

Merrill J Fernando Eco-Innovation Award 2016
Time Energy Accounting for Work Done in a Sustainable Economy

Introduction

Poverty is killing the planet. It must be abolished. How do we spend the least amount of energy to provide for the greatest number?

We over fish our seas, cut down our forests, grow livestock for food and take fossil carbon out of the ground and stick it in the air and rush headlong to the Planet's next extinction event.

The Blue Economy

The Blue Economy concept is a transnational initiative pioneered by Small Island Developing States with an interest in the waters beyond their national jurisdiction. Its direct purposes and objectives are therefore beyond the scope of this presentation, which will deal solely with time-energy accounting for work done as a sustainable alternative to the Central Bank administered wealth system based on credit.

The weakness of the global financial system was highlighted again recently with a press report that Deutsche Bank's gross notional derivatives exposure is \$47 trillion or 25 times the value represented on its Balance Sheet.

One cannot legislate poverty away and all attempts at such are no more than licenses to pollute or afford access to lucrative resources for vested interests.

The Cause of Modern Day Poverty

We live in a technological society that requires more and more people to do less and less work. Such a system makes a virtue out of slavery and is inefficient in the extreme. Increased automation generates wealth for society without physical labour but the benefits of these advances are not distributed to society at large.

At the same time: life on earth is being destroyed.

The most critical and valuable material in maintaining the life support system of the planet is its photosynthetic biomass. Photosynthetic biomass increases in mass through the absorption of solar or other electromagnetic radiation while releasing oxygen and water vapor into the atmosphere.

Respiring biomass is that component of living biomass that uses the output of primary production to make the complicated biological patterns of life; it consumes oxygen to power its functions and does not have photosynthetic functions itself.

Buckminster Fuller writing in *Critical Path* in 1983 points out that when all the cosmic-energy processing as rain, wind and gravitational pressure is added to processing time and paid for at domestic household electricity rates it costs nature millions of dollars to make a single gallon of petroleum.

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“To say, “I didn’t know that” doesn’t alter the inexorable energy accounting of eternally regenerative, 100 percent efficient - ergo 100 percent concerned - physical energy Universe.” Bucky.

Time Energy Accounting for Work Done

Bucky suggested time-energy accounting of kilowatt-hours, watt-hours and watt-seconds of work. Economic value therefore maybe derived from inverse of the energy cost of a good or service.

Imagine a street with three doughnut shops. Shop A uses electricity from the national grid, Shop B uses a diesel generator and Shop C uses solar. Assuming the same average quality of doughnut across all three shops Shop C doughnuts will produce the highest return.

The Cost of Breathing (CoB) of each economic unit will establish the per capita cost necessary to survive for a single day in the community in formal currency and total energy consumed. This may be calculated by assessing the minimum needed for adequate food, clothing, shelter, medical care, transportation and education in each partaking community. True parity purchasing value (PPV) will afford us a method of comparing relative costs. For example consider the energy cost of a glass of water from my imported fridge with that of a glass of cool water from a clay pot? An energy based economic value system will automatically compensate the low-energy consumer when transacting business with a high-energy consumer.

The Energy Delivered Value (EDV) of each community will be an index prorating the cost of delivering goods and services across the economy from the amount and type of energy consumed.

An Internet based mutual credit accounting system can rebuild the common wealth of a community by creating an independent means of exchanging goods and services efficiently.

A local server easily tallies the transactions and collates the economic activity of networks of networks of like minded-communities who voluntarily participate in an alternate Sustainable Economy underlying the Military-Industrial one.

The less energy used, the more inherent value in the good or service produced. We can build our own sustainable system. In this system, people only have to work a few hours and others are paid to stay at home. With modern technology we can create societies with likeminded people who want to exchange goods and services freely. Culture is created during leisure time. So when people are paid to stay at home there can be more time for dance, music and art that can cultivate and rejuvenate our culture.

You never change things by fighting the existing reality. You must invent a new reality that makes the old obsolete. For that reason, we can only make a change by making our citizens on the periphery self-sufficient and independent from the Centre.

This is the true challenge for the Blue Economy and for humanity as whole in to the rest of this Millennium.

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Notes

1. There is no sustainability without self-sufficiency. Societies that depend on outside sources to sustain themselves are not sustainable. This is self-evident.
 - a. When the British wanted to get our peasantry to work for them, they destroyed the infrastructure that sustained them. They banned *rajakariya* as institutional slavery and then had their agents breach village tanks. When the village rushed to repair their tanks they were arrested for performing *rajakariya*. When the nation rose-up in protest the Uva-Welassa rebellion was put down with merciless ferocity. Every able-bodied man over 18 was killed. All livestock was killed or taken in to the Army. All fruit trees were cut down. All provisions were either burnt or taken in to the army. Our nation has still not recovered from this massacre.
 - b. If we are to achieve any kind of sustainability as a nation we require a return to the independence of the periphery from the centre and the re-establishment albeit in a modern idiom of the institutions that built our culture.
 - c. To this end the economic underpinning of our nation was the consensus that if Man lived in dhamma, the people and the land would be safe.
 - d. This Mahasamatta, this common or general consensus, ensured that once one had performed one's traditional duty or *rajakariya* for one's community one was free to do whatever one wanted.
2. Intrinsic to a Consensus Society is the limit of society's reach and unless one broke faith it was essential that one was allowed to explore one's karma as thoroughly as possible. If one was living in dhamma one was not creating adverse consequences. This was a largely cashless society, which built and functioned through wealth held in community. This spirit informs Lanka to this day, giving one hope that though there is much that has been lost there is still something worth saving.
 - a. The present economic paradigm of requiring more and more people to do less and less work is the root cause of poverty and the multifaceted destruction of life on this planet.
 - b. No value can be created without a transaction between two or more human beings. Assigning value is how we account for work done.
 - c. In the case of a credit cardholder who makes a purchase using his or her card. The work accounting for the purchase has not been performed and what the cardholder is doing is creating financial credit by a prior arrangement, instantly and efficiently promising to pay back her credit card company out of future income.
 - d. The credit card company bases the cardholder's credit limit on her credibility or their assessment of her capacity to repay. In other words the cardholder's future productive capacity.
 - e. Similarly when banks issue loans to society they do so based on society's future productive capacity. But society's productive capacity belongs to society not banks, for no good reason we have abrogated our right to issue society's credit to banks and to pay them for the privilege of doing so.

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- f. Society's productive capacity is a function of its infrastructure, transport and communication networks, built capacity, plant and machinery, the health, education and skill level of her citizens,
 - g. All the banks are really doing is keeping our accounts for us. There really is no reason we cannot keep our own accounts.
 - h. From a societal stand point we only need to know that a transaction has taken place, both parties are satisfied, and x value was transacted. We make the appropriate debit and credit, just as a bank does, and we move on.
 - i. The difference is that society does not have to pay interest to itself. It provides the credit from the built reserve of society, the potential capacity of its assets. This is exactly what banks do today except we have to cover the credit with our work to not only pay our debts but also that of society, which their minions and our rulers contract us.
 - j. From an entrepreneurial point of view, a wealth system is a means of transferring goods and services to a consumer and obtaining currency with which you can purchase other goods and services. Which is why we need an alternate wealth system separate from a central bank run debt driven financial system, funded by income tax and interest.
3. Buckminster Fuller the American Architect and visionary writing in 1983 in Critical Path pointed out that when man wanted to go to the moon, he made a list of tasks he would need to accomplish to do so and one by one accomplished them. Since climate change is the greatest challenge to man as a species Bucky suggested we make a plan to come to an accommodation with it. When all the cosmic-energy processing as rain, wind and gravitational pressure is added to processing time and paid for at domestic household electricity rates it costs nature millions of dollars to make a single gallon of petroleum.
- a. "To say, "I didn't know that" doesn't alter the inexorable energy accounting of eternally regenerative, 100 percent efficient-ergo 100 percent concerned- physical energy Universe. We find all the no-life-support-wealth-producing people going to their ... jobs in their cars or buses, spending trillions of dollars' worth of petroleum daily to get to their no-wealth producing jobs. It doesn't take a computer to tell that it will save both Universe and humanity trillions of dollars a day to pay them handsomely to stay at home."
 - b. Bucky suggested time-energy accounting of work done in kilowatt-hours, watt-hours and watt-seconds of work.
 - c. Such a system would allocate value in the economy according to type and quality of the energy used to make it.
 - d. Taking the inverse of the energy cost as the base value of the good produced would prioritize value according to the least time taken to produce it.
 - e. The Cost of Breathing would add all the monetary and energy costs necessary to survive in a 24-hour period in a particular community.
 - f. An Energy Delivered Index (EDX) would calculate the cost in energy and formal currency to deliver the energy used to produce a particular good or service, and establish a total Energy Delivered Value (EDV).

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- a. If one evaluates the energy that goes in to giving me a glass of cool water from my LG fridge, one must begin the calculation in Korea and add all the proportional energy required to bring it to my home, where it is plugged in to the national grid and cools my water.
 - b. Contrast this to a farmer in the Wannu who has a clay water pot in a shady part of his home, where it perspires and cools.
 - c. In an economy where value is predicated on energy cost the goods and services produced by the farmer would be proportionately more valuable than mine.
7. Society is a machine to produce the goods and services it needs. The more efficiently such a machine functions the more useful it is.
- a. The most critical and valuable material in maintaining the life support of the planet is its photosynthetic biomass. The biomass so termed has the ability to increase in mass through the absorption of solar or other electromagnetic radiation while releasing oxygen and water vapor into the atmosphere. Respiring biomass is that component of living biomass that uses the output of primary production to make the complicated biological patterns of life; it consumes oxygen to power its functions and does not have photosynthetic functions itself¹.
 - b. The ecological services provided by natural systems of the planet have no direct way of being costed in the current economy that we currently consent to. Instead we have to resort to indirect reparations such as carbon taxes that seek to ameliorate pollution not prevent it. Most of the time polluters leave the clean up to society.
 - c. In an economy predicated on energy a country such as ours with its abundance of *photosynthetic biomass* is automatically compensated for the services it provides.
 - d. A technological society can and should strive to provide the highest quality of life to all its citizens. Its civility may be counted by the protection it provides to its most hapless citizen.
 - e. C H Douglas was an Engineer who seeing the efficiencies of the industrial age at the beginning of the last century suggested that society distribute this largesse through a stipend administered by an Office of Social Credit. Section 4 above sets this out using modern technology.
8. Networks of networks of like minded individuals can agree to share goods and services equitably using Open Source software such as Cyclos (www.cyclos.org) that provides banking services online and seamlessly. Self-administered Cyclos payment gateways may be accessed securely through Smart Phones Apps, Magnetic Cards or Online. This software is completely customizable and completely secure and free.
9. Open Source Ecology (www.opensourceecology.org) offers blueprints, bills of quantities, instructional videos and training on their farm in Missouri on how to make what it calls the Civilization Restarter Kit. Using a hydraulic pump powered by a small internal combustion engine or a battery-powered motor

¹ Dr. F. Ranil Senanayake

<http://www.analogforestry.org/what-is-photosynthetic-biomass/>

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the inventor Marcin Jakubowski offers any society with access to a lathe and a welding set the tools to build the infrastructure they need.

10. Technologies like this in the public domain, together with skilled artisans with a desire to share their knowledge and expertise to spread and build common wealth make the knock on effect of wealth creation by circulation within local economies a matter of providing the services society needs.
11. The bridge that our local community in Kotadeniyawa built across the Maha Oya easily demonstrates the knock-on effect of wealth creation. This bridge was funded by local businesses including our coconut estate, a design was provided by State Engineering and the RDA, the materials were provided by the government at cost, and the people provided the *shramadana* (voluntary labour) to build it. It was built in 100 days and the community owed nobody for it. Within a short space of time the town of Kotadeniyawa doubled, and the sleepy old town that used to go to sleep at 7pm now even has an All-night food stop. Contrast this with the IMF funded bridge in Minuwangoda, admittedly a more robust and greater load bearing construction, nevertheless took nine years to build and every time the GOSL did something the Western powers did not like funding was suspended. As we are all aware given the GOSL's recent increased indebtedness we are still unable to repay the loans we have already taken from the IMF. We are also all aware that debt is the crow bar with which foreign capital pries open economies.

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The Consensus

We, the citizens of Mahasamatta, a free and sovereign society of like-minded sentient beings, who agreeing that knowledge of oneself is an unique and individual pursuit, hold the following to be true and irrefutable:

1. All Life is sacred and sacrosanct.
2. Society is a free association of independent individuals for mutual benefit.
3. We are agreed to do all we have agreed to do and not encroach on other persons or their property.
4. All knowledge, science and technology build from a mountain of human achievement that is the natural inheritance of all.
5. Society has a duty to transmit that knowledge and all its benefits to generations yet to come.
6. The most critical and valuable material in maintaining the life support system of the planet is its photosynthetic¹ biomass.
7. Society has the ability and so the duty to provide the best quality of food, clothing, shelter, education and healthcare (hereinafter called the goods and services) it can to its citizens without compromising the viability of all other extant species and generations yet to be born.
8. Society can and shall calculate the cost of its goods and services by time-energy accounting in kilowatt-hours, watt-hours and watt-seconds of work.
9. Society can and shall create and administer a system to represent the time energy accounting as prescribed in 8.
10. In terms of 6, 8 and 9 above the rate of produced Cycling Atmospheric Gasses (CAG's) shall be used in calculating the base Energy footprint for time-energy accounting in a production zone.
11. If a member of society performs a service to society, society owes that member a debt. The society shall account for the full market value of the debt in terms of 8, 9 and 10 above by issuing the appropriate payment.
12. All citizens can avail themselves of the benefits of knowledge, science and technology in common with their fellows, such that, each may choose, with ever increasing freedom and complete independence, whether they will or will not assist in any project placed before them.
13. This is the consensus of us all, that if man lives righteously the people and the planet will be safe.

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