

First Contact:

Dipl.-Ing. Maschinenbau
Michael Schrading
Steinlachwasen 5
72072 Tübingen

Tel.: +0049 -(7071) 763074
Fax: +0049 -(7071) 760935
email: ms@yesno.de

Bank account:
GLS Gemeinschaftsbank eG
Konto: 7001905740
BLZ: 43060967



Turn^{it} the desert green!

A collection of ideas in preparation for turning the desert green

In no way should these ideas be secret, nor should they in part, or in whole be sold commercially in order to make a profit.

Forward:

To keep things straight from the start: The desert is not to be destroyed nor taken away. Not only because large desert areas are part of the earth's ecological system " More to the point is a transformation of those arid areas in which people and animals exist, into an environment where life is possible"

1. We do not wish to be against something!

The aim is not to destroy. Important is to be **FOR** something. We have more power and vitalization when we are working **FOR** something, rather than against something.

When we are **FOR** something, then the negative elements disperse into the background and do not even appear in the first place.

Earth is living sand. Deserts contain sand without significant organic contents.

The crystalline mineral is dominant. The climatic conditions are not good for organic material. To turn the deserts green doesn't mean to destroy the sand or take it away. The living forms spread out to turn the inorganic sand into living earth. Wherever woods are to be seen, then they are growing in sand that may have once been desert. With time, the organic humus brings life with it. The organic mixes itself in with the mineral. Sand becomes earth. To achieve this is the main aim, the main point of this concept, the idea!

2. Living ecosystem

Everyday science defines "**ecosystem**" as "a stable, self-containing system composed of living organisms in a non-living environment" According to this definition organisms do not change their environment but only adapt to them.

We do not have this view. We are of the opinion that the forests have, just like the oceans in the studies from James E Lovelock, "a self controlling function when their power is large enough".

"When the organic content is dominant, then the climate which is created, can influence itself so that plants are supported" James Lovelock, the English chemist played a leading role in this discovery. Other biologists too numerous

to name here, have also stated that forests for example, can influence climate, rainfall and temperature according to their size and consistency. Through our project we wish to cause a change in the makeup of the desert.

3. A fully connected whole

"It is my belief, that large parts of the desert could be transformed so that both humans and animals could again live there". This reforming follows the principle of earth keeping itself alive." This means that by implementing the ideas outlined here, the earth can itself be brought to a particular stage where it is then itself able to provide the life supporting areas for plants and animals - as has been done in the millions of years in the past. This self-support makes it imperative that the planted vegetation communicates with the surrounding environment. This communication has the one purpose of self-support (and hence further communication). The strength of the expression of the plant or animal lies in the common feature of that species. Hence an area of natural forest has a greater influence over its surrounding environment than simple rows of single trees. One single plant growing on its own has to adapt to its environment rather than the environment adapting to that plant. James Lovelock wrote in his book "GAIA, the earth is a life form" in 1991:

"Forests, rain and cloud formation are products of the needs of the forests, but the greatest part of the foliage causes water to evaporate. The rising steam condenses to clouds, rain follows, and the trees grow. When trees are missing rainfall stops and the ground dies".

James Lovelock shows his example from Harappa in Pakistan, where the farmers cleared the forests, herded goats and cows, who ate the leaves of saplings and grasses which grew in place of the trees, the rain did not return and the rest of the forest died. What remained was desert.

This is why it is so important to have a particular **size** of coherent forest. This coherent area encompasses a particular size of environment around the vegetation. As the size of this surrounding area increases, the plant's ability to provide itself with energy, for development, to multiply and its influence over the environment increases so that all possible needs are secured.

4. Water of Life

One further important point in the method is to not tap into the ground water in either arid or semiarid areas. In many projects some still running today, the groundwater is being tapped and in some cases fossil water is being sprayed over the desert's surface having been taken from deep out of the earth's core, using huge amounts of energy. The amount of water available however, is limited.

After shutting off the pumps and sealing the source, all plant life would dry up.

This should be avoided completely through the practice of the theory explained here. Water in arid and semi-arid areas, should not be allowed as far as the surface where it could evaporate before being of use to the plants.

Even rain, which unusually appears in the Sahara, will evaporate high above the desert due to the high temperature and not even land on the ground.

5. Self determination from the start

"The project is aimed to provide the ecological forces with help to secure their own living space, so that sandstorms and desertification do not destroy and spread. This projected ecosystem is to have an energy and resources consumption aimed at zero. No energy will be removed from the system, for example via harvesting, nor shall money be spent on for example pumping water to the surface."

This does not mean that no energy will be necessary. All the energy required comes from the sun and hence can be used without loss. Thus the system rules out disintegration through loss of an external energy supplier. Once planted, the seeds in the system look after themselves. Hence the human contribution to the project can be held as simple as possible.

6. Development knows no time

"A process is complete when it is complete. Whether it has taken 100 years or 100 million years. Mother Nature is above all else, very patient. And she demands patience from us too if success is to be the result. For this project we are not talking about 100 million years, we believe much less".

Not only ecosystems are influenced by changes, the inhabitants living close to these areas will experience at some time or other changes to their social and cultural conditions. Our plans are thus long-term.

7. True dealing arises from consciousness

At the forefront is the realization of the idea. Dealing from a consciousness and urgency is the driving force. Endless debates and discussions about the state of the earth are useless without a corresponding realization of the discovered results. Where does sand come from?

How hot is it at which height over the desert surface? Who was the cause of the expansion of the desert etc? Nonsense! All necessary preparations and representations of the idea have one sole purpose, which is to carry the idea through to the point of completion.

Ideas about the fight against desertification are plentiful and abundant. All of them were unable to produce a realistic improvement of the semi-arid conditions. Granted, some have produced amounts of knowledge about life in dry areas in better form than before. Some new and useful changes have been initiated. The consciousness that the expansion of the deserts is in fact a danger to life and man himself is only barely recognized. This becomes more evident the further the observer is from the endangered area."

"Naturally, one will say, "This is all not new to me but what can I do....?"

The best evidence for the existence of a consciousness about something is

through dealing with it. I am aware that when I go out in the rain without an umbrella, I will get wet. That means - I take an umbrella. I knew it. I knew I would get wet so I took an umbrella. I deal according to what I know. Perhaps this example will help to enrich the consciousness about the problems of the deserts and their expansion. So ...

Do it

Preparation and requirements

Not without water

Life on earth is unimaginable without water. Likewise, another source other than the sun as energy supplier is impossible. This fact limits the radius of the area, which is recoverable to those parts of semi-arid land under which groundwater is available. The Picture 1 shows Nigerian children from the inner delta, who have dug a well, as children, are the only ones who can pass through the tunnel, which has been completed here to the level of 6 metres. Places such as this are ideal for the establishment of greenery.



Picture 1:

This picture has been taken from the front page of the book "Desert Earth" published 1991 by Focus-Verlag from the collection Oekuzid 7 (with kind permission of the publisher Focus Verlag).

The requirements for the realization of the project are:

A) The ground substance

- The ground must have such a consistency that at a depth of about 10 metres a measure of dampness is apparent due to the existence of ground water below.
- There should be no large bodies of stone of up to a depth of 50 metres under the desert surface.
- There must be no large deposits of salt in the ground making the growth of plants impossible.
- The ground must be suitable for the growth of palms and lower plants.
- The movements on the surface must not be greater than 50cms per year.
- The above requirements must extend to an area of 100 sq km or greater.

B) Plant types

- Important is to have an area, which is in one piece, and not separate.
- Three plant types are to be considered:
- Tall trees with large leaves (palms). The plants should grow quickly and reach a mature height of 8 to 10 metres. They should give quick shadow and tolerate high temperatures.
- The second plant type is bush or crablike. It should grow well in barren ground and spread quickly.
- Low growing plants which spread quickly and wilt slowly as in humus that its own plant parts have the best conditions for further growth.

Plants are first nurtured in another location. The plants, which grow high, should reach a height of 150 cm in the first year before they are brought on location. An investigation should be made as to the appropriateness of Halophyte plants in the area in the event that salt concentration in the groundwater should rise.

C) Infrastructure

There must be an infrastructure via which heavy machines can be transported to the selected region. On top of that, access routes for personnel and service are needed.

D) Social/political requirements

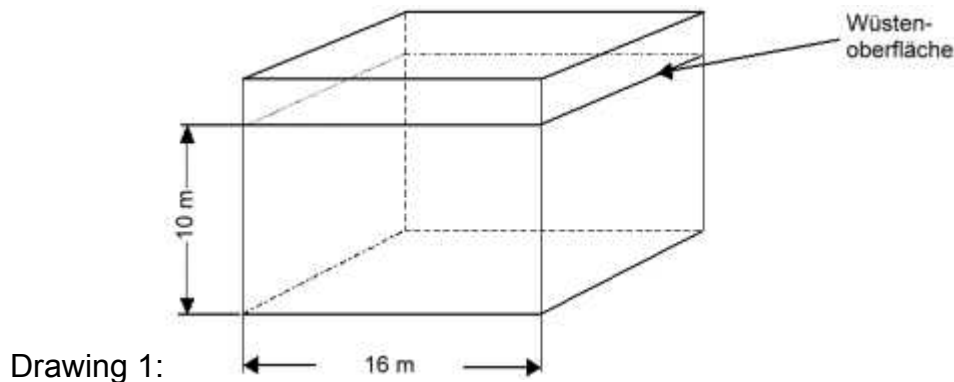
The idea of recultivating lost land must not take precedence over the local population's needs nor cause local discontent. There must be a cooperative relationship with the local government body and also with the local population. Machines, equipment and personal should where possible, be acquired locally. Hence it is necessary to check in advance if:

- Co-operation
- Communication
- Support from government
- Support from local population

is possible.

In one cell life begins.

This area should have a size of **16 x 16m** in the beginning. It should be regarded as a kind of cell. It should have a healthy rich base and a climatically controlled inner life. The ground which is to be cultivated would be found at a height of 10m **under** the desert surface. This "new system" in rectangular form at a depth of 10m could be as follows:



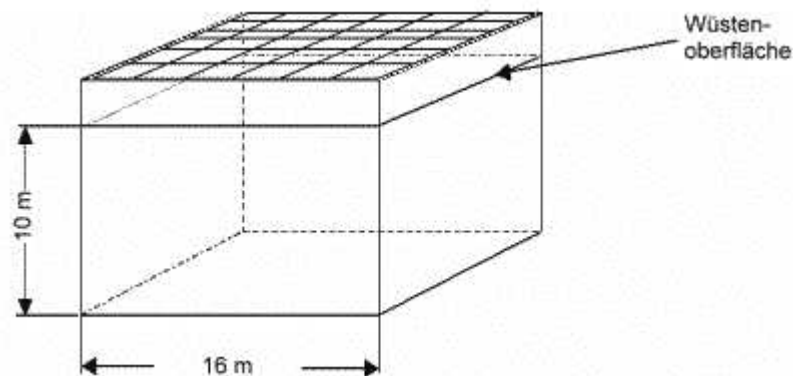
The cubic form, which may eventually be changed later, is dug out. The sand, which is removed, can be used for other buildings. The retaining walls used are the same as those used for building underground railway systems. They protrude 1 m above the desert surface. The construction and type of materials used depends on the sideward forces of the sand drifts in that area. In practice a cell should look something like this:



Picture 2:

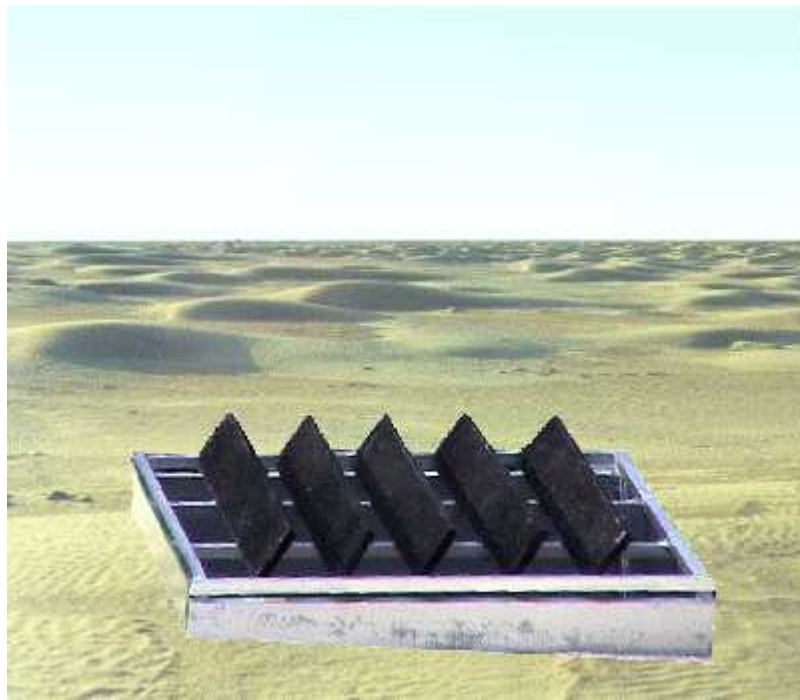
At the beginning of the growth period the system is covered with artificial glass (Plexiglas etc). One part is covered with solar cells. Another is coloured glass related to the amount of sunlight, which can be expected in that area. The roofing may be opened in segments.

.



Drawing 2:

Opening and closing the roof cell can regulate humidity. The exchange of air and moisture is one of the few control mechanisms that is at our disposal. The roof is opened when the nights are cool and during the heat of the day remains closed. The energy needed for regulation and control is taken from the solar cell system. Following is a photo collage of a cell:



Picture 3:



At the heart of the system one year old palms are planted every 2 m. The remaining ground is covered with fast-spreading ground plants. Picture 4 shows the inside view of such a cell. This picture is taken from the picture book Sahara, from Publishers BechterMuenz 1994.

Picture 4:

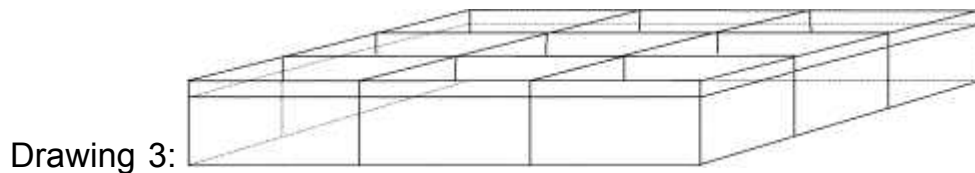
This picture is taken from the picture book Sahara, from Publishers BechterMuenz 1994.

Moisture and temperature are controlled using the moving roof panel (not shown here). Shrubs, bushes and different grasses are also placed between

the trees and according to the strength of the sun, have a regulatory effect on the humidity and provide humus for the ground. The exact type of plant suitable can be chosen with reference to the local prevailing conditions.

Strength in unity

Once the trees have reached a height of 8 m, the roof may be removed, as long as the system has reached stability within its surroundings. The time required for this first growth period is estimated to be about **4 or 5 years**. The criteria for selection of palms are, one, fast growth rate and two, root development. The roots should extend deep and wide in the sand. At maturity they should reach a final height of 8 to 10 m. After the development is complete work may be started on neighbouring cells so that the total area covered reaches **48 x 48 m**. The new cells are then started in the same manner as described above.



A) After 4 years

What is important is that the cultivated area be regarded as a complete unit. The narrowest part should not be smaller than 48 m. **After 4 years** growth, up to **256 square metres** of woods are created.

In a model, which we have made, the total area would look something like this after 4 years:



Picture 4:

The cell system has then a total area of 2304 square metres. The solar roof can be removed in the middle section after 4 years. Leaf growth and spread of plants provide enough shadow for the needs of this cell. The outlying cells need the regulating roof for the next 4 years. Beside the cell system is the housing for personal and technical instruments. Picture 5 shows a detail of the model after 4 years development.



Picture 5:

B) After 8 years

In the surrounding new cells, as in the first cells, new palms, adaptable bushes and shrubs are planted. After 4 years, the inner dividing walls may be removed, so that the size of the cell has increased to 48 x 48 m. The digging out of the cell, planting of greenery and erection of the cell roof should be timed so that a drying out of the ground is avoided. Rooves can be removed and then immediately mounted in nearby new cells where they are directly needed.

C) After 12 years

After a development period of about 12 years it is estimated that a **total area of up to 6.4 square kilometres woods** can be created when 1000 cells are simultaneously started. In some areas the groundwater may not come high enough to serve the plants. Such an unevenness of the groundwater can be catered for with solar powered water pumps planted deep in the ground.

D) In the end life wins

Forests have a great natural power as long as they can grow in one group and are protected from the sides (through the surrounding trees and walls). This power grows as the forest grows. In the process described by James Lovelock of a wood near Harappa in Pakistan the influence of the wood increases with its own growth. The aim is to cause local climate changes so that the rainfall increases, the ground temperature decreases and the forest arrives at a point in its development where its daily expansion is greater than the increase in desertification at this location. After a further 12 years with the help of the described cell reproduction, the forest may reach a size of 30 square kilometres. From this point then the power of the forest should have reached a size of effectibility. That is to say it now influences the weather rather than only being subject to weather changes.

Epilogue

1. Working all together!

As ever and with this project too, what is absolutely essential is the commitment of a large number of local people. In the realisation of this project everyone should find his or her own part to play. We mean here that

each person should be allowed to help in the way that they are best suited.

The skills and involvement of the people in the country, in which the project is planned, should have first priority. The work done by each person on location, their dedication, the amount of their labour and material, will convince them of the need for a change in the climate, which will above all have a significant effect on local sociological behaviour.

Self-interest is to be supported. What is not wanted is the situation where a group of academics arrive, do their experiments and disappear a few years later. Better is that situation where people then are motivated to be active themselves and hence change their own intolerable conditions.

At the beginning of the project, at the preparation stage, there should be a group of experts who follow and help coordinate the work, composed of the following people:

1. A documentary reporter
2. Biologist/plant expert.
Important is knowledge about the development of plants in extremely hot dry climates, likewise knowledge about halophytes etc.
3. Botanist.
4. Geologist/meteorologist.
5. Technicians capable of looking after the desert stations (solar cells, water and supplies).
6. Translator.

7. Representatives who are suitably qualified to be able to deal with local government officials and who can best represent the aims of this project.
8. Journalists who summarize the gathered documentary information and pass it on in suitable form to other press agencies and government departments. They would also be responsible for dealing with the internal flow of information in the organisation.

Besides tending the pilot project in a semiarid area in Europe (Spain or France), they would also take care of the worldwide distribution of reports (E.g. via internet) in order to motivate as many people as possible. This motivation can, besides making the project known, also create interest using the following:

- Calls for donations!
- Adoption of a cell or a tree!
- Active participation under supervision. Similiar to the work in a Kibbutz, etc.

Everyone should be given the possibility to directly help to change the process of erosion occurring in deserts around the world, no matter how near or far they are personally from the endangered area. There is enough to do for everyone, whether old or young, whether rich or poor. Taking care of the earth through direct activities, is a human need, which has not been given a chance to appear.

2. Living together, acting together!

We hope that you, dear reader, are able to identify with this project. We need you to get involved. If you are a member of an organisation which is also closely involved with restoration of water resources, or desertification etc, then we would be only too glad to hear from you to see how we could combine resources in order to work together to resolve the above problems.

We know that the above outline is not the last and best solution. There are many points where much more work and thought is required. It is however a start. Not one, which dries up in the sand like the water in the desert.

It should be a challenge now to act,
consciously facing the earth,
and look at ourselves,
how we are and where!

If we want to make a change, then this is the place where our actions can have the
greatest effect.

Be significant - to the generations still to come.

Thank you

Dipl.-Ing. Michael Schrading

3. Contact addresses:

Dipl.-Ing. Maschinenbau
Michael Schradling
Steinlachwasen 5
72072 Tübingen

Tel.: (07071) 763074
Fax: (07071) 760935
Email: ms@yesno.de

BSc (Hons) UK
Clive Stewart
Kiefernstr. 19
40233 Düsseldorf
Tel.: (0211) 7337000
Fax: (0211) 7337002 (after confirmation that the machine is turned on!)
Email: spl@whotoo.com