# Biologic Design

## Wetland Ecosystem Treatment

**Integrated whole site reticulation systems for wastewater purification, resource production & habitat creation**

## Response to Draft V0 of the Report - Sustainable Forestry for Food Security and Nutrition

As a PhD student at The Centre for Agroecology, Water & Resilience (CAWR) and long-time practitioner in regenerative systems design, I was sent the link to the Draft V0 Report on Sustainable Forestry for Food Security and Nutrition by Michel Pimbert and hope that my returning these comments one day later than was required will not preclude there inclusion in the next draft of the report.

Although there are sections in the report on Natural Forests, Managed Forests, Agroforestry and Plantations (of which the latter are usually single-species), I did not read anything on the harvesting or **conscious management of water within any of these forestry systems**, nor were **constructed, multi-species, ecologically managed forest ecosystems** mentioned.

It has been my 'practice', through my design consultancy, Biologic Design, to create functional, constructed, tree and wetland ecosystems with the express aim of delivering ecosystem services: water purification, resource production (fuel, food and fibre) and habitat /biodiversity enhancement.

As well as the above specific 'bioengineering' functions, these constructed natural ecosystems also carry out the other energy transactions of all trees viz. Oxygen production and Carbon Dioxide sequestration, dust precipitation, temperature amelioration and cloud/rain-making.

**Central role of water in life processes**

Bearing in mind that water is the basis of all our primary production, no matter what the form it takes, I believe an additional strand could be usefully integrated into the next version of the Sustainable Forestry for Food Security and Nutrition document.

**Agroforestry for degraded landscape regeneration**
It would be of great practical benefit to create an additional category of Forestry, this being "**Agroforestry for degraded landscape regeneration"** as this would help to focus our efforts at the rehabilitation of the worlds ever increasing 'stockpile' of degraded and desertified land.

This category would comprise ***Constructed Multi-species Agroforestry Systems, with Integrated Rainwater/water Harvesting***, it lies somewhere between 'Agroforestry' and 'Plantation Forestry' and focusses on regenerating degraded, unproductive, desertified landscapes by using good water husbandry and soil creation - providing a varied and abundant yield.

**Case Studies - Biologic Design Systems**
The landscapes so created within this new category might come to look something like that which Biologic Design has created on a small scale with the WET System at **Brookside Farm in Warwickshire,** where we have a beautiful, productive and resilient multi-species, soil-based, sewage treatment wetland integrated with an orchard/food forest - which also harvests rainwater runoff from the barn roofs.

On a larger scale at **The Crossing in Sussex** where an established smallholding has integrated a whole site water reticulation system within a CSA/Regenerative Agriculture smallholding business. Enhancing soil creation and maximising the potential yield by the conscious, planned, movement of water through the whole site.

Or, on a broadscale level, the landscape created within and around the 250 hectare **Tamera Community in Portugal** by its water retention landscape team. Here simple and very effective water retention earthworks (inspired by the work of Sepp Holzer) were put in place around 8 years ago and these have completely reversed the soil degradation and loss due to the wholesale introduction, to this area of southern Portugal, of Northern European plough agriculture.

**Repairing degraded landscapes**
Clearing the land of trees and the instigation of broadscale annual plough agriculture is an incompatible agricultural practice in this area and in the climate of Southern Portugal and since the early 1970's it has had disastrous effects on the soil of this *brittle environment*.

Here the topsoils and top layer of subsoil have become desiccated and either blown away in the wind or washed away in the intense seasonal rainfall.

**Wells and Springs - and Streams**
Another consequence of clearing the land here has been the drastic dropping of the water table, with springs and ponds drying up; now, with these tree planted earthworks in place the groundwater in Tamera is rapidly returning to 'pre-plough' levels and even during drought periods the streams continue to flow and the lake and pools do not dry up.

Within the proposed new category of ***Agroforestry for the Regeneration of Degraded Landscapes*** we are not looking at simple monoculture plantation forestry, but a designed 'water retentive landscape' planted with a mosaic of mixed woodland tree species, fruit and nut trees, medicinals and forage trees for livestock - as well as management for fuelwood, building poles and timber.

Integrated within this constructed, recombinant ecology, and at its very roots are the water retentive earthworks and techniques which enable the seasonal rains, when they arrive, to be harvested and stored in the soil (as recharged aquifers) and also in wetlands and ponds. Allowing this store of water to become useful during the dry season or drought and also preventing excessive runoff and downstream flooding in the wet season.

Within this consciously designed agroforestry/silvopastoral system would be glades and 'avenues' of pasture for the benefit of livestock - which also feed and self-medicate from the planted tree species.

This diverse ecology, with the correct management in place, leads to a strong, mixed economy, food security as well as the amelioration of the extreme weather conditions - caused in part by the landscape heating effects of broad scale deforestation.

**Social Order**
Within these regenerated landscapes the communities of people who are ecologically managing this regeneration process have the chance to recognise and then coalesce into a 'Bioregion'.

This proposal follows the Permaculture principle of observing nature in a thoughtful and protracted manner so that we can learn from the evolutionary intelligence which has evolved within natural ecosystems when we design our own primary production systems.

It also acknowledges the Permaculture ethos of leaving all the planet's remaining virgin forests and unspoilt ecosystems intact as 'models' of climax ecosystems for us, and future generations yet unborn, to learn from as we design our verdant and productive 'recombinant forest ecologies' which will be needed to feed, house, clothe and inspire us in the not too distant future…

I hope you will feel able to pass this proposal on to the authors of the report and that it will be of use.

With very best wishes,

Jay

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