Sulfur or Chloride but also metals and chemicals or pesticides (permitted under the certification of MPS). All these elements are 'bound' to the roots and the substrate and are therefore removed from the water.

The water that goes to the constructed wetland comes from the vocom houses (chemical residues) and from the pack- and cooling houses. In 2015 also the toilet blocks will be connected. The waste water is the only food for the plants and they 'eat' it almost all.



scheme of the system at Sher Ziway

in the green houses (light green) are small constructed wetlands next to the vocom houses (CW1). From there the water comes into a trench between two green houses and flows slowly to the outside wetlands (CW2) at point 5. This is the last wetland and from there the clean water can go to the lake of Ziway. By then, the water is cleaner than the lake water itself



### **the results after testing and independent assessment**

The parameters studied are divided into 4 groups and the average final returns are:  
(in % as removal succes rate)

nutrients	99.4%
metals	94%
heavy metals	93%
residues (total weight)	99.98%

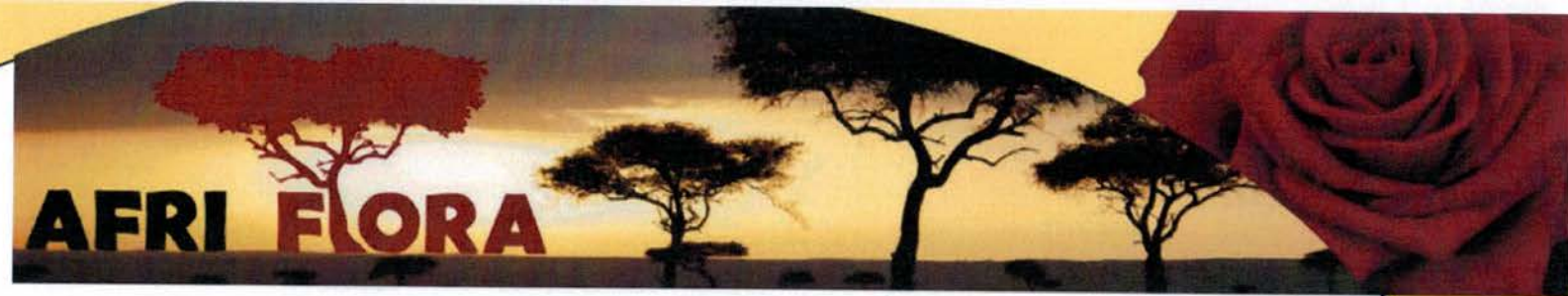
Thus, the average removal percentage is very high and nearly complete. The water samples were examined by Horticoop Ethiopia on nutrients. The Laboratory Zeeuws-Vlaanderen in the Netherlands analysed for pesticides and residues. The laboratory uses three methods (GC-MSMS, GC-ECD, and LC-MSMS) with which approximately 600 substances can be distinguished. The full spectrum is applied to the samples sent to them.

The effect (removal percentage) can also be seen by comparing some water samples as shown below:

before the first wetland



after the last wetland



### Scaling up at Sher Ethiopia; Ziway and Adami Tulu

In december 2014 the pilot was officially approved. On this result Sher took several decisions:

- scaling up the water treatment to the whole farm at Ziway (450 ha. of roses);
- further development of the constructed wetlands in the new farm at Adami Tulu (200 ha.);
- take back **all** the purified water in the watertanks of the farms (no more effluent water to the environment what so ever).

This means that in 2015 30 more constructed wetlands will be build.

