

Produce no waste

Nature recycles.

Dustmen were collecting coal ash, a toxic pollutant.

Food waste makes your bin smelly (so do nappies and sanitary wear).

Powys pioneered In Vessel Composting (IVC); it's now taken from Powys to Oxford!

In Uganda, there's a conflict between settlers and locals, settlers want to clear the land, while locals want the trees for firewood. Solution: coppicing. Mud brick houses don't require firing, and decay to nought. Maintenance is by a regular mud coat, every few weeks.

Water – it costs US\$100,000 to build a well 90 m deep. But it's easy to clean up grey water, and avoid flushing loos. They're definitely not needed in low density settlements.

They'll be trained in SRC (short rotation coppice). Especially retain acacia – it's nitrogen fixing. Keep cattle and goats away, but you can feed branches to goats. Vegetables there need 50% shade. Coppicing is new to E Africans.

A lot of hydro is planned and being developed for the Nile. The Aswan Dam is a disaster, it's silting up.

The Biospheric Project in Salford, started by Vincent Walsh for a PhD project, was trying to harness the local waste stream, in a former Victorian print works. The plot of land in front is contaminated with coal ash, could it have been bioremediated? It was planted up on one side with raised beds, 2' high. The other side had a layer of dead wood and sand to help stop heavy metal migration. Long mounds of woodchips were set up with stumps impregnated with shiitake (contains all the essential amino acids; great for Chorlton, not for Salford) and fruit trees inbetween – the leaves were tested for heavy metals. In this way a comparison could be made between raised bed and forest garden.

In the nearby tower block, over 50% of the occupants live without cookers. Microwaves yes.

People's food waste is accepted into wormeries. They need 25:1 C:N. Upon sorting, surplus worms were fed to the aquaponic fish.

There are 3 types of saprophytes. Primary (eg oyster mushrooms) are easy to cultivate.

Secondary saprophytes feed on the result, and dead primaries; they're fussy. Tertiary saprophytes are well nigh impossible to cultivate.

By growing oyster mushrooms on a mixture of substrates and removing one at a time, he's trained them to grow in something as improbable as gear box oil.

<http://www.fungi.com/blog/items/the-petroleum-problem.html>

On the roof were polytunnels, beehives and hens.

The hydroponic fish produced poo, so the water was circulated via plant roots on the roof, which took up the nitrogen and cleaned the water.

Some plants were even taking condensate from the windows, dripping into their pocket-shaped pots.

Water top-up came from rainwater, via a biofilter.

There were some vegetarian fish too, Tilapia need high temperatures.

78 Steps was a wholefood store, set up to sell the produce. It was named after the distance to walk to it and back from Biospheric.

Inputs: wood, woodchip, food waste, rainwater, volunteer time.

Outputs: food, education.

Biospheric is bust <http://www.salfordstar.com/article.asp?id=3040>

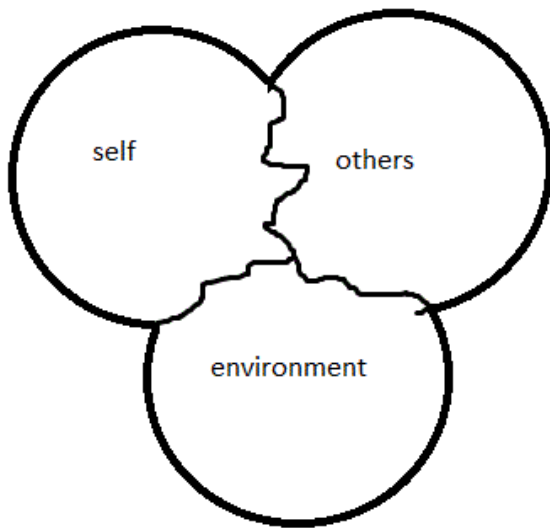
Vincent said making the shop work was the hardest bit.

Steve's started a similar thing in Newtown. Its funding died in 2015, but it's still going thanks to volunteers.

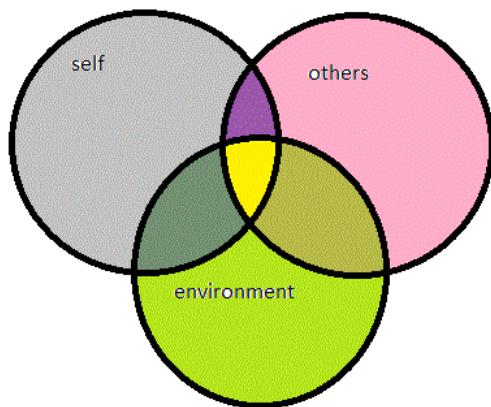
SUMA offers free delivery for orders over £250 in our area.

<http://www.suma.coop/order/delivery-information/>

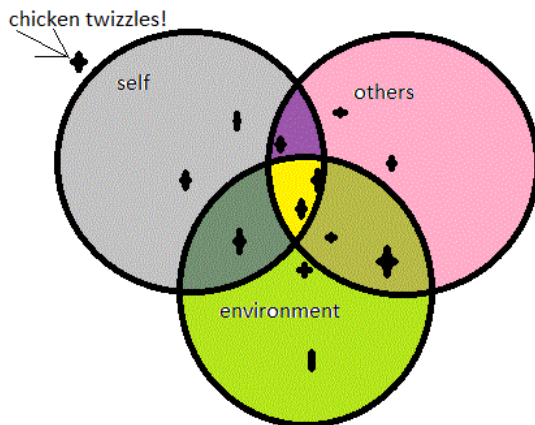
Imagine a shopping basket. Give each person an item to think about, then to put it into a continuum, a line, with the other contents. Different people will work on different criteria. The Green movement can be over sanctimonious! We can't blame people for their choices.



Our choices and actions have impacts on others and on the environment.

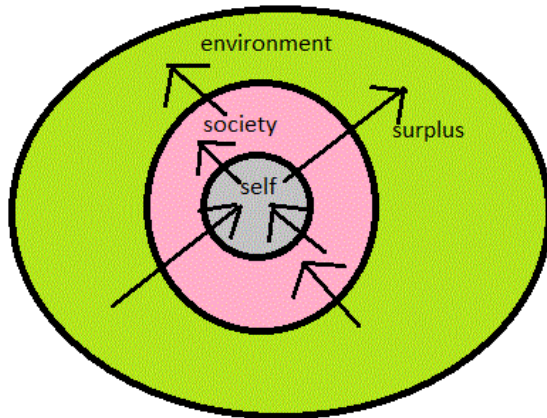


Our actions and choices should not just benefit ourselves. They should benefit others (PEOPLECARE), environment (EARTHCARE), and ourself (FAIRSHARE). The yellow marks Permaculture.



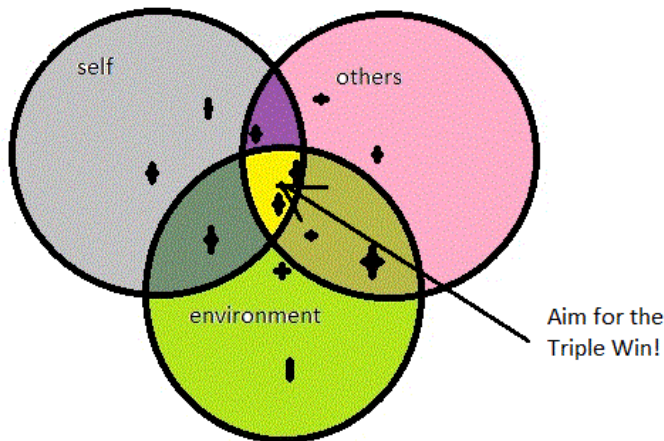
Our actions and choices should try and focus on getting near the permaculture mark. Where precisely it is is subjective!

Permaculture's about intent, changes and ethics. Our first criteria is to meet our own needs (self), without which we can't help others. You can't work on an empty stomach. There's a difference between needs and wants, but it's subtle and personal. At some point, we've enough strategies where we can meet our own needs, and help others. For a regenerative economy, we have to meet our own needs while retaining surplus for investment. Taking a fair share allows you to give to others.



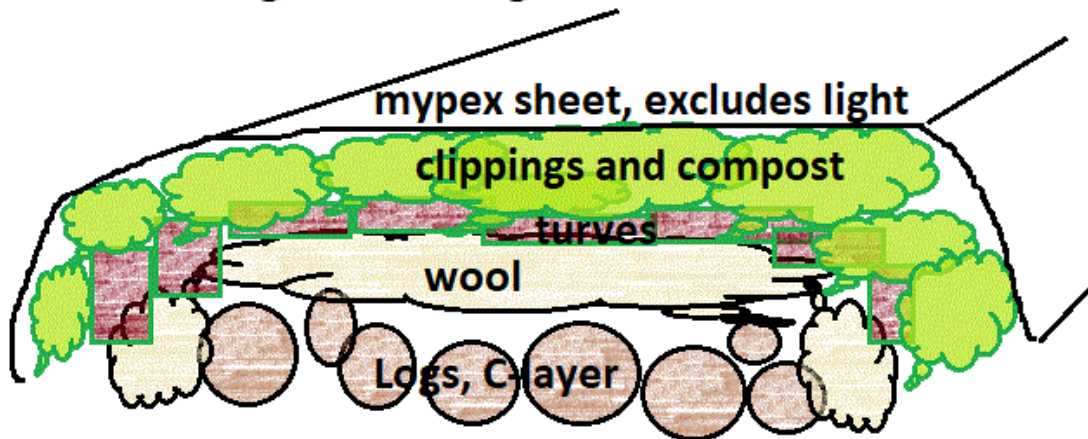
For refugees, meet immediate, medium and long term goals. In Africa, avocados may take 2 years to fruit, and mangoes will produce a ton a year at 40 years old. Just because they take a while to fruit doesn't mean you shouldn't plant them – who set off the crop you're eating?

Sat 24th March, fundraising gig in Llanrhaeadre



Hugelkultur beds at Pen Dinas, Cwm Harry, are inspired by Sepp Holzer, self-taught permaculturist. Cwm Harry make food waste compost. It's been sustained by volunteers since 2015.

Hugelkultur Ridge



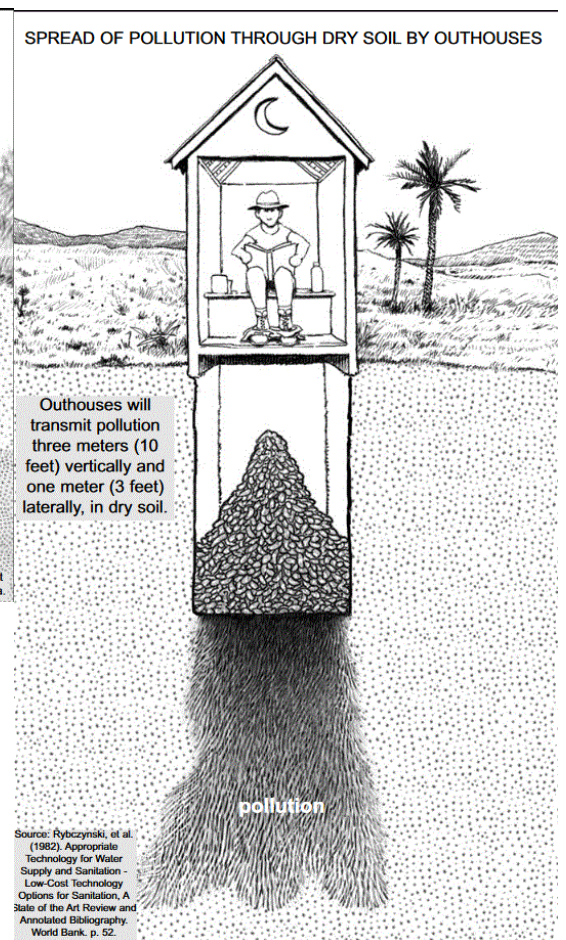
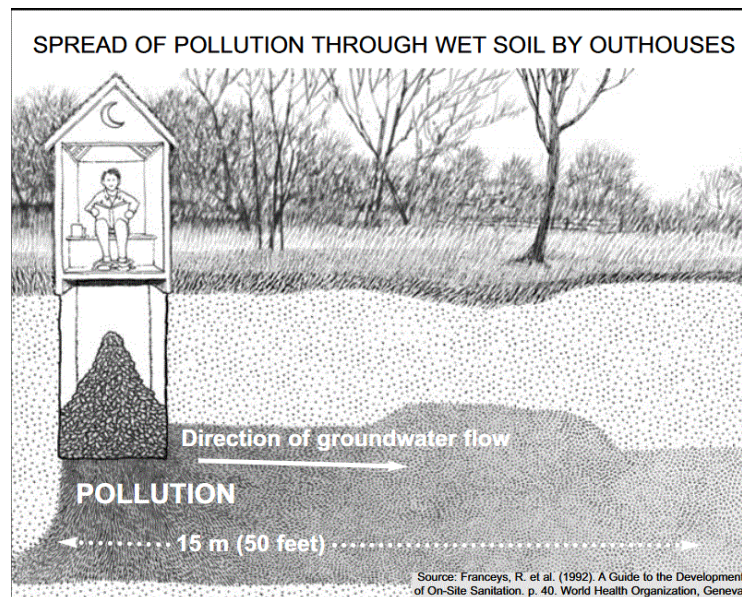
The beds are built along the contour (find the contours using an A-frame). The general construction is twigs and poplar poles, dead and rotting, untreated. Then rotten wool, turves (with lots of couch), grass cuttings (on their own can get smelly). The initial aim is for a 25:1 C:N ratio, which will go to 10:1 in the finished compost. It's covered with light excluding mypex. Height is knee-high.

Having made the ridges in the autumn, come spring and solitary bees, voles and slow worms moved in. Sue Stickland, author of Backyard Seed Saving, is a volunteer.

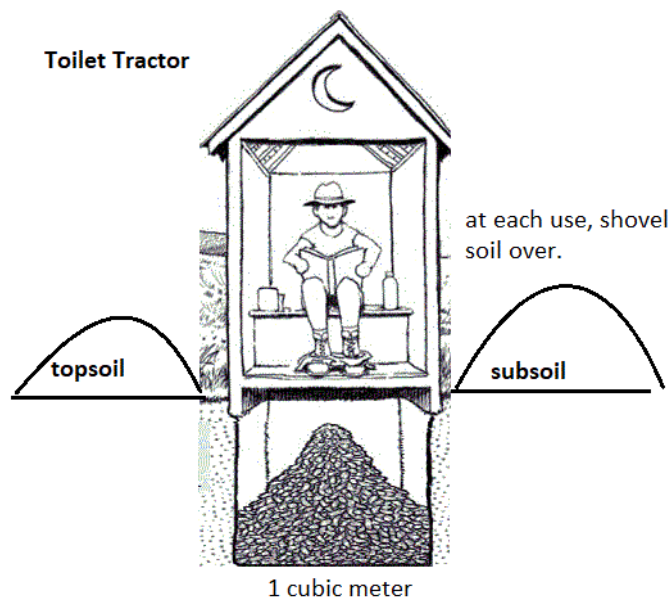
Mypex is only used for the first year to stifle weeds. They cut holes for plug plants, and only watered on planting; more wasn't needed, and they still had rampant gourds.

Composting Toilets Notes

Great reference – Joseph Jenkins, The Humanure Handbook,
<http://humanurehandbook.com/contents.html>



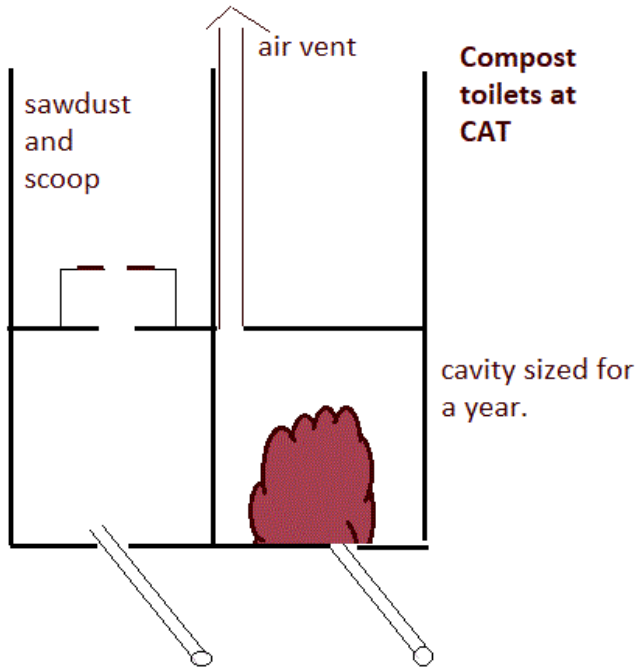
Mixing urine and faeces produces ammonia. It's easy to split the urine off.



When 2/3 full, close up with topsoil and move on.
 After a year, either dig up or plant a tree on.

http://info.cat.org.uk/sites/default/files/documents/CompostingToiletDesign_4page.pdf
<http://info.cat.org.uk/sites/default/files/documents/SewageTreatmentAndCompostToilets.pdf>
 from <http://info.cat.org.uk/water-and-sewage/>

See the Humanure Handbook,
 chap 5: a day in the life of a turd.
 CAT resources:



After a year, the mound will have reduced by half, look like compost and be pathogen free.

Short of somewhere to put the sawdust after a conversion, flush to compost? Put the sawdust in the cistern.

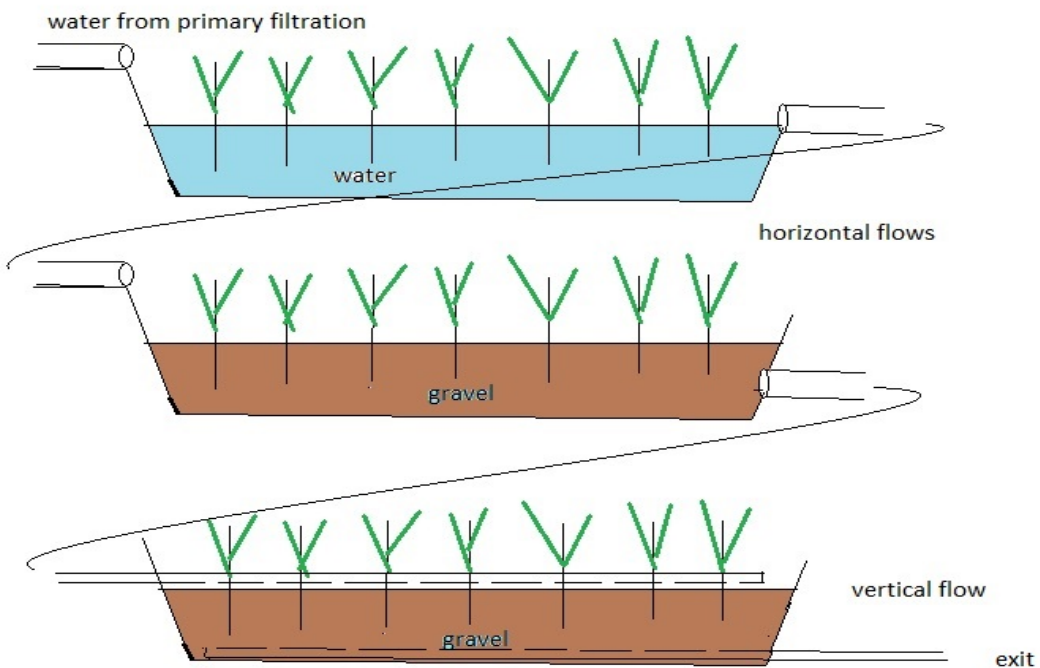
70C for 48 hours kills Salmonella.

Dig the compost out, cover with straw and leave for a year for safety.

Cae Mabon's toilet has a great view!

At the Sunrise Festival they used wheelie bins.

A septic tank ferments, producing sludge, scum and overflowing water and dissolved nutrients, which need to be disposed of safely. It'll go to ground. So small scale is better than large, you're able to distribute it over a larger area. Or dump it in a reed bed, a 3-stage reed bed:



Reeds absorb air and transfer it to the roots. Reeds can be cut and composted.

The reedbed system and how it works (from Sheepdrove):

As the water flows through the different stages of the reedbed system the nutrients contained in the waste are converted by microbes and consumed by plants. This process means that pollutants and any harmful bacteria are reduced to safe levels.

The first reedbed is a very active ecosystem. It destroys bad bacteria and also converts ammonia into nitrate which is a much safer compound that plants and algae can use.

Moving downstream, as the water arrives at the settling pond, naturally occurring bacteria take up the nitrates and release harmless nitrogen into the air, reducing the pollution in the water.

Air mixes with the water as it splashes around the aerating flowforms and enters a stream. The water flows down stream to the second reedbed and then a wildlife pond. Here, a long standing time kills off germs.

The wildlife pond finally flows into our beautiful lake. Carp, waterfowl and pondlife thrive in the tranquil clean and clear water - it actually meets European bathing standards! The water that overflows into the willow bed is released here and seeps down into the chalk.

From <http://www.sheepdrove.com/our-farm/environment/>

They're in Hungerford, Berks.

Jean Pain was a forester. He conceived the idea of mounding his brash such that it would compost, with a hose pipe through it to gather heat and move it to his house.

<https://permaculturenews.org/2011/12/15/the-jean-pain-way/>

http://journeytoforever.org/biofuel_library/methane_pain.html

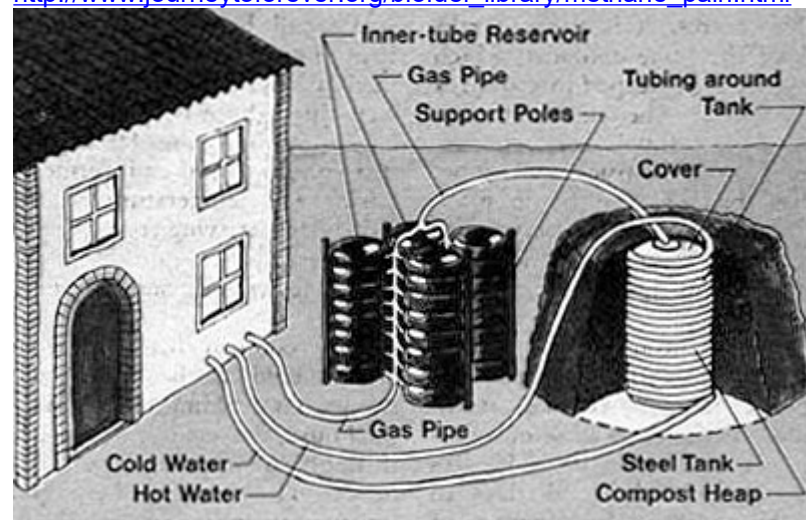
Mother Earth News tried it - <https://www.motheearthnews.com/organic-gardening/jean-pain-zmaz80mazraw> - with an update - <https://www.motheearthnews.com/diy/compost-heater-zmaz80sozraw>

Further updates: <https://www.motheearthnews.com/renewable-energy/compost-water-heater-zmaz81jazraw>

And in 2017, using it to heat a shower - <https://www.motheearthnews.com/homesteading-and-livestock/compost-hot-water-zbcz1707>

Readers' Digest article, 1981:

http://www.journeytoforever.org/biofuel_library/methane_pain.html



The Reedbed System & How It Works

Our reedbed purification system treats all the waste water from the farm, chicken processing, the cottages and Eco Conference Centre. Using only natural processes to convert this waste water into clean water, the system needs no chemicals or power supply. Instead it relies entirely upon gravity to create a flow of water through a series of different ecological habitats, which also support enormous biodiversity.

