Agua, Vida y Naturaleza Project 2012-2014 explanation

Introduction

This document explains the Agua, Vida y Naturaleza Project (AVNP) that started on January 3, 2012 in Ecuador. If there is any question left after reading or if you want to start a similar project, please mail pieterhoff@aquaproholland.com .

The funding of the Project

The Agua, Vida y Naturaleza Project is funded by the Dutch 'COmON Foundation'. The founder of COmON has an agricultural background and supports the dream of Pieter Hoff to reforest the world with 2 billion hectares of economical and ecological interesting trees in the coming 40 years. Through the AVNP the founder hopes to help developing a multiplication model making this objective possible.

The Groasis Technology

The Groasis Technology is introduced by AquaPro Holland, a private company founded by inventor Pieter Hoff. The Groasis Technology (GT) is a biomimicry technology to restore ecosystems and vegetation cover and exists of: 1) improving the soil with mycorrhizae 2) leaving the capillary structure intact 3) using plants with the right primary roots 4) the use of the waterboxx and if necessary when planting on rocks 5) the use of the capillary drill. The Groasis Technology is a copy of how Mother Nature solves the problem of planting plants in deserts, eroded areas, badlands and on rocks. This way we can replant man made deserted or eroded areas, restore the vegetation cover and make them productive through planting fruit trees and vegetables.

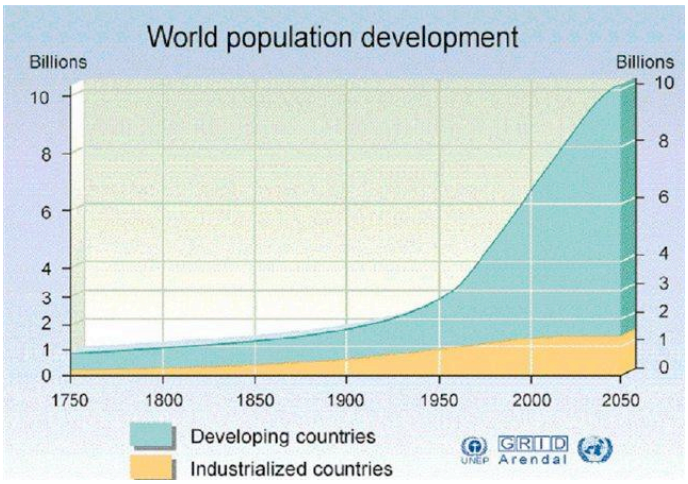
The obstructions for the poor

The GT can be used by anyone who wants to plant dry or eroded areas. This can be either governments, NGO's, investors or farmers. The AVNP focuses on farmers who are living in dry areas and have great obstructions if they want to start growing with 1) almost no access to sufficient fresh water to grow their crops, 2) no capital to invest if they want to and 3) no or little knowledge on how to grow high productive crops.

Economical basis

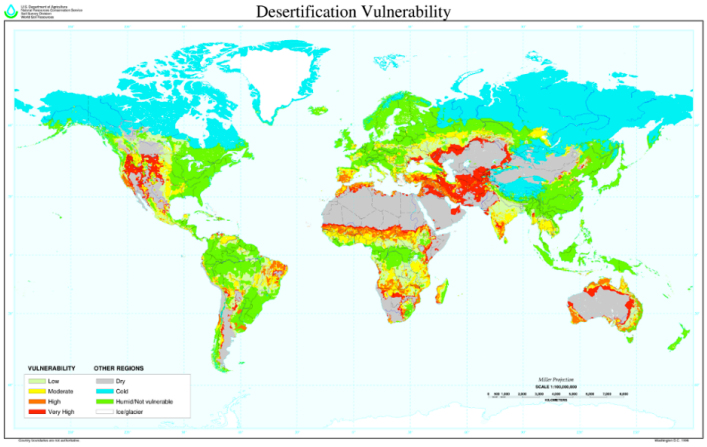
There are approximately 300 million small farmers in the world and each year there are even fewer of them left, due to a lack of income leading to a bad future; they stop growing and decide to leave for the cities. In 2009 for the first time more than 50% of the population of the world lived in cities. So here we have a very challenging development. In 2050 we will have approximately 10 billion people living on earth, compared to the 7 billion we just passed. So we have to raise our food production with at least 43% to have the same amount of food for the 10 billion as we have now for the 7 billion. As almost 1 billion people suffer from hunger at this moment and the basic material prices for food (rice, corn, wheat) have doubled over the last 3 years, it is clear that we have to find a solution for this problem. This means that we have to create ways for the poor farmers to find a way to produce more food

and have a better economical basis so that they do not stop producing and end up emigrating to their cities.



The challenges of dry areas

Dry areas offer us opportunities, but also challenges. Many dry areas do have sufficient rain (from 250 to 500 mm which is 2,5 to 5 million liters per hectare) but the characteristic of this rain is that it falls very unequal over the year period in a peak. This map shows with the yellow, orange and red colors all areas that have been deforested by mankind over the last 2,000 years but that have that quantity of water. It is approximately 2 billion hectares. It means that these areas have once been covered by trees, so they can be covered by trees again if we want to. The fact they grew there means that there is no doubt that they can grow there again. There is sufficient water for them to grow there and be productive.



However, although there is sufficient water over the year, there is a challenge. As said, this water falls in peaks which means that there can be one or two weeks of rain and then it is dry for 50 weeks. This means that crops depending on sowing seed (corn, outside vegetables, wheat) cannot grow there without irrigation. But there is not sufficient groundwater to irrigate the whole world. Many countries that have used too much of it in the past now already depend on reversed osmosis technologies to produce fresh water from sewage water or even from salted sea water, e.g. Israel, Jordan, the Middle East. Some countries already lost big once productive areas e.g. Death Valley in California. So in dry areas with sufficient water, but a peak problem, we have to use trees to produce food. These trees have the capacity to grow there without any problem, we only have a first year planting survival problem to solve and that is exactly what the Groasis Technology does. The following picture shows an Acacia in North Kenya. The picture was taken during the great drought in Summer 2011. Everything below the tree is dry and dead, however, the tree is 20 meters high and 30 meters in diameter and grows well. So trees that are able to overcome dry periods without rain and who produce 5 tons of fruits per hectare, are the answer to the food challenge. We have to plant the 2 billions of hectares of eroded land of the map above, with trees producing food.

The capital liquidity challenge

The next question is then, who is going to plant these trees? In principle the farmers living in those areas could do this. But they are poor and hardly have sufficient income to live from. That is why so many of them stop. And planting trees means extra challenges to them. Who is going to buy and finance them? The first 5 to 7 years they are not productive but they do require maintenance. Who is going to pay this and how will they overcome these 7 years? Where do they find the food, that is already so expensive, to live from? The answer lies in developing a cash crop income. We have to develop a way for them to produce enough food that guarantees them food for themselves, income to live from, money to invest in planting and maintaining the fruit trees and to allow them to overcome the period of 5 to 7 years until these trees start to be productive. The best cash crop to do this, is the production of vegetables.

The objective is to produce 50 kilos of tomatoes per m2 with less than 20% of the average water use

Can vegetables overcome the 50 weeks of drought?

No they can't. Vegetables need daily sufficient water to grow and sufficient water to produce their fruits. A tomato plant that produces weekly 1 kilo of tomatoes, needs weekly

some liters of water to be capable of doing that. This is why we have started to do trials with the Groasis Technology to find out whether the technology is as effective with vegetables as it is with trees. Trials during 2011 have taught that the Groasis Technology looks promising. With a water use in the first vegetable trials of less than 20% compared to traditional growing, high productive results were reached. One can visit this page to find photos http://www.groasis.com/en/press/photo-library-results and this page to find videos http://www.youtube.com/user/Groasiswaterboxx .

Controlled climate

Vegetables have other demands. Trees have developed instruments to overcome long periods of drought. They have for instance up to 80 meter deep taproots to find capillary water. They also drop their leaves when the quantity of evaporation of the leaves is higher than the quantity of water that the taproots find. And cold desert nights do not damage their growth. Vegetables do not have these instruments. That is why we need to develop controlled environments to avoid extreme circumstances. For this objective we use a greenhouse in combination with a shade house. The Groasis Climate Control House allows us to keep the humidity high enough during the day and keep temperatures high enough during the night. However, a plastic greenhouse causes too high temperatures inside during the day and to avoid that extreme, we use a new kind of shading. We use white shading – instead of black what is used in 99% of the occasions – because it keeps the radiation out. We also put the shading 2 meters above the greenhouse, so that a draft can transport the heat away before it enters the greenhouse. This shading principle keeps the heat out during the day allowing us to have balanced temperatures to grow vegetables without climate stress. Together with the waterboxx, giving a daily water dose to the plant, we expect this way to be capable of growing vegetables in dry areas.

The Groasis Climate Control House

Food and income

By assisting poor farmers to produce vegetables, we create a possibility for them to have sufficient sound food and sufficient income. This allows them to plant fruit trees and wait 5 to 7 years until they are productive. So through developing a business model that helps poor farmers making money, they will stop emigrating, start producing more food and help us reforest the world with productive trees. If we can make the army of 300 million farmers start to plant trees, then the 2 billion hectares of once forested land, will be productive again within 2 generations. Agua, Vida y Naturaleza is a multiplying model to guarantee sufficient food and income for the farmers.

Multiplying model based on supply of education followed by access to capital

The problem for the farmers however, is that they need education and capital to start with this model. Therefore we have focused on a training and a capital facilitating model giving them the opportunity to start. If we give them access to capital after they have followed the training courses, then we are sure that they understand the technology, that they are able to make money with it, have food and an income and are able to pay back their loans. Once this model works, we can multiply it to the 300 million poor farmers.

Ecuador as an example

The Guayaquil based 'Cooperativa de Ahorro y Credito' is an ideal partner to organize an Agua, Vida y Naturaleza Project. They have over 54,000 farmer members and 56 agricultural centers. The 56 outlets will be the future training centers for the members of the Cooperativa. The central training facility will be in the Santa Elena province of Ecuador on the experimental site of the Universidad de la Peninsula de Santa Elena, the second partner in the project. The third partner in the project is Groasis Ecuador, AquaPro's local distributor. Groasis Ecuador is founded by two entrepreneur families with agricultural roots: the family Sansur exploiting a company of supplies to the agricultural sector and the family Nevado exploiting the biggest and only organic rose growing company in Ecuador. The fourth partner and initiator of the project is AquaPro Holland.

The entrance to training

The Agua, Vida y Naturaleza Project in Ecuador works according to a simple multiplication model through the following steps:

1. We search a reliable partner of which our target group are members. In this case the Cooperativa de Credito y Ahorro (CCA), a farmers' cooperative based in Guayaquil, is the partner. If you are interested to develop a same model with us, it can for instance also be with a tribe, a village or a region as long as the group has a strong organizational structure.
2. We also prefer to have a scientifically strong partner – experienced in educating students - included. In this case it is the Universidad de la Peninsula de Santa Elena (UPSE)
3. The scientific partner develops a training center for trainees

4. After having received a training, the trainees will go to locations where poor farmers live
5. There the Cooperative starts training centers, a copy of the training center at the University, and there the former trainees change into trainers and start to train the farmers, being the women, men and if they want, their children. CCA, partner in the AVNP, has 56 outlets and it is our objective to have a training center at each outlet within 10 years.
6. The training is theoretical and practical
7. After one year the students are offered a chance to do an exam and get, if they pass it successfully, a Groasis Technology certificate

The access to capital

After having passed the exam with a positive result, the farmer, or a group of farmers, can apply for capital. For this we look for banks who are willing to participate with us. In the case of this proposal we have two potential partners. Our cooperative partner in Ecuador is facilitated by the Ecuadorian government to supply capital. In January 2012 we also had a first meeting with a strong international private bank who is very interested in investigating the model to participate in it. However, there is a risky side here that banks do not like. The farmer, although having a Groasis Certificate, mostly does not have enough collateral. For this reason we have sought for help from the Inter American Development Bank in Washington (AIDB). We have invited AIDB to investigate the possibility to develop a model where they can play the role of guarantee for the capital supplier. Through this way AIDB can leverage its capital to a far larger extend of finance that they are able to do at the moment. AIBD has shown interest and is following the Agua, Vida y Naturaleza Project. Once this financial model turns out to work, we have found our way of multiplying the model to the 300 million farmers worldwide.

Background information about the area

This proposal is a plan to come to the reforestation and restoration of the ecosystem of the Santa Elena Peninsula, Manabí, El Oro, Los Ríos, Bolivar, Guayas and Tungurahua in Ecuador through helping farmers having enough food and income in order to enable them to plant fruit trees. The area and its surroundings are lately hit by severe droughts that lead to hunger, poverty and economical collapse of the region. Instead of describing the situation here, we kindly ask you to study the following links. They will give a perfect insight into the problems that the region encounters, being very similar in all the provinces mentioned:

Link 1> http://www.eeb.cornell.edu/agrawal/pdfs/other-pdfs/reforestation.pdf

Dry forest trees are often deciduous and other organisms are forced to deal with desert-like conditions for part of the year and rain forest like conditions for the rest. Sadly, because tropical dry forest soils are among the most arable, they have been decimated to less than two percent of the original amount worldwide; Ecuador has virtually no tropical dry forest left.

Almost all of the trees in this environment have been cut within the past 50 years. Near the coast the only species that are older are the occasional Kapok trees (*Ceiba trichistandra* and *C. pentandra*), whose magnificent green contorted trunks tower over the land. Kapok trees produce copious amounts of silky fibers around their seeds which are often used in mattresses and pillows. The tragic but obvious reason for their continued persistence is that the wood is useless to humans. Secondary growth amongst the Kapok trees include scat-

Link 2> **Drought disaster in Ecuador March 2011-07-** 11http://eeas.europa.eu/delegations/ecuador/documents/echo_ayuda_humanitaria/20110418_monthlyreport_03_2011_es.pdf

Ecuadorian Coast Drought Causes Great Economic Losses

Stijn IJzermans 26-3-12 21:33

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Drought caused by the lack of rain in the coastal region, has caused heavy losses in plantations of more than $ 220 million. About 78 thousand hectares of rice and some 110 000 hectares of corn have been lost, according to studies by the Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP) and the National Secretariat of Risk.

Five provinces in the region were declared emergency, according to Emergency Operations Center of Ecuador (COE). The worst affected provinces are Guayas and Los Ríos (90% damage). In Santa Elena, El Oro, and Manabi have dried around 15 000 hectares of rice, according to early reports ($ 156 million losses only in rice production).

On the other hand, the Government decided to suspend exports to Colombia that was ready to buy some 150 000 tons this year. This measure will prevent domestic shortages, as the 90 000 tones stored in the National Storage Unit and 50 000 tones are in the hands of industry-by-sector authorities used to meet domestic demand.

A similar crisis hit the corn growers. The cost cities in emergency lost is about 110 thousand hectares. The corn growers have lost about 71 million dollars at a rate of $ 13 per quintal. The drought could end up with another 100 thousand hectares of maize.

Visit and control

The training center will be on Santa Elena peninsula, is one hour drive from Guayaquil. 5 Times per week there is a direct flight Amsterdam to Guayaquil. Guayaquil is a city of approximately 2,4 million people with sufficient modern hotel facilities on world level. Look here for info http://nl.wikipedia.org/wiki/Guayaquil . The Agua, Vida y Naturaleza Project is daily visit able, after appointment. For an appointment please contact pjperdaems@groasis.com, the experienced Dutch trainer of the Project.

Conclusion

We hope that the explanation of the Agua, Vida y Naturaleza Project will inspire you to also develop such a project. This Project is based on trying to develop a self-multiplying model based on sound economic principles that will help us to reforest the 2 billion once forested areas with economical and ecological interesting trees in the coming 40 years. Thank you for your interest in reading this.

January 2012

Pieter Hoff
CEO and founder of AquaPro / Holland