

A Parallel Economy Using Metered Alternative Energy as The Basis of a Currency for Sustainability, Emergency and Carbon Neutrality

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Abstract

Monetization of alternative energy is proposed as a way of achieving carbon neutrality and sustainability. The local power station or microgrid issues kWhr credits based on electrical input from alternative energy. These “alternative energy currency units” are used as the basis of a parallel economy that recycles all waste. Different companies focus on the varied components of the sorted waste stream to form a sustainable, “neomedieval”, community.

Comet (2016, 2017) proposed the monetization of alternative energy derived from solar, wind and waste to energy devices [1, 2]. A credit card system would provide information of energy inputs and outputs from each homeowner or business. The credits or debits would be relayed to the local power station that would act as both as an energy store and a money bank. This system would be carbon neutral. It is proposed here that this simple economic model be integrated into a system of municipal planning such that the supply lines for food, fertilizer, water, manufactured goods and services are derived from the processing of municipal, rural and industrial waste and exist in parallel with the existing economic system, but this “recycling economy” uses a currency based on alternative energy of KiloWatt hours (kWh).

Electricity then become the basis of a local parallel currency, whereas the dollar remains as the currency of account, particularly for the purchase of imports. Money involves the concepts of a medium of exchange, items of value and “permanence” such as precious metals, debt, a depository or bank. In the case of an electric currency the depository might be the local power station. If the influx of energy is from solar panels and waste to energy devices, then those households with surplus energy may have energy tokens in credit. Withdrawing energy from the grid and power station will yield a debt and electrical bill. The grid and or power station then acts as a bank. The surplus energy can then be sold to local businesses/manufacturing. Hence all transactions can be denominated in kWhrs.

The question of whether an electrical currency should supplant the existing paper fiat currency cannot be answered yet, but the concept of slowly changing the informal specie of the dollar from fossil fuels to alternative energy could be useful in a discussion

as to whether to reform the dollar or introduce a new, additional, alternative energy currency. Underlying the present discussion is the economic assumption that money is presently created by the government printing of collateralized, performing loans, regulated by the local banking system, & derived from the setting up or expansion of new businesses, mortgages etc. If some of this money is used to purchase energy from a local power station using alternative energy, then a community may have achieved the first steps to both sustainability & carbon neutrality. The bank & power company will determine how much circulating currency can actually be backed by electrical energy or stored as “latent energy” (banked non - circulating dollars).

Discarded but sorted metals and plastics from local manufacturing & domestic waste can be melted and converted back into useful articles by possibly using a 3D printer. Encouragement for individuals to sort waste can be taken by the local municipalities by instituting pay - as - you - throw (PAYT) schemes. It may also be possible to use the electrical currency to act as specie for largely unsupported fiat currency and provide resilience against economic shocks.

Municipal Structure

The ideas of civic planning probably go back to the origins of civilization. Cities go back far into pre-history and are linked to the rise of agriculture. Jericho is one such example but there are many others. Initially a “medieval system is envisaged in which an urban municipal nucleus is twinned with a rural municipality. Here food grown in the rural districts is exchanged for manufactured articles in the town. Waste was used as fuel, fertilizer & in humble construction. In most modern societies little waste is recycled. Municipal systems, that encourage local small industries, are now

required that would act similarly to the detritivores & decomposers of the forest floor, a parallel economic system acting in tandem to the existing one in which local manufacturing would use the waste stream as primary feedstock. Sorted waste sorted from small towns may be sent to larger towns for energy extraction and / or melting and reconstitution of plastic and metal articles, possibly using a 3D printer.

Here I would like to introduce biological examples of sustainable systems, particularly those that involve combination autotrophy and heterotrophy. Many organisms are commensal, containing both algal cells and “animal” cells in a symbiotic relationship. In the case of lichens, the heterotroph is a fungus. On the coral reef, many corals, clams, even protozoa and jelly fish can contain symbiotic algal cells. The heterotroph uses the sugars and starches made by the algae, the algae will benefit from the animal waste containing phosphates and nitrates. On the grandest scales the whole coral reef ecosystem essentially functions as a combined autotrophic/heterotrophic organism with complex, intricate structure depending on water depth and light penetration. On land the rainforest also can be considered as a sustainable whole, as can any ecosystem.

To return to the idea of civil planning, it was probably the Etruscans and Romans that introduced advanced sewerage systems. However, most of this ended up in the local river. Sewage is also now little used in agriculture due to problems with pathogens, heavy metals & pharmaceutical metabolites. The useful N, P & K are lost. Pre-modern China however did use the “night soil” collected by the community and sold to farmers. This system was indefinitely sustainable. However modern urban sewage is contaminated with industrial heavy metals and is unsuitable for agricultural purposes. It can however be anaerobically fermented to methane, while the residue, if combined with yard waste and aerobically fermented can be used as compost or charred to carbon-negative biochar. During the whole premodern era urban and rural communities were interdependent and lived in relatively close proximity to one another. Transportation and haulage of goods & produce was expensive and slow. Artisans in the city manufactured goods that the farmers could use. Professional services and wealth, such as medicine, legal financial and educational were available in the towns whereas food was produced in the nearby poorer, rural, areas. The juxtaposition of autotrophic and heterotrophic processes in a single symbiotic protist, cell or colonial coral is duplicated at the largest scales on the coral reef. Sequestered sunlight in the form of sugars and other carbohydrates from autotrophs sustains large numbers of decomposers & other heterotrophs. Essentially the closer autotrophy is to heterotrophy the less energy is wasted in securing food. Hence “municipal symbiosis” might be attempted that links urban and rural areas. It is absurd to ship food halfway round the planet where non-luxury staples can be grown nearer home.

A local alternative energy-based currency, as opposed to the present, global, petroleum - based currency might stimulate local manufacturing and agriculture that use the waste stream as its

primary resource. Nevertheless, whether in the Middle Ages, or the present, an international currency is still needed for luxury items. These were the gold ducats and silver pence of the Middle Ages, the dollar of today. By balancing local food production with consumption using alternative energy, sustainable, carbon neutral, municipalities can be created. This document does not attempt to denigrate the dollars that are vital in long range trade and as currencies of account. But a local currency raises the idea of “localism” in which complementary urban & rural municipalities are largely interdependent on one another, rather than the present scenario of only long range trade creating wealth.

Simple inventories of goods sold in the local city, or town will give a fairly accurate ideas of the dimension of the resource base presently going to the land fill. Instead of throwing away waste, an unused resource base, we can use it to support entire communities by segregating, sorting & “remanufacturing” from it. For instance, phosphates, recovered at the wastewater works can be used in agriculture, if freed of heavy metals, to be sold to local farmers; similarly bones from food waste. The idea is to create autonomous regions that uses only their own resources.

These ideas also may be used in converting a refugee camp into a self-sustaining community or establishing a lunar base. It may be argued that imported fertilizer will always be cheaper than bone & sewage derived phosphate. I would argue that though the imported fertilizer maybe cheaper, the money used to pay for waste - derived phosphate will stay in the waste - generating community. The real value of bone fertilizer would be in the elimination of “nuisance costs” from landfilling, methane generation etc. as well as the “exported” environmental costs from mining the phosphate. The municipalities “macroeconomic costs” would be reduced if someone takes food - waste bones & sewage sludge, isolates the phosphate & then sells that locally as clean fertilizer, thereby creating a local parallel economy in fertilizer. The municipality might hire a phosphate recovery outfit, or if none exists, set up a company that would perform this service.

Conclusions

The creation of an alternative energy currency, that is applied to reconstructing waste into useful materials, will have certain implications for trade. Hence for a given commodity, transportation over shorter distances will result in lower prices. Hence if the price is based on alternative energy alone, a nucleus of manufacturing could be created, that serves an entire impoverished community, & would be more economical than transporting essential goods from afar. Construction materials based on remelted metals, remolded plastics, glass, combusted plaster board etc., would make useful building materials. A whole range of interdependent goods and services could arise by one industry using another industries material waste streams and/or wasted energy. Cleaned phosphates and nitrates derived from the sewage and waste food streams could be delivered to local agriculture. Ash from combusted plant material could supply potash. Imports of low tech. items would be diminished by local 3D printing and the “balance of payments” would improve.

In a single eukaryotic cell the organelles have a definite arrangement that allows for convenient interdependency. This organization of a cell has some parallel to the medieval parish, where almost all materials were local and were used (as far as possible). Trade would continue to be in commodities not available locally, hence the relative value of cabbages, wheat, rye, rice and pepper corns would still depend on locality and distance to market. Imports would also continue, If alternatives could not be locally obtained in high enough quality such as porcelain and other luxury goods or even in sea salt, an essential nutritional item. For energy, the medieval state used brush wood or dried dung and charcoal. Insulation was by warm clothing and shelter. By resurrecting a “neomedieval state” based on local manufacturing and services many economic and environmental problems could be solved with updated modern technology.

The ramification of “neomedievalism” is that for a given geometric space, with sufficient sunlight and water, a human population could survive based purely on its waste. Similar ideology would create the first lunar/martian bases or sustainable refugee camps. The only real currencies are energy, salt & water based. By switching progressively from petrodollar to alternative energy dollar a new society might be created that is sustainable and carbon neutral.

The idea of a parallel economy, that acts as a part of the proposed circular economy, may prove to be a vital component of future world economic development.

Covid-19 & Climate Change

The economic impact of the present pandemic & the immediate future problems of climate change cannot be overstated. Entire economies on a world - wide scale are probably now stretched to near breaking point. Quantitative easing for unemployment assistance will affect the circulation of capital. 5 potential solutions, depending on the severity of the pandemic, appear to present themselves:

1. Hope that the world economy has sufficient resilience to absorb the shock.
2. The situation proves uncontrollable, confidence in currency is lost due to indefinite QE & failure of currency to circulate. If the economic (& political) situation shows signs of collapse, then maybe develop a “backup” of local economies using currency based on electricity from the grid obtained using conventional fuels, so that if the dollar collapses, people can still be paid in kWh tokens or by using an electrical credit card. The municipality takes a temporary “command & control” viewpoint, similar to the “New Deal” of the 1930s, & supplies a basic minimum of food, water, fuel (& electricity) to support the community. If possible, health permitting, the community works on infrastructure projects. A wartime economy is created. Gasoline/diesel are prepared by dry distillation of waste plastic or from syngas etc. The community takes on a “medieval flavor”, so to speak. Local food needs are relayed to farmers, who in an agreement with the municipality, supply basic foodstuffs to the local food outlets & are paid accordingly.

3. The situation, though dire, is just barely manageable. The pandemic abates but climate change & political problems worsen. The dollar is supported & denominated in kWhrs of alternative energy input into the local grid by homeowners & from wind, solar & waste to energy companies. Recycling, reselling & mending of manufactured items become significant. The economy “doubles” as wasted items are fed back into the community or repurposed. Biochar & other carbon fixation projects go ahead. Maybe OTEC is used to enhance upwelling on western continental shelves to globally fix carbon in the anoxic muds of the western continental shelves.
4. The pandemic persists. All physical proximity becomes dangerous. Schools & workplaces become redesigned for individual isolation & most communication is electronic. Robots gradually replace manual labor, whether digging ditches or performing surgery. The population decreases.
5. Various combinations of 2,3 & 4.

References

1. Comet P A (2017) salvation by waste. Academic journal of environment science, Academic Publishing 5: 151-160.
2. Comet P A (2016) An integrated model of sustainability and emission control : The concept of society as super-organism that even by consuming at own waste using alternative energy as currency American journal of environmental protection, Science publishing group 5: 17-20.

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