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Summary

The world faces two key shortages-sustainable food and sustainable energy. This can be reduced to a shortage of fresh water and an inability to utilise the power of the sun to keep climate change in check. This proposal describes simple technology already available to us, using PVC pipes to address both issues together, an idea that can be repeated at any scale borrowing nature's own solutions.

Essay

Looking at the fundamental problems of food shortages and energy generation, things can all be boiled down to a lack of water. We have plenty of salt water, even far from the coast in places like the Murray Darling Basin, Australia which has plenty of saline water (www.mdbc.gov.au/salinity/land_and_water_salinity) but yet not enough fresh water to enable crops to grow in many parts of the world.

One of the impacts of climate change now being noticed is that the water resources are becoming more unreliable. For example; even this week the news reported heavy rain hit drought stricken parts of Nigeria, but this will do little good as what is necessary is rainfall spread over a long period of time. However, irrigation schemes are costly and often use up a lot of energy as water is heavy stuff to pump.

So, how about borrowing some ideas from nature? On Ray Mears Extreme Survival (series three BBC) programmes he visited the skeleton coast of Namibia, West Africa. Virtually nothing can grow in this desert which receives practically no rainfall. However, near the coast sea mists provide enough moisture for some plants to grow. Therefore borrowing this idea how about using the same principle but directing this moisture through a PVC pipe inland to the fields.

In practice this is how it would work:

- At the coast, sea water would be collected by wave/tidal action into a series of large black PVC pipes. These would lead into smaller pipes leading away from the coast uphill to the growing areas.
- Just like a hosepipe left out in the hot summer sun, it quickly heats up the water. The black PVC pipes would act as very effective solar collectors continually evaporating the moisture from the surface of the sea water trapped in the pipe.
- Non return valves made from PVC would ensure that this water vapour would only flow in one direction and that pools of water would collect at these points at night.
- The energy stored in the water vapour would drive it through the pipes uphill and inland.
- Burying the pipes in the cool earth around the roots of the crops condenses the water vapour producing the source of fresh water for trickle irrigation.

This water can be used for irrigation, as a potable (i.e. suitable for drinking water) water supply, as a power source e.g. steam turbines to generate electricity. An

important feature of the system is that the salt is left behind in the pipes and can be collected as a useful and saleable commodity, a constituent part of PVC. Because of the large surface area of the solar collector created by the pipes, this system has the potential to create large amounts of fresh water and energy from a constantly available resource that is the sea.

The twin challenges of feeding an ever expanding world population and tackling climate change with sustainable carbon neutral technology will have to be met in the third world, if we are not going to repeat our wasteful ways in the future. This will call for low tech, cheap solutions such as the one described above.