

# CLIMATE PACIFICATION

## Manual for prosperity production

### PILOT: MOUNT KILIMANJARO, PIVOT FOR INSTANT ENVIRONMENTAL ECONOMIC GROWTH

- Climate disturbances have increased the frequency and magnitude of global flood and drought cycles.
- A quarter of the world population is under direct threat, jeopardizing any continuation of economy.
- The global economic loss from weather upheaval has tripled to USD 1 billion per year in the last four decades.
- USD 200 billion invested in an increase of the world's continental water vapor flows to 140.000 cubic kilometer per year, reverts El-Nino extremes, climate warming and ocean level elevation into unprecedented abundance.
- The world's greatest civilizations all perished due to climate change in generation of sustained flood and drought regimes.
- A doubling of equatorial water vapor flows prevents flood and drought destruction at higher latitudes.

## MOUNT KILIMANJARO: PIVOT FOR INSTANT ENVIRONMENTAL ECONOMIC GROWTH

### Abstract

The land locked glacier altitude and adjacent depression in seasonal lake formation of Kilimanjaro-Amboseli, subject to desert generative bi-annual rainfall, incorporates the universal conditions to re-instate perennial precipitation, in generation of trans regional extension.

Deployment of 2.76 million cubic meter surface water, subject to 40% annual seepage and forest regulated evaporation, re-cycled by mountain elevation; dictates bi-annual extension in accommodation of additional rain season discharge.

Mount Kilimanjaro's hydrosphere saturation from bi-annual expanding bio-sphere rehabilitation, equilibrates in consequent extending pacified perennial precipitation.

Increasing, land mass recycled evaporation volumes, subject to improved evapotranspiration trajectories, generated from biosphere rehabilitation, are in reduction of global, atmosphere administered, vapor flows and El-Nino extremes.

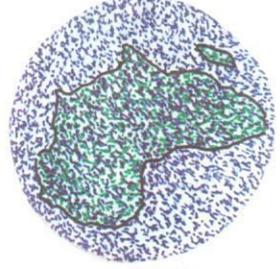
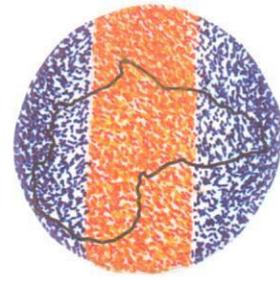
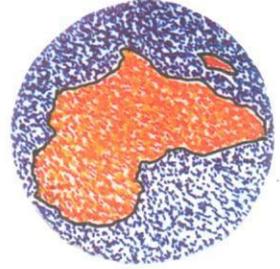
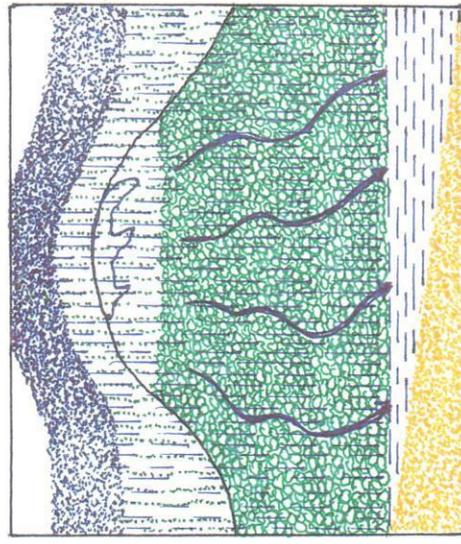
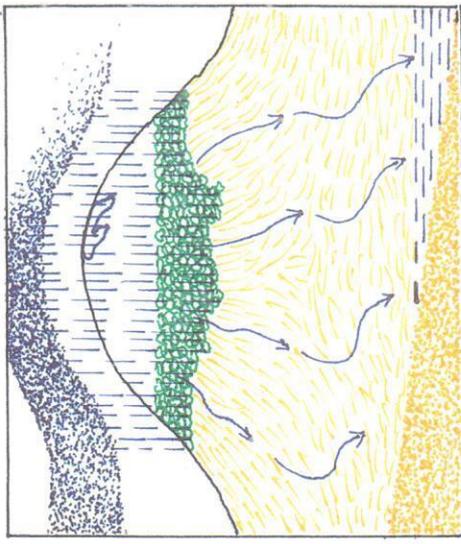
An increase in equatorial, land mass recycled rainfall, is reducing flood risks on higher latitudes.

Improved evapotranspirational capacities on higher latitudes, reduce local wind storms and simultaneously facilitate desert combat, through extending pacified precipitation patterns, accommodated in re-curring recipient aquatic infrastructure.

Expanding rain recipient and accommodating land mass, is in additional decrease of global El-Nino repercussions, nurturing climate cooling and ocean level depression, in generation of extending food production capacity, for the growing world population.

Climate disturbances have increased the frequency and magnitude of flood and drought cycles, directly jeopardizing a quarter of the world population and tripled the annual world economic loss to USD 1 billion in less than four decades.

Inter continental oriented low cost-high revenue, pilot development, of hydrodynamic extension into biosphere resuscitation, ignites rapid regional multiplication in culmination of world wide climate pacification.



Transition from bi-annual rainfall into perennial precipitation

Less than a thousand kilometers west of Mount Kilimanjaro, the tropical rain forest climate of the Congo basin is characterised by almost constant heat, humidity and rainfall to an annual depth of 1500mm. Plant growth takes place throughout the year resulting in luxuriant vegetation.

The solar heat causes daily evaporation from lakes and moist land mass.

The heated saturated air rises and cools at higher altitude into rainfall in almost the same area from which the moisture originates.

On the same latitude, towards East-Africa's major source of precipitation, the Indian Ocean; rainfall segregated in two rain seasons, drops from a 1000 to less than 400mm in regions affected by encroaching desertification.

Deforestation and consequent vegetation cover recession from the coast up to the continent's rain forested interior, diminished the year round landmass evapotranspiration capacity.

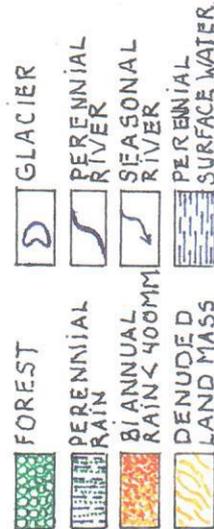
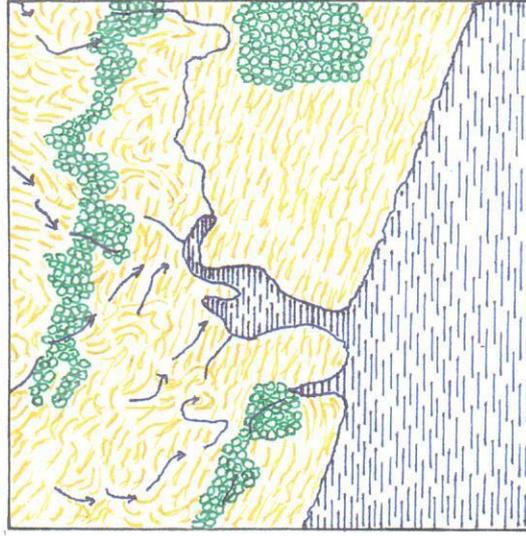
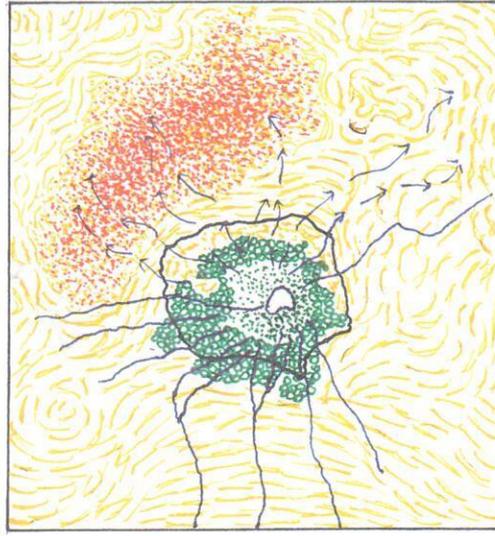
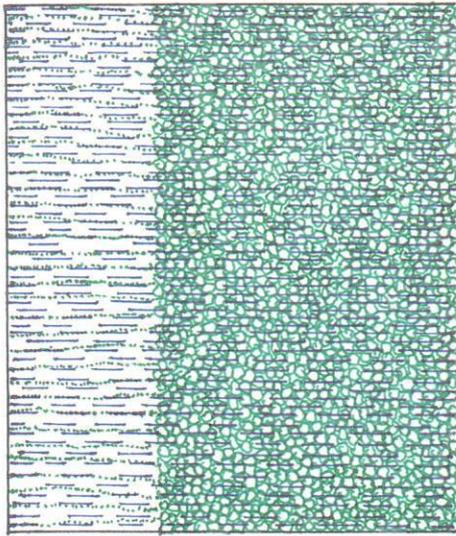
The region subsequently became entirely dependent on bi-annual rainfall prone to aggravating flood and drought cycle.

With an expected rise in water demand, subject to a 50% human population increase, a rehabilitation of the biosphere is required, in restoration of the region's evaporation potential and perennial precipitation.

Diversification of East Africa's unilateral dependence on bi-annual precipitation volumes from the Indian Ocean, requires accumulative storage capacity, nurturing perennial, in situ water recycling in expanse.

Foliage rehabilitation of intake and conduit trajectories in conjunction with extending afforestation of projected recipient land mass, generates a regulated bi-annual accumulation to regionally recycled evaporation volumes.

The (re) introduction of quadruple agriculture in restoration of indigenous tree canopy, supported with grafted fruit trees, shrubs and seasonal crop provide a hydrology sustaining culture and instant economic growth.



Mount Kilimanjaro's land mass elevation focussed on climate pacification

Mount Kilimanjaro's glacier is receding caused by insufficient bi-annual precipitation in conjunction with accelerated discharge of run off water instigated by deforestation of the surrounding low lands and the mountain's lower slopes.

Transition of the current, single layer, subsistence agriculture and pastoral occupation into commercial quadruple utilisation, will accumulate bi-annual rainfall required for extension, instigating perennial precipitation focussed around the mountain elevation.

Evaporation from the reforested region is cooled into rainfall by daily convection conducted and returned by Kilimanjaro's elevation to the same area from which the moisture originates.

The glacier's frequent exposure to precipitation will consequently accumulate ice and snow formation in regulation of the mountain's discharge and rehabilitation of its aquatic storage capacity.

The astronomic monetary revenue discrepancy from subsistence land utilisation and quadruple agriculture, facilitates rapid self propelled expansion, instigating regional climate cooling and commercial termination of erosion.

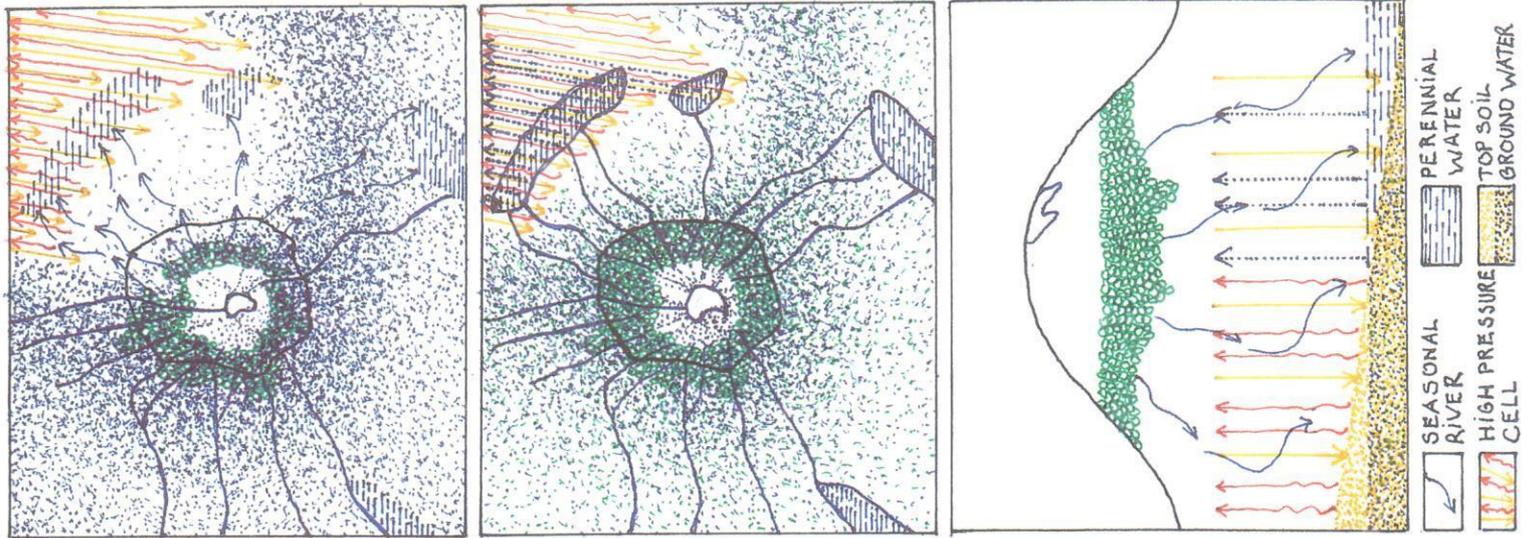
The transition of matured erosion gullies into water collection capacity, through the deployment of sub-surface dams is a commercial viable utilisation for surface water collection and sub-surface water accumulation subject to favourable dimensions.

Amboseli: desertification through inundation

The Amboseli depression with an annual rainfall between 200 and 400mm, incorporates progressive desertification in physical confinement with however pivotal thermo and hydro dynamic consequences for the entire Kilimanjaro region.

Deforestation of Mount Kilimanjaro's lower slopes for seasonal crop cultivation, annihilated the medium and deep rooted hydrologic system, instigating accelerated aquatic discharge in ever depressing erosion, inaccessible for agricultural utilisation.

The thus created over-capacity of subsurface water, subjected to gravity, resurfaces in the Amboseli depression in elevation of the ground water table and swamp formation.



The format and quantity of the slopes' swept away debris, suffocates the vegetation on the flood plains, in siltation and consequent strangulation of the swamps bio-diversity. Amboseli's saturated water retention capacity in conjunction with the soil's crystalline segregation in reaction to humidification and de-hydration forces annual precipitation into the evaporational confinement of a seasonal lake.

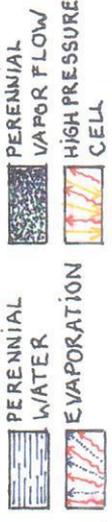
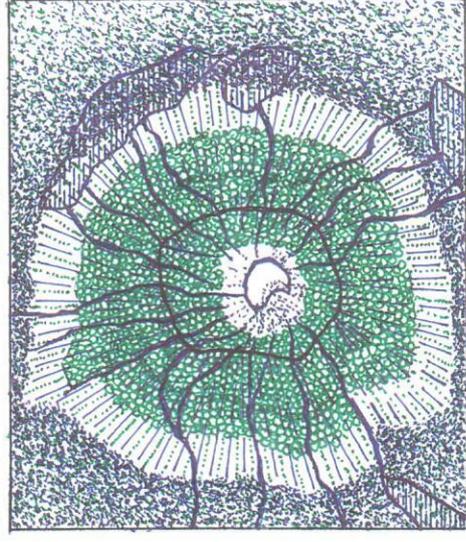
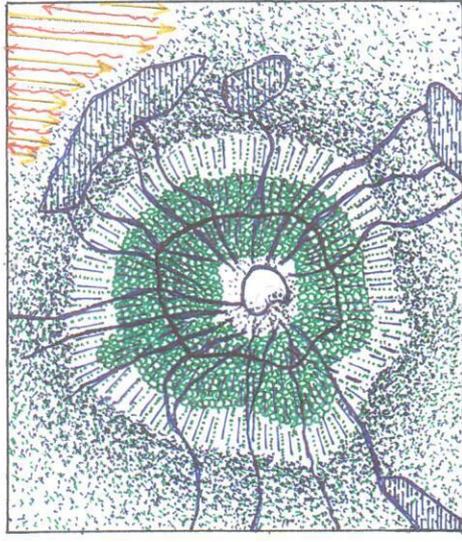
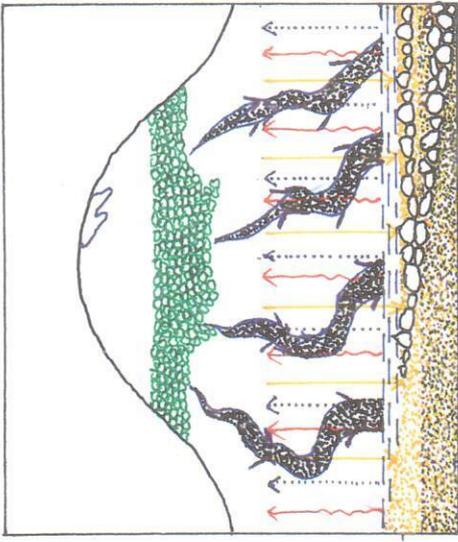
Liberated and henceforth concentrated salination, re-activated by rain season flooding, prohibits sufficient vegetation recovery, accelerating decline.

Mount Kilimanjaro's perennial influx of consumable water in swamp formation, became the major surface water resource in generation of fodder with limited nutritional scope for cattle and wildlife. Subject to the limitation in concentration of this perennial water and food resource, long distance and high density cattle circulation proves destructive for remaining grass occupation, accelerating desertification.

Amboseli's high pressure cell, generated by heat reflection, from denuded land mass, distorts Mount Kilimanjaro's retention capacity of the region's limited evaporation volume into north, north-westerly dispersion.

Afforestation of the depression's aquatic feeder zones, facilitated by water and soil conservation, stabilises disbursement, decreases daily temperatures in reflection, enhances regulated evaporation and generates grass, shrub and crop improvement, in dispersion of cattle, wildlife and human activities. A subsequent increment in precipitation and regulated disbursement thereof, will improve vegetation cover in Amboseli's depression, in simultaneous de-salination through top soil penetration and a decreasing ground water table.

Kilimanjaro's hydrospheric perforation thus ceases, upon which the region's bi-annual rain water accumulation from the Indian Ocean's evaporation volume commences. Quadruple agricultural deployment, surrounding a land mass elevation with dimensions such as Kilimanjaro, set a perpetual accumulative precipitation pattern in motion facilitating unhampered expansion in adjacent regions.



International cooperation in climate pacification

Eurasia's deforestation, instigated 13000 years ago by agriculture, need for building materials and energy supply, turned north-east Africa's stable recipient precipitation into an accelerated flood and drought cycle.

Some five thousand years ago, reduced evapotranspiration from Eurasia's deforested land mass turned the Sahara savanna into an expanding desert up to the present day. "Natural" disasters caused by deforestation, have increased the frequency and magnitude of flood and drought cycles directly jeopardizing 25% of the world population and tripling the annual economic loss to USD 1 billion in less than four decades.

The most frequent disasters in 1998, the year America and Asia were particularly hard hit, were windstorms (240) and floods (170), which together accounted for 85% of the total economic losses (Verstappen, H.Th 2001.)

Climate pacification is a global priority beyond race, religion or (development) status, in requirement of unprecedented international cooperation.

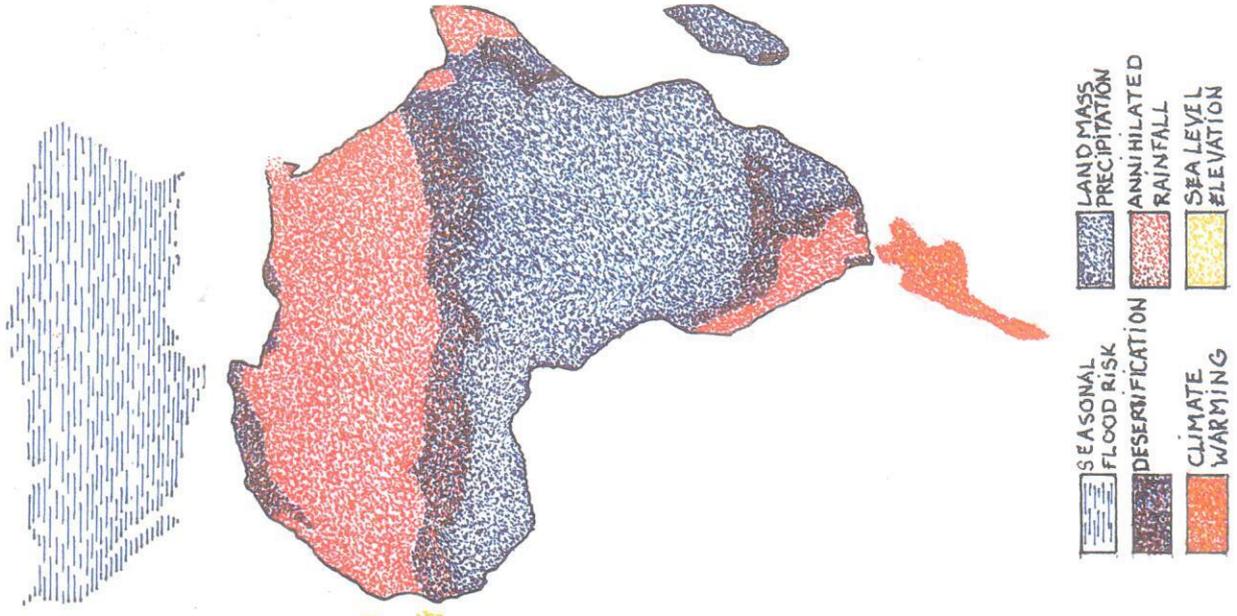
Subject to the magnitude and myriad nature of world wide, accelerating biosphere degradation, an effectively unified intercontinental or international approach remains a pipe dream in our contemporary constellation.

Deployment of pilot developments, beneficial on the local level with international status, in disentanglement of universal predicament, will dissolve the current (inter)national stalemate.

An increase in pacified and therefore erosion diminutive equatorial rainfall, is a reduction in flood risks on higher latitudes and an equivalent decrease of global El-Nino repercussions.

An increase of the evapotranspirational capacity on higher latitudes is in reduction of local wind storms and will simultaneously facilitate desert combat through re-appearing precipitation patterns, should recipient aquatic infrastructure be rehabilitated.

An increase in rain recipient and accommodating land mass is in equivalent decrease of global El-Nino extremes, nurturing climatic cooling and ocean level depression.



Rehabilitation and tranquilization of existing and re-appearing aquatic infrastructure is in assembly of the breeding ground for trans-continental deployment of quadruple agriculture, generating global climate pacification.

The world currently produces enough food for everyone at the cost of accelerating bio-diversity destruction.

The majority of the world population simultaneously suffers from malnutrition and lack of sufficient potable water instigated by reactionary scarcity policies.

In conjunction with contemporary scientific approach, this majority is held in ever severe ransom subject to accelerating decline, in the absence of any comprehension with regards to a self sufficient production of water, food and bio-diversity.

Pilot projects re-instating the physical conditions for biosphere rehabilitation through hydrodynamic extension, form the simple cure for the current collision course, with instant economic growth and vascular climatic pacification as a tangible result.

#### Kitenden dam, Amboseli Kenya: pilot into biosphere assembly

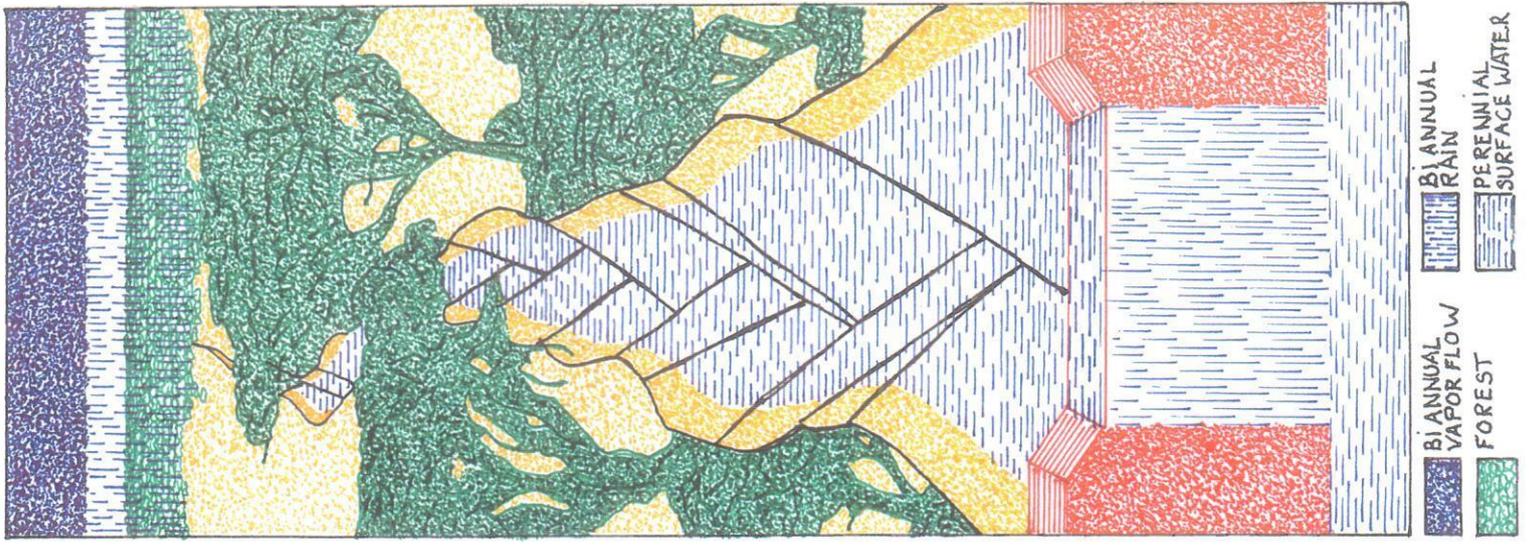
Less than forty five square kilometers of canopy destruction, turned the Kitendeni river on Mount Kilimanjaro into a torrential seasonal stream, in ever deepening encroachment of the mountain's slopes.

Soils and washed out vegetation from kilometers of erosion gulleys, in excess of several meters, are deposited in seasonal swamp formation of the Amboseli depression, subject to unabating evaporation in de-regulation and consequent salination.

The Kitenden dam in Kenya, beneficiary from Kitendeni river's silt laden discharge of Mount Kilimanjaro, has to be scooped every seventh year at a cost of USD 25000, pushing the surface water cubic meter price, from an initial USD 1.20 to a staggering 7 USD in the sixth year of operation.

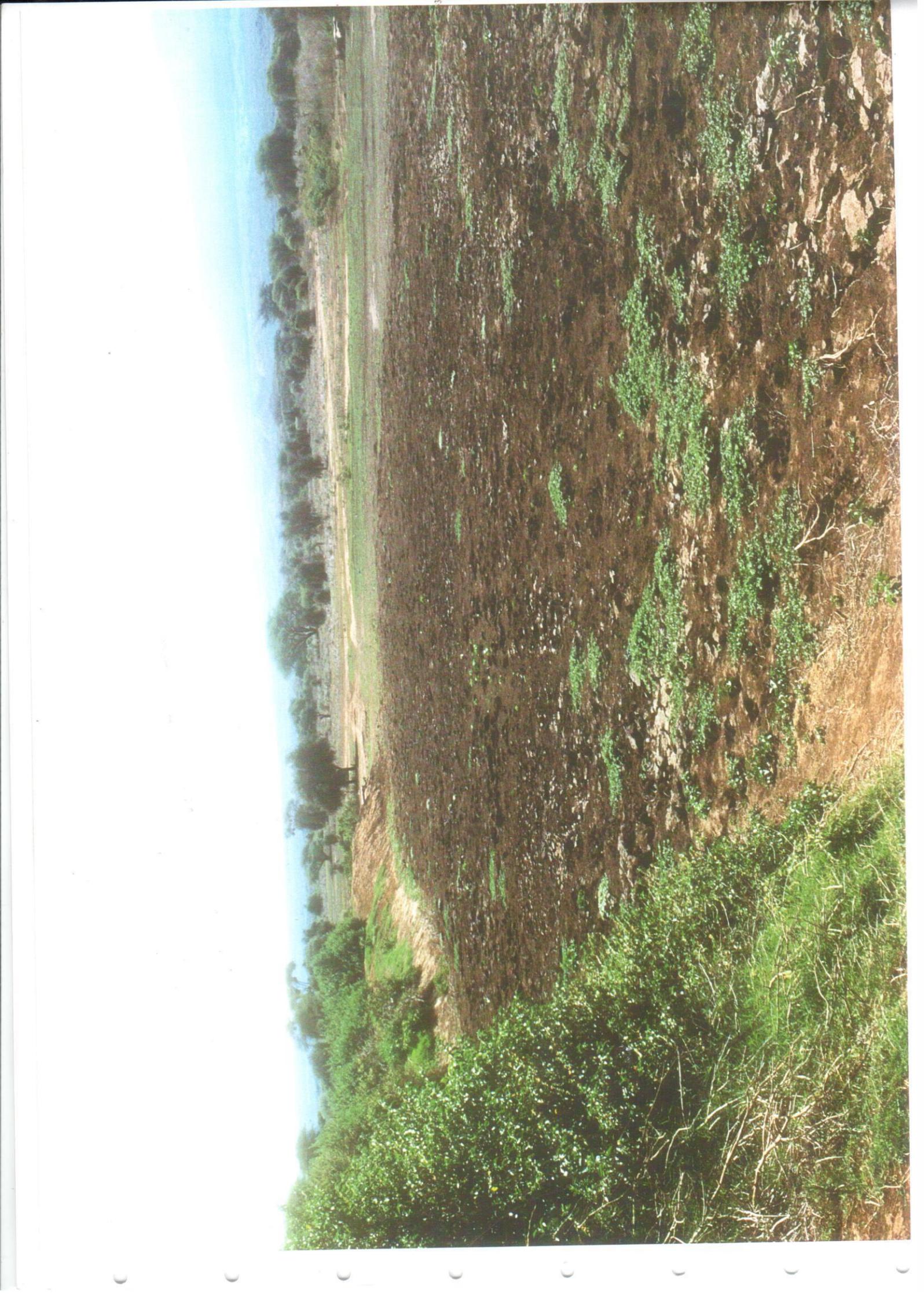
Excessive and silt laden El-Nino flash floods, abruptly terminated the Kitenden dam's water collection capacity in 1998.

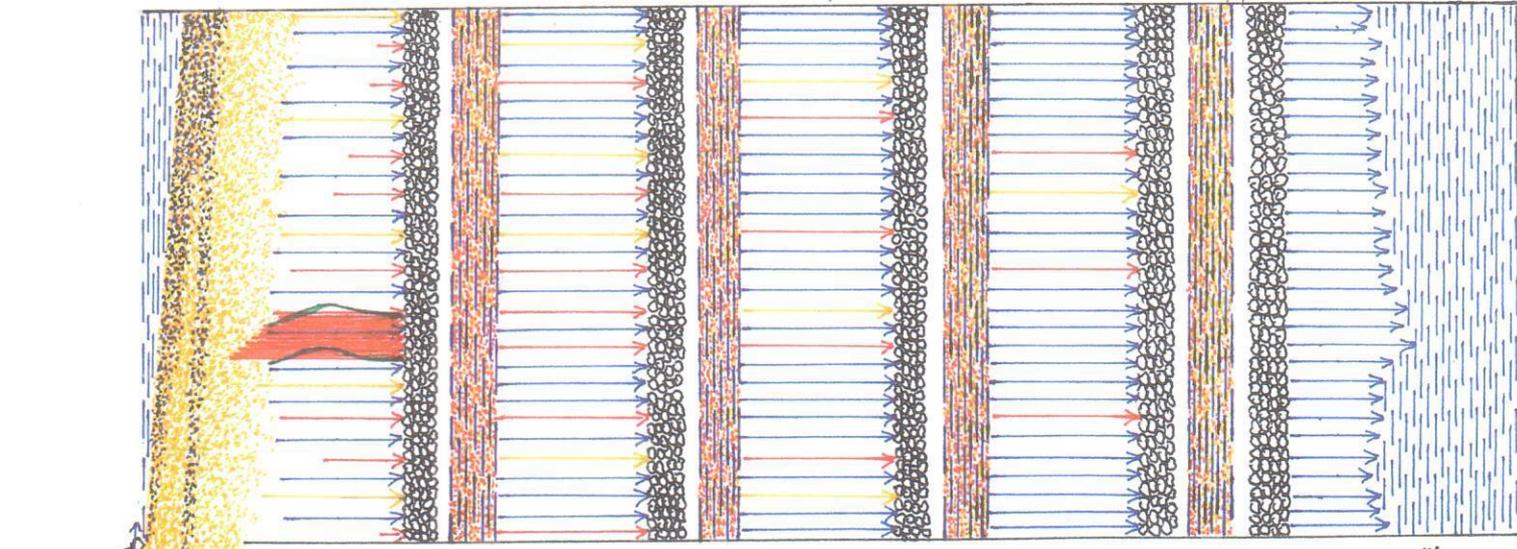
Three hundred people, their cattle and livestock were subsequently forced into a daily thirty kilometer walk to and from the nearest water supply in Amboseli National Park.











Three years later, after approximately 30.000 kilometers of grass destructive circulation with a thousand head of cattle and 6000 livestock in search for water, the rehabilitation of Kitenden dam could start with funds from Rotary International.

Scooping and the deposit of siltation on the old dam with earth moving equipment provided by Kenya Wildlife Service took 152 bulldozer hours, 38 plant operator days and USD 2000 for fuel and lubricants.

To enable a discontinuation in donor dependency with regards to the maintenance of the water catchment, seven trenches were excavated in the rain water run off area on both sides of the intake channel from Kitendeni river.

The trenches allow water penetration into sub-surface accumulation generating additional post rain season discharge into the surface collection pond.

The sub-surface penetration simultaneously permits reforestation with, in this case Croton tree seedlings, non palatable to Elephants, nurturing further water absorption and grass recovery towards maturity.

Kitenden dam's dual type of water intake, from rain water silted by cattle generated ground cover destruction in the run off area and Kitendeni's silt laden river water from agricultural erosion; dictates filtration able to accumulate minimum rainfall and absorb El-Nino extremes.

The near-by abundance of rough stone in conjunction with the necessity of low maintenance to become no maintenance, nutrition generative filtration in the next half decade, makes stone wall filtration the optimum in simultaneous deterrent for cattle and livestock intrusion.

Stone wall filtration in generation of rain and river water accumulation

Amboseli's semi desert classification subject to erratic rainfall between 200 and 400 mm per annum, dictates a regional grid of water collection and filtration units, permitting vascular reforestation and dispersal of surface water locations for human activities and wildlife.

The systematic deployment of subsurface dams in seasonal rivers recuperates the perennial status of the existing aquatic infrastructure as shown in Kiui district by Sahelian Solutions (Sasol) and in Tsavo National Park by Kenya Wildlife Service and Westerveld.





Agricultural development and reforestation facilitated by these dams, are in conformance to riverine extension subject to manual irrigation and natural rehabilitation. The surface dam of Kitenden is a hybrid form accommodating both river and rain discharge, permitting ever extending reforestation away from existing aquatic infrastructure in generation of multiplying surface water locations.

Seven trenches bi-sected by Kitendeni river water intake channel and vital adjacent grass and shrub land were excavated with an initial capacity of 1900 cubic meters, subject to siltation; in the denuded rain water run off area of Kitenden dam.

Stone wall filtration from centered 5cm stones deposit, mantled with 15cm units and covered by 25cm large rough stones; was triple wing extended to increase the rain water collection capacity with approximately 50%.

The river water intake channel obtained a similar and uninterrupted filtration system to disperse silt laden volumes from Kitendeni river over the entire unit, since silt deposit not exceeding centimeters acts as a fertilizer.

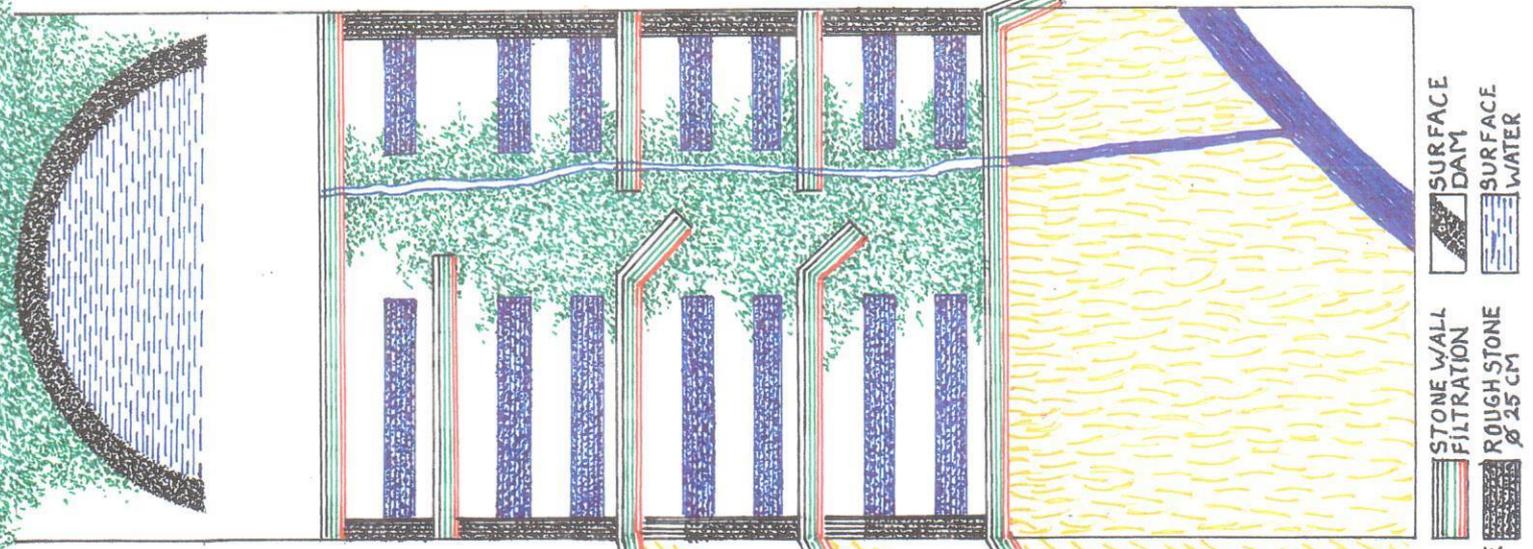
The three internal filtration walls are discontinued where the existing vegetation cover enables nutrition generative filtration and doubles as an emergency spillway should rain and river discharge turn out-in simultaneous excess.

Both the up and down stream filtration walls are uninterrupted to equalize water intake and discharge over the entire length of the unit.

The side walls are made of 25cm large rough stones with a maximum permeable deposit at the cross points with the wing extensions, to allow unrestricted passage of water in simultaneous deterrent of cattle and livestock intrusion.

After saturation of the approximate 3 acres entrenched sub-surface water storage and 18 acres at the rear side of the dam, generated by seepage and overflow from the surface water collection pond; reforestation in requirement of manual irrigation can commence.

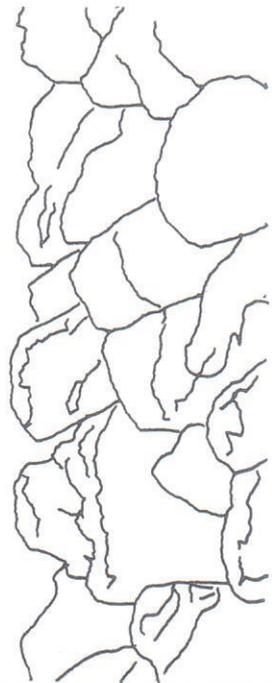
Subject to sufficient rainfall; tree-, shrub and grass cover maturity replaces the stone wall filtration within a five year period; permitting re-deployment elsewhere in generation of an additional 20 acres of prime forested grass land with 10.000 cubic meters of consumable water.

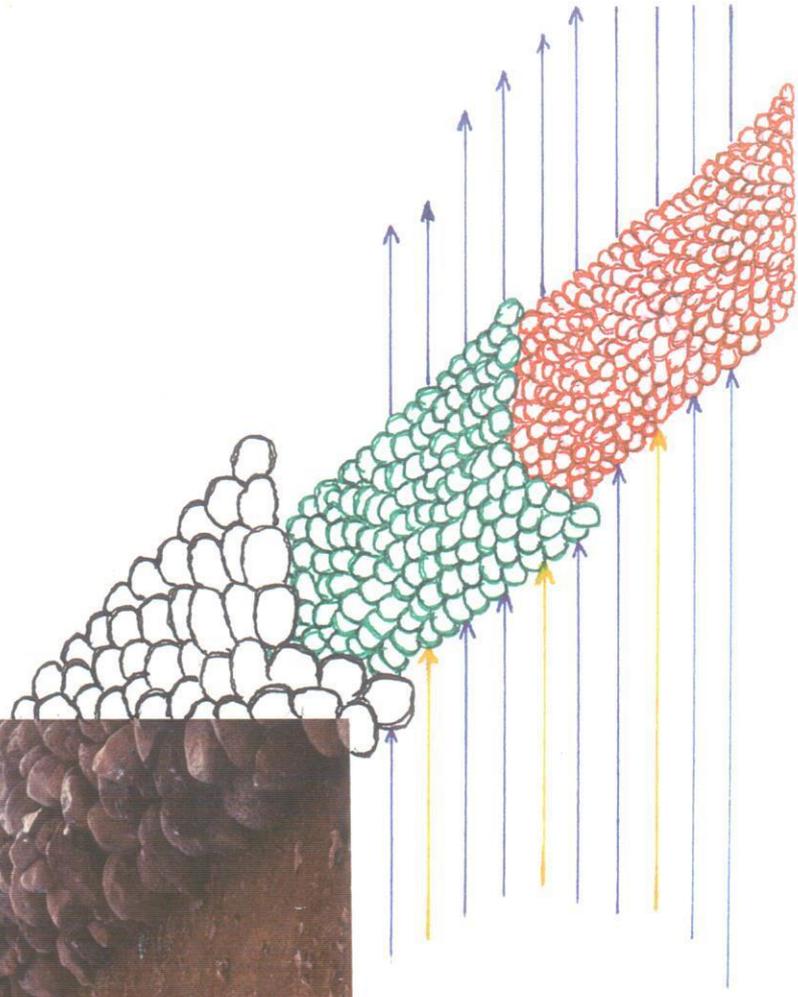
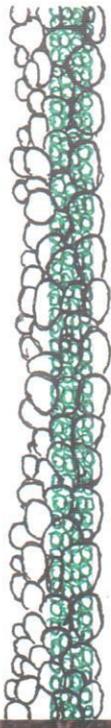


- RAIN WATER COLLECTION AREA
- WING EXTENDED COLLECTION AREA
- VEGETATION COVER
- SEASONAL RIVER WATER
- STONE WALL FILTRATION
- ROUGH STONE  $\varnothing$  25 CM
- ROUGH STONE WATER INLET
- SILT ACCUMULATIVE TRENCH
- SURFACE DAM
- SURFACE WATER

STONE WALL  
FILTRATION  
25 CM Ø  
ROUGH STONE

RUN OFF  
WATER  
SILTATION

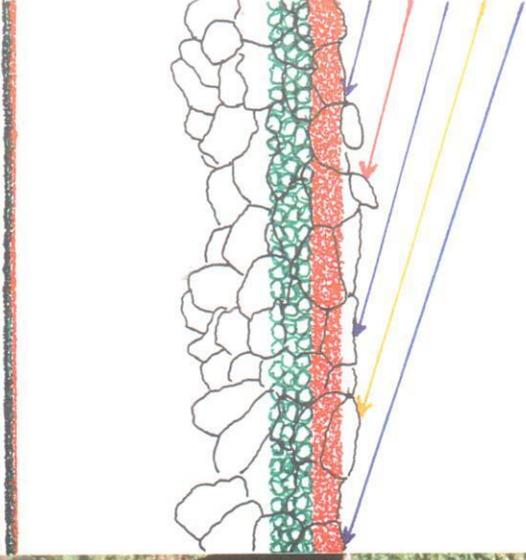




 25 CM Ø ROUGH STONE  
 5 CM Ø STONE

 15 CM Ø STONE  
 SILTATION

 FILTERED RUN OFF WATER



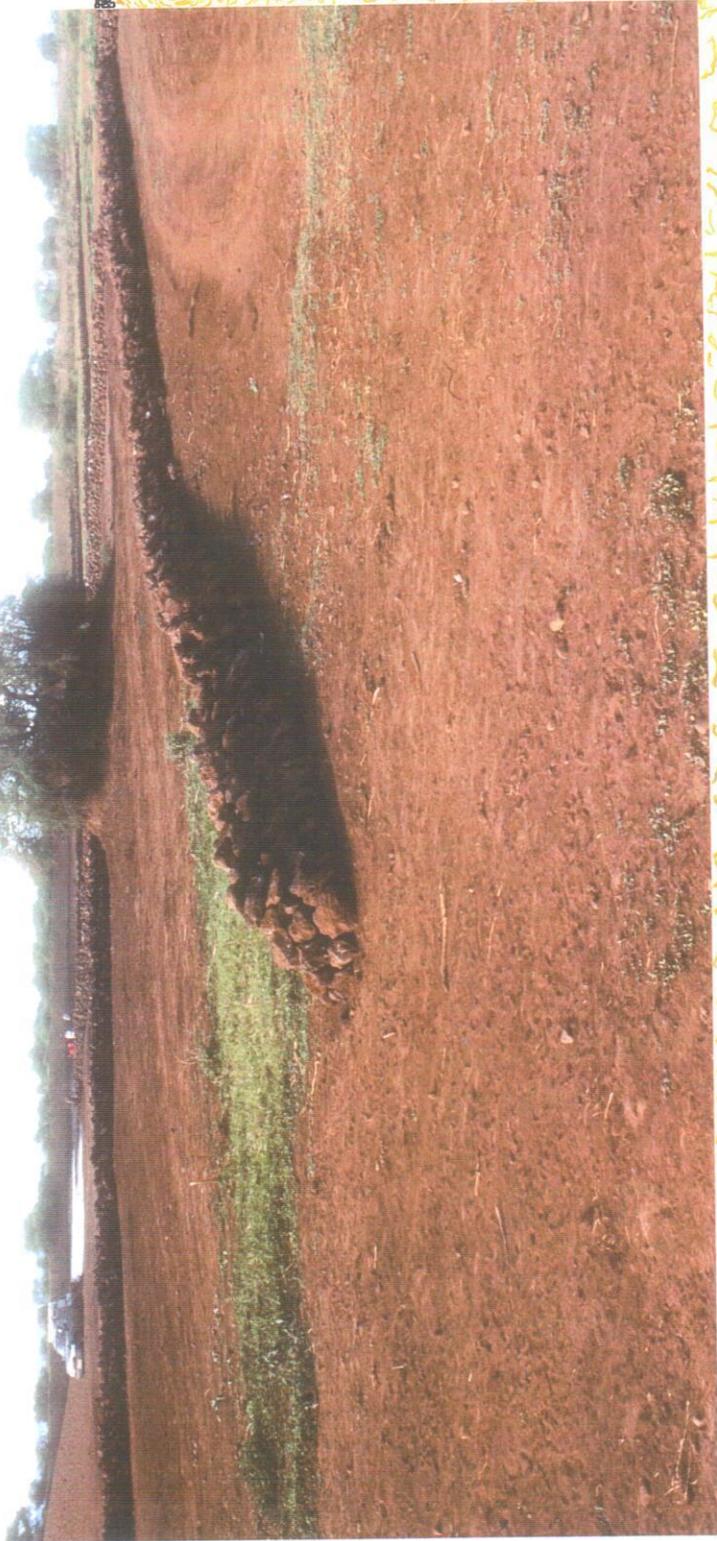
RUN OFF  
WATER

DISCHARGE  
FILTRATION WALL

INTAKE  
FILTRATION WALL

SILT LADEN  
RIVER WATER

SILTED RUN OFF  
RAIN WATER



WING EXTENDED RUN OFF RAIN  
WATER COLLECTION AREA



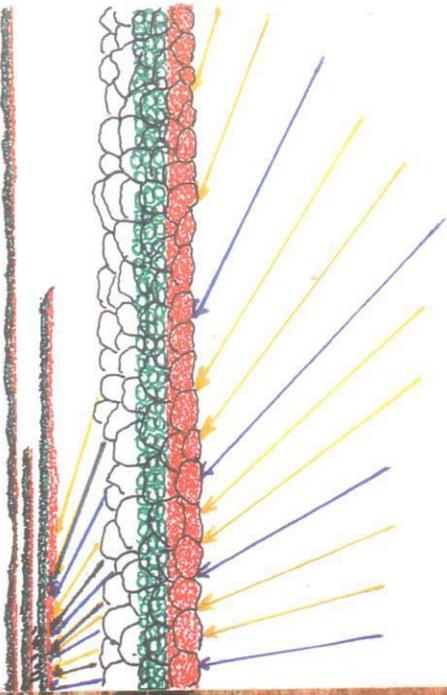
25 CM ROUGH STONE  
PERMEABLE WATER INTAKE



EROSION PROTECTIVE 25 CM  $\phi$   
ROUGH STONE SIDE WALL



TRENCH EXCAVATED  
SOIL DEPOSIT



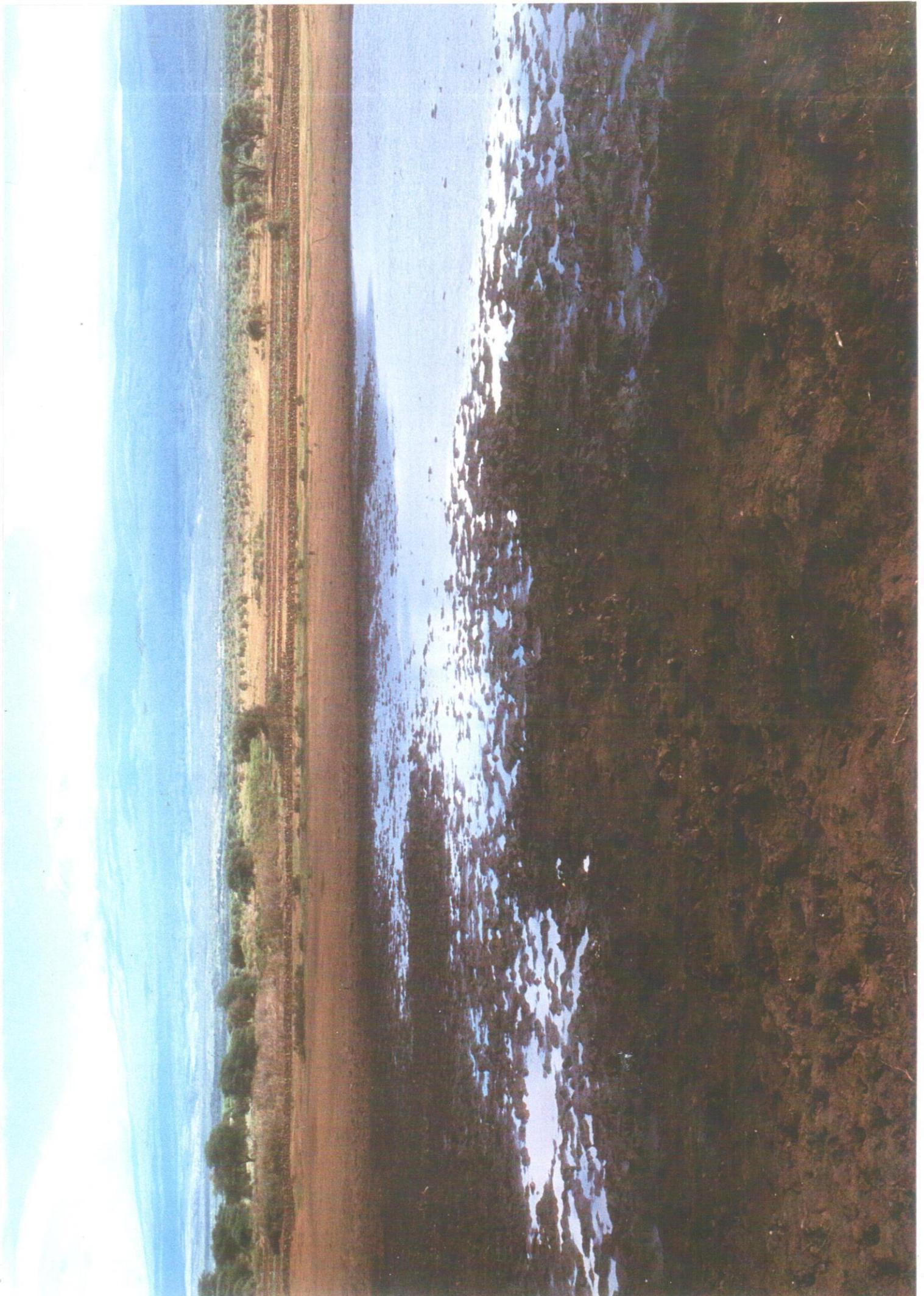
 SILTED RUN OFF  
 RAIN WATER  
 INTAKE STONE WALL  
 FILTRATION

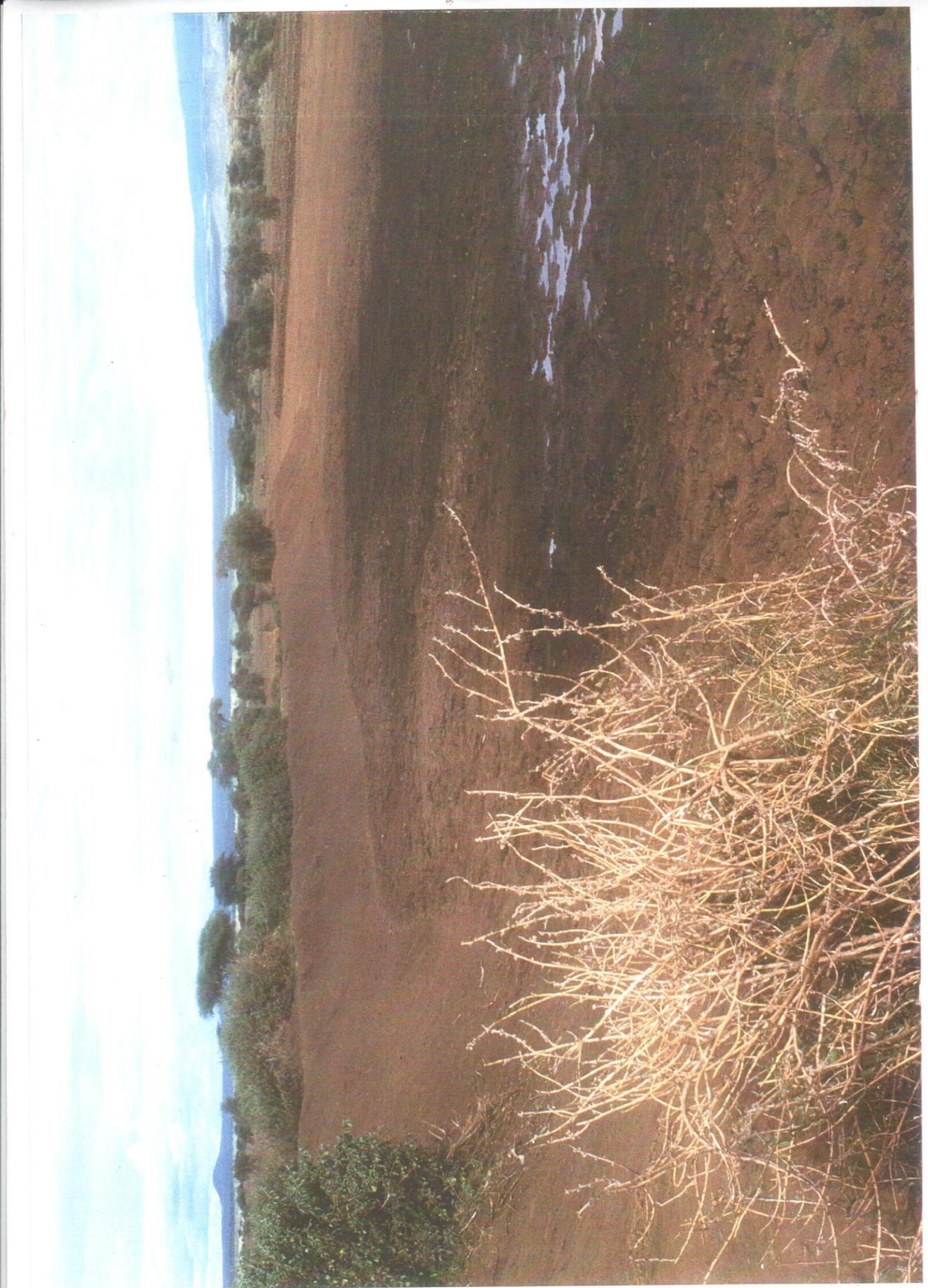
 FILTERED  
 WATER  
 INTERMEDIATE STONE WALL  
 FILTRATION AND WATER DISPERSAL

 WING EXTENDED RUN OFF RAIN  
 WATER COLLECTION AREA

 DISCHARGE STONE WALL  
 FILTRATION







The Amboseli region requires 900.000 cubic meters of consumable water per annum (Uniconsult (K) Ltd, 1983-2005) at a cost of USD 3.15 million, to deploy 126 water collection and filtration units, with an annual forest regulated evaporation of 360.000 cubic meters. Fifty units are required for the immediate environmental and economic stabilisation of the 12000 member Masai community, the reduction of their livestock circulation and to cater for occasional wildlife inter-action.

The majority of the 16 bore holes sunk in the periphery of the national park without the provision of sub-surface water recuperating dams, are derelict caused by maintenance and operational obstacles or will become in-operational due to a consequent depression in the water table.

The diesel generated pumps will have to be converted, facilitating donkey generated rotative transmission in simultaneous deployment of ground water table resuscitating, sub-surface dams.

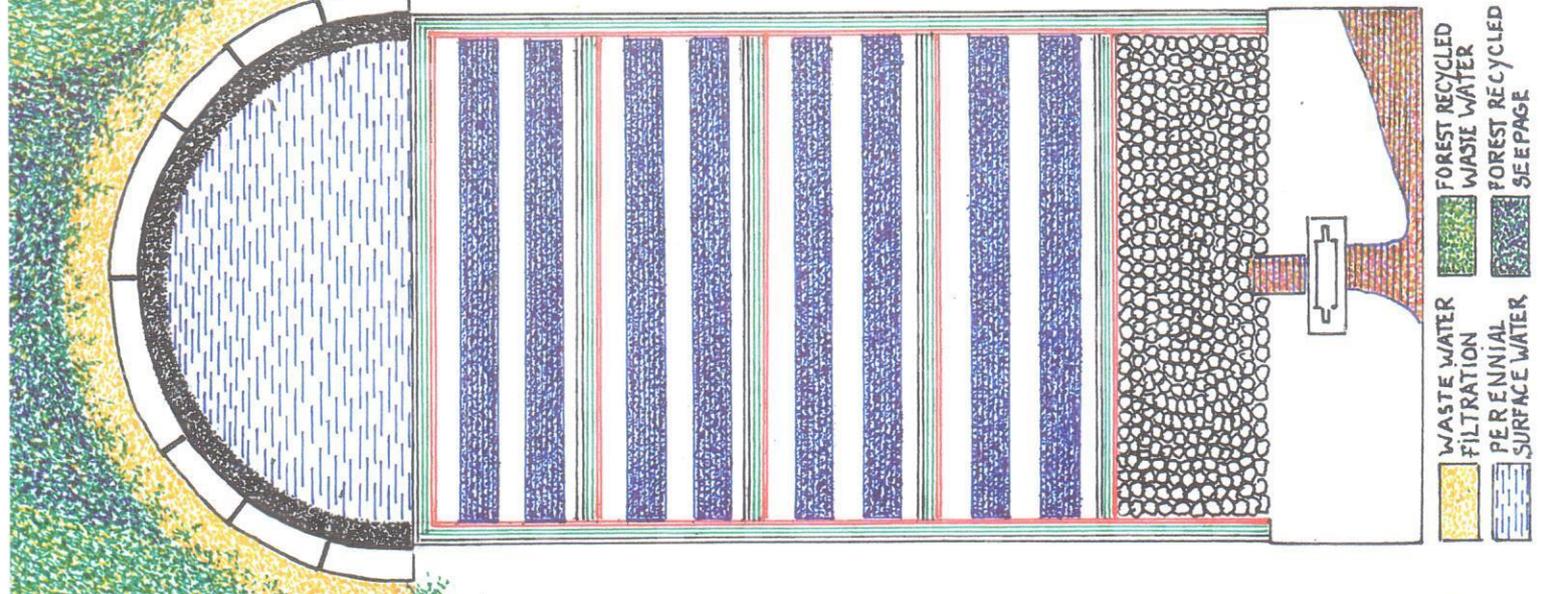
Subject to Amboseli's rising water table, one lodge has been inundated while the two adjacent ones will follow the same course and should therefore be re-allocated outside the park's depression to higher altitude.

The deployment of 725.000 cubic meters of surface water, including forest regulated evaporation and seepage of 40%, or 290.000 cubic meters per annum, generates consequent afforestation and grass improvement at lower altitudes.

Once a ring of water conservation and reforestation has been established in the higher altitude periphery of the national park, vascular afforestation towards the depression derived from gravity, will regulate ground water table fluctuations in consequent de-salination.

The substantial amount of consumable water required for amongst others, tourism; generated by the developments concerned, turns into an asset of biosphere rehabilitation, should discharge of purified waste water be re-cycled into additional surface water provision and afforestation.

Provision of Amboseli's consumable water demand of 900.000 cubic meters per annum, in deployment of 1.260.000 cubic meters, will generate an annual forest regulated evaporation and seepage of 360.000 cubic meters subject to further commercial propelled increase.



### Kilimanjaro-Amboseli: international cooperation in biosphere reconstruction

Saturation of the 1.26 million cubic meter water collection capacity in the Amboseli region, in a ten year time frame, will initially almost entirely depend on Kilimanjaro's pacified run off water. Torrential discharge, caused by deforestation of approximately 200sq.kms from the elevated Kitendeni-, Karashi-, Maarba-, Kamwanga and Naiperra river basins, will have to be brought under engineered control, through the systematic deployment of sub-surface dams.

An average of 154 sub-surface dams will revert the perennial status of the rivers concerned and will bring a water volume in excess of 1.5 million cubic meters into manual access for agriculture and afforestation.

A capital injection of USD 3.85 million for water conservation over a ten year period, in conjunction with a USD 3 million investment for reforestation, provides prime arable land with sufficient perennial surface water for additional triple agriculture at a cost price of USD 140 per acre.

Water conservation dictates a continued increase in water collection units with tree-, shrub and grass cover to prevent erosion, subject to rain season addition of in situ recycled evaporation from 960.000 cubic meters of the Kilimanjaro-Amboseli sector concerned.

The periphery of the seven kilometer wide wildlife corridor between Kilimanjaro and Amboseli National Parks is the optimum location for the region's bio-diversity nursery, incorporating altitude variety, for the supply in projected demand.

The current 760 USD average price per acre, suitable for rain dependent agriculture in conjunction with a single capital investment of USD 140 required for centennial, low maintenance water conservation and afforestation, permits rapid and extensive community implementation.

Sasol built 320 dams in Central Kitui, Kenya; the highest concentration of dams in the world, instigating a four fold decrease in the price of consumable water and a simultaneous thirty fold increment in dry season income within the first year of implementation.

With this income, hydrology sustaining agricultural diversity is purchased and irrigated into five year maturity, from poverty eradication into health and capital accumulation.



Saturation of Kilimanjaro's hydrosphere, reflected in the region's re-appearing perennial aquatic infrastructure, with increased river flow, swamp formation and lake accumulation, is in unprecedented bio-diversity re-generation and non-restricted evapotranspiration extension, subject to afforestation. Forest extension and hydrology sustaining quadruple agriculture development, preceded by water conservation and connected to saturated hydrosphere, is the accurate management tool to subject land mass into perennial precipitation.

The Indian Ocean and Lake Victoria are East Africa's major examples of local hydrosphere saturation disconnected by denuded intermediate land mass, in generation of eliminated perennial evapotranspiration.

Every rain season, the diminished land mass evaporation is rudimentary re-instated by vegetation cover rejuvenation, propelled through initially thermo dynamic driven and consequent torrential rainfall, generating unabating erosion and vegetation cover destruction. Every dry season, vegetation cover is forced to, annihilated evaporation for individual survival, terminating the land mass evapotranspiration capacity.

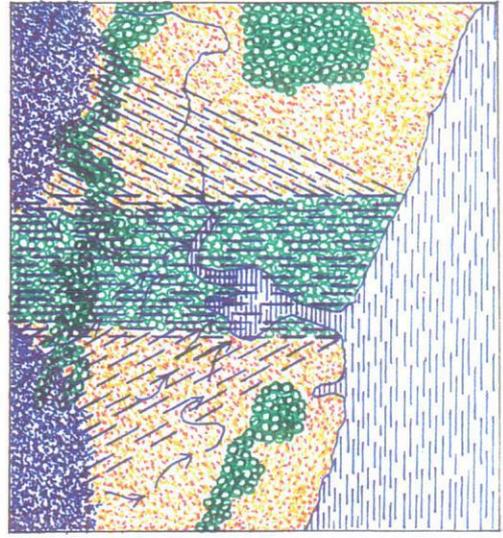
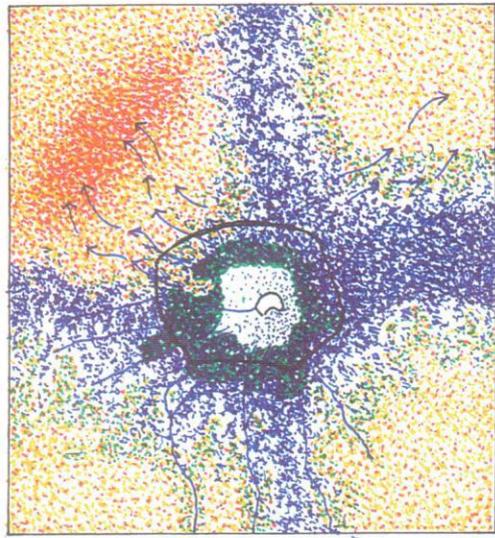
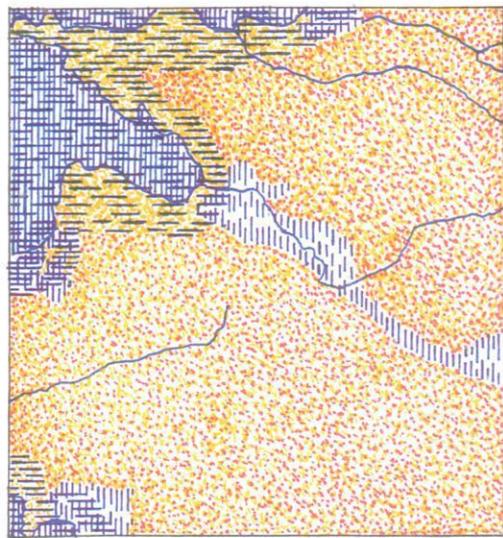
Sustained equatorial, bi-annual rainfall regime consequently ceases into desertification, relocating precipitation volumes to higher latitudes in generation of de-regulating flood cycle.

The relative ease and short routed, low cost-high revenue rehabilitation of evaporation capacities from coast and lake regions, facilitates rapid inland extension of evapotranspiration increment.

Local government in conjunction with (inter)national non-government organisations and the commercial sector, will have to be brought into cooperative comprehension through the deployment of universal pilot development with world wide application potential.

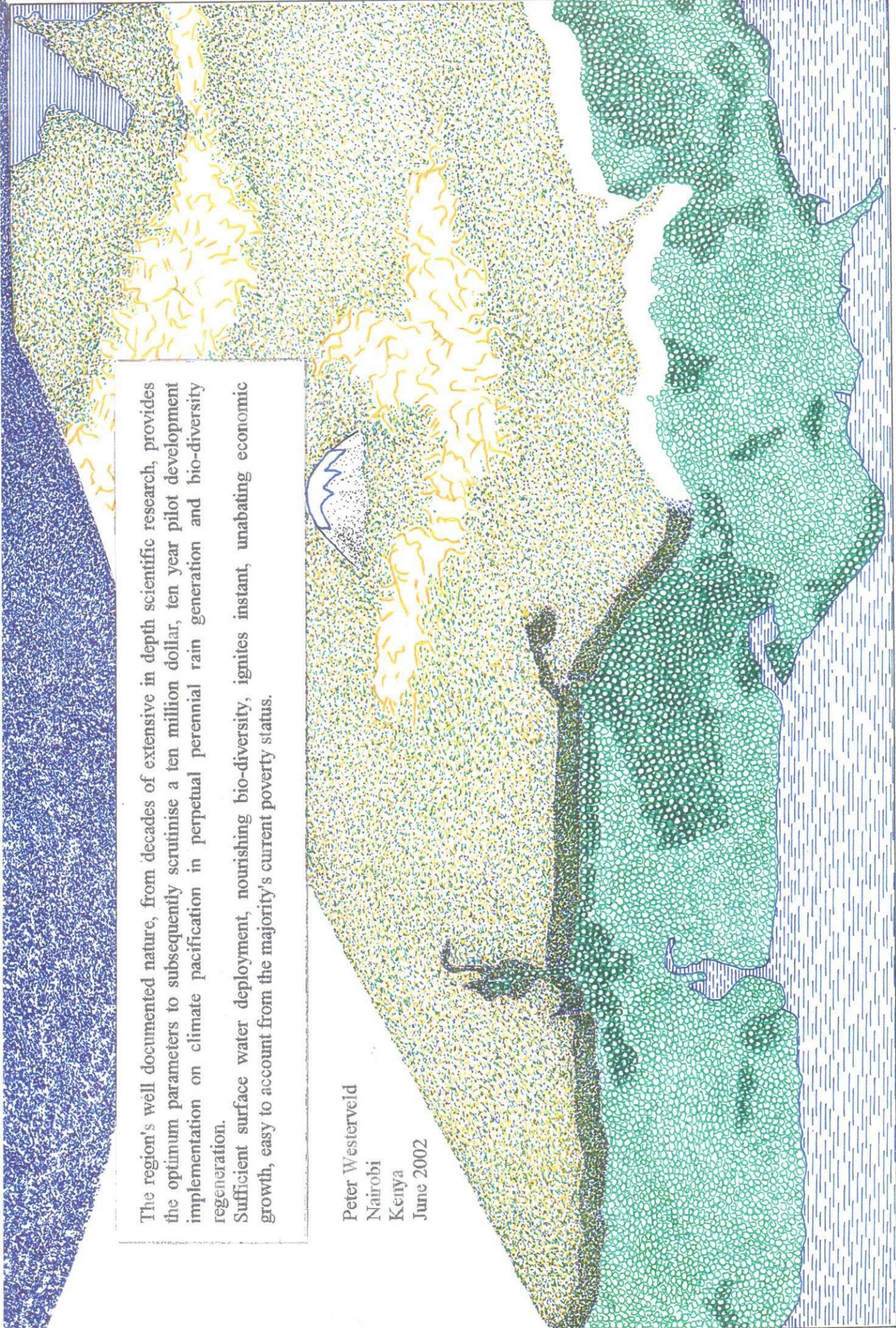
The Kilimanjaro-, Meru-, Ngorongoro and Loita landmass elevations, form the geographic land locked, rain generative pivot of the Indian Ocean- Lake Victoria hydrosphere re-connection, subject to encroaching adjacent desertification.

The Kilimanjaro-Amboseli ecosystem, in custody of equatorial bio-diversity from rain deficiency at 3755 feet to a receding glacier at 19340 feet, sustains extensive semi-nomadic cattle breeding, commercial and subsistence agriculture and wildlife tourism, bi-sected by an international boundary.



The region's well documented nature, from decades of extensive in depth scientific research, provides the optimum parameters to subsequently scrutinise a ten million dollar, ten year pilot development implementation on climate pacification in perpetual perennial rain generation and bio-diversity regeneration. Sufficient surface water deployment, nourishing bio-diversity, ignites instant, unabating economic growth, easy to account from the majority's current poverty status.

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 June 2002



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