Lethal Kickback of Largescale Renewable Energy Exploitation

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Self-assurance combined with ignorance, on the background of obscurantism, has taken hold of world-wide environment protection to such proportions nowadays that the author is compelled to publish his opinion. The author is well aware of the fact that this endeavor is like flogging a dead horse in this world turned upside down in all aspects, but publication relieves him from the pressure of conscience.

Regretfully, nowadays it is a mainstream view for both experts and laymen to approach renewable energies as some savior able to solve humans' energy issues. Advocates of this quite pseudo-scientific and irresponsible view, by tacit evidence, see renewable energies without even considering the natural-environmental effects of their use. "Daysight" has grown so bad that today there isn't one single researcher, person or politician etc., or one research institute, science academy or any other institution which would raise at least the following elementary questions: 1. Do the so-called "renewable" energy resources really renew? 2. Does renewable energy use in greater portions exert any negative natural-environmental effects? 3. If it does, which are these? 4. Knowing the negative effects, is it worth using them in greater portions? And so on.

In the age of industrial revolution or steam engines it was still condonable for humanity not to consider the noxious effects on nature and environment of operating and using the newly commissioned machines and their energy sources. However, man failed to learn from his mistakes, because he missed this reckoning in operating every new machine and energy source ever since. The 21st century is no different with humanity idolatrizing wind engines, solar collectors, tidal or geothermal power plants, etc. *Humanity's chance to survive does not consist in finding new and abundant energy sources, as history testifies that these only bring on larger and larger-scale environment pollution as side effect. But survival requires humanity to learn the lesson that the commissioning of each and every new machine or*

utilization of energy source must also have a related ***natural-environmental assessment study*** *for the entire life duration of the given technology.*

Foremost, *the term "renewable" for energy streams of earth is absolutely wrong since the Earth is a closed equilibrium system, and its ubiquitous total consumed energy quantity is finite and constant. Though its energies can dissipate or transform into one another by permanently absorbed solar radiation etc., but the total energy cannot thrive, replenish (renew).* Namely the permanently absorbed solar radiation etc. is no renewable since their permanent subtraction would direct the system into the state of thermodynamic heat death quickly, and so, it is not available at all. It can be seen from this sloppy term that the 21st century men –similar to the industrial revolution's man– presume their energy fetishes infinite, omnipotent and available.

Figure 1 *The "gamehouse effect"*
The gamehouse effect caused by light-minded mankind

That is, man must approach his fetishes with the "Something for something" principle. Or, in other words, "Nothing comes for free" (this is most general law of nature). Namely, renewable energy does not come without a backwash. Moreover, the most guileful, dramatic and global natural-environmental side effects are brought on particularly by using these energies. We shall take a closer look at this, of course, not with the ambitions of a natural-environmental assessment study, but rather by focusing on the framework of the approach, and mentioning indeed only a few aspects.

In our estimate, the total quantity of human energy production per one day will be at least

$$\propto 3\times10^{21}\ \text{J, that is } 3{,}000{,}000{,}000{,}000{,}000{,}000{,}000.00\ \text{Joules} \qquad (1)$$

in 2100. We understand this extent if we consider that energy concentrated in the present global active atomic arsenal of humanity is less than thousandth of this amount. That is, the daily energy produced by mankind will be thousand times the energy which would be released in a today total nuclear war. In other words, humanity generates in a year a quantity of energy which would correspond to $\sim$ 400,000 total nuclear wars. (However, due to the bad coefficient of efficiency, which is roughly 5%, energy utilized makes only a few percents of this, and the remaining 95% burden the environment.) Hereafter the basis of reasoning process, prediction, calculation and reference is the (1) energy production of year 2100th. If mankind intends to redeem only 33% of this energy by renewable energies, then the energy quantity of

$$\propto 10^{21}\ \text{J} = 1{,}000{,}000{,}000{,}000{,}000{,}000{,}000.00\ \text{Joules} \qquad (2)$$

would have to be extracted from the Earth cycles a day, which roughly corresponds to more than three hundred total nuclear wars. (It can be prognosticated that the maximal rate of renewables will be 29-36% in 2100.) Let's take a brief look at some issues of disengaging renewable energies.

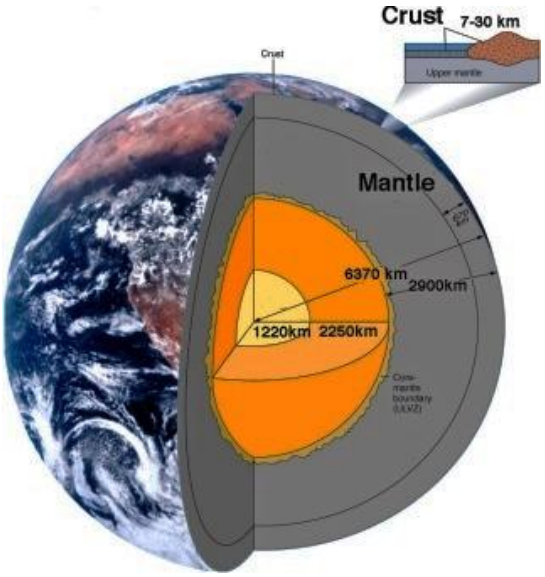

Figure 2 *The structure of Earth*
The schematic structure of Earth viewing from space

The theorem of the conservation of energy (the “something for something” principle) demands caution in approaching alternative energy development methods, as renewable

energy development also has negative global environmental effects. It is known that the chain processes organized into earth cycle-courses are sustained by absorbed *solar energy* which drives them. [1,2] Look at the circulation of water, air, sea currents, or processes of living world just as photosynthesis, for example. [Today entire energy needs of earth photosynthesis is $\propto 10^{19}$ J/day, what is a tierce part of today total quantity of human energy production per day. In this amount the oceans, tropical-subtropical forests and the subsistence of continental existence possess a quota $\approx$30-30-30%. From the need of continental existence 3×10^{18} J/day, the agriculture and forestry quota is 2.5% of it (i.e. 7.5×10^{16} J/day), but the energy need of nutrition 3×10^{16}J/day. Finally it is reasonable to suppose that the measure of photosynthesis in 2100 will not differ significantly from the present.] Therefore, a large earth-scale direct utilization of solar energy - say at a scale of $\propto 4\times10^{20}$ Joules - would already jeopardize Gaia, geomagnetism, ecosphere and fauna, etc., as the extraction of the sun's electromagnetic energies may "break", or in worst cases, may terminate the existing and interdependent cycle-processes due to energies rerouted. [2] And if cycles break, latent energy scattering occurs, resulting in the most unexpected forms of immediate and global heat production or heat loss, and collateral physical environment pollution, etc. This perturbation would lead to unforeseeable consequences regarding the biosphere, certain biological species, weather, and climate. Furthermore, the inevitable occurrence of new decomposition and recovery poles and functions [2] would animate the propagation of certain worms, fungi, bacteria, and viruses. That is to say, Earth would close the cycles on other courses, by transforming the new decomposition → recovery "half-cycles" created by worms, fungi, and viruses into real cycles, similarly to the energy system reacting according to the Le Chatelier-Braun principle or Lenz's law, etc. {For the real or four poles of organic cycle-processes, see reference [2].} It is known that the Le Chatelier-Braun principle postulates that the reaction of a closed equilibrium (homoeostatic) systems is always contrary to the effect it is subjected to.

With regard to solar energy utilization, we may mention the deterrent case of the GENESIS Project supported by the Japanese Sanyo company. (GENESIS: Global Energy Network Equipped with Solar Cells and International Superconductor Grids.) This project designs amorphous silicon solar cells of 800 km × 800 km installed in oceans, which would be connected to the international electric power circulation by high-temperature superconductor grids. This project would utilize roughly 4% of the solar energy radiation reaching the Earth. [3] This rate corresponds to $\propto 2.7\times10^{20}$ J/day what –considering the relations (1), (2) and especially the energy needs of earth photosynthesis– is a fatal quantity. This project has an alternative in which solar cells would be installed not into oceans, but the

deserts of continents. As this version would still utilize roughly 4% of non-localizable energy of solar radiation, the noxious environmental effects would still not be decreased.

Aspects touched on the large-scale utilization of solar energy must be considered in case of other renewable energies as well. The atmosphere is gaining solar energy all the time. Thus for example, in case of *wind energy* –among others– one must take into account the effects of the decrease of the kinetic energy of Earth's atmosphere (geostrophic winds) on weather and climate, and atmospheric warming. [More particularly, intercontinental and continental wind currents, or the strength of jet streams (Rossby waves), cyclones, tornadoes, and hurricanes.] Based on the above principles, the gigantic –let's say $\propto 2\times10^{20}$ Joule– exploitation of the atmosphere's kinetic energy –as an indirect additional exploitation of solar energy– could easily transform South-American rainforests into a Sahara-like desert. Or, for example, this extraction could decelerate the combination of the upper and lower air strata of the troposphere, and may develop new –cross– currents, combination mechanism, convection, or latent energy paths among the stratosphere, troposphere, and mesosphere. Etc. Now this would exert a direct influence on the geomagnetism or ozone layer condition, on the spectrum and intensity of the ultraviolet radiation reaching the Earth surface, on weather and climate, etc. Not to mention that large-scale energy development by using current technologies would occupy a considerable amount of agricultural or fishery areas or habitats. Furthermore, this solution would devastate landscape significantly.

Reflections on wind energy are just as applicable in case of *tidal (water) energy*. In this case, one must also consider and reckon the possible effects and their extent of decreasing the kinetic energy of sea water –by let's say $\propto 10^{20}$ Joules– on sea surface or deep sea hydrothermal currents (e.g. Gulf-stream), and ocean and sea undulation, and finally, on the living worlds of seas and oceans (e.g. hydrothermal vent fauna), and then on weather. Large-scale extraction of the latter two energies may influence even the rotation of Earth, day length and consequently time measurement etc.

The earth is constantly losing its thermal energy by three mechanisms that transport heat from one place to another: conduction, convection, and radiation. Heat is conducted through the solid material –the inner core and the lithosphere (including the crust). It is carried upward in convection currents in the outer core, the mantle, the oceans, and the atmosphere, and it is radiated away into space. (About the crust, mantle and outer core, see the Fig. 1.) As for the development of *geothermal energies,* one must consider and reckon to what extent and in what form the heat energy exploited from the thermodynamic cycle-processes of upper mantle and earth surface –of let's $\propto 1.5\times10^{20}$ Joules– would be recovered

from the latent heat of these spheres or molten or solid core (magma). Namely, the geothermic gradient would be random-modified and the earth lose its thermal energy further. (This approach assumes that only heat is subtracted in the energy development processes.) It is known that the troposphere derives heat energy from earth surface, thus, the large-scale extraction of geothermal energies would influence seismology, telluric currents, weather, etc. also. The latent cooling of soil may lead to the extinction of certain plant and animal species, and the extermination of certain habitats. Moreover, the excess heating needs of local buildings resulting from latent cooling of soil may intensify the greed for energy.

The exploitation of *gravitational potential water-energy of rivers* –on a scale of let's say $\propto 0.7\times10^{20}$ Joules– requires us to consider also how water viscosity and friction with earth would change energy dissipation rates that reach the environment, as a result of taking away the potential energy's subtracted kinetic equivalent. This energy is not to be ignored either, if we think of the river drift transport, erosion (deepening) or migration of water-gates (Grand Canyon), pressure conditions, connections with subsurface waters and the effects they exert on changing the local living world. At the same time, just as in the case of the above four renewable energy types, here also applies that according to the Le Chatelier-Braun principle, etc., the earth's energy system would compensate the potential energy loss of freshwater latently, globally, and in the most unexpected forms.

The *biomass* energy development method truly does not belong to renewable (natural) energies. The substantive source of bio-energy is the solar radiation energy after all. Energy exploitation by using biomass is a simple chemical process, similar to heating with wood, coal, gas, oil, or mazut, etc. Although, the use of bio-energy –at a scale of let's say $\propto 0.8\times10^{20}$ Joules– can only be significantly lower than that of fossil energies, and it requires a more complex technology. Notwithstanding this energy would get into the electric energy grids instead of the thermodynamic cycle-processes of earth surface. Consequently, according to the Le Chatelier-Braun then "something for something" principle, the earth surface will redeem this missing energy from elsewhere.

Today mainstream sciences of environment (e.g. ecology) are *a priori* holistic. The Earth, or as known more euphonically, Gaia (Γαῖα), is a closely integrated complex interacting "living" system, that is, a hyperorganism. [2] The interpretation of system theory in case of living beings means that *by developing renewable energies, mankind interferes directly with the mechanisms which control the organism*. (Another such mechanism is the relation of geomagnetism with magma currents, or the influence of earth surface temperature on weather changes, etc.) This energetic perturbation can be pictured as the random

excitation or irritation of the nervous system of an organism by electric discharges or other physical effects, for example. It is known that the very low, but durable (ultra-irrelevant) excitation of the nervous system is able to provoke a significant effect or self-stimulation mechanism in the organism's behavior. (This is the neurophysiological basis of mind operation after all.) However, the stimulation of the Gaia hyperorganism by extracted renewable energies, based on the correlation (2) takes place in a gigantic scale. If we take the 33% renewable energy share, this would mean a "tickling" equaling three hundred total nuclear wars a day. Due to the unexplorable nature of this issue, for now it is unforeseeable how long Gaia would tackle this, and when, where, and how it would retaliate, according to the Le Chatelier-Braun then "something for something" principle. It may also happen that it transforms into a Mars-like planet. According to the relation (1), the traditional energy development methods –heating by wood, straw, biomass, coal, gas, oil, or mazut etc., including water boiling by nuclear energy– operate in a gigantic scale also {approximately thrice of (2), thus equaling the energy of thousand total nuclear wars per day}, but their chemical effects burden the buffer zones which receive or absorb pollution, and do not damage the nervous system. (As in earth history radioactive elements were created before the creation of the biosphere, in energy development using nuclear energy, energy is transferred and used from times before the biosphere.)

Figure 3 *The Gaia*
The picture represents a holistic view of Earth

Naturally, these effects must not be overdramatized either. Unfortunately, night-blindness caused by ignorance does not list heat emission, the main environment pollutant, in any emission charts*. [2] Taking a system theory comparison applied to living beings, the

pollution of the buffer zones results in the multiplication in the hyperorganism of noxious substances (“toxins”) known to environment protection, resulting in the distortion of the reactions of the organism, in the destruction of its internal life processes, that is, they harm its health, but do not directly jeopardize the basic functions required for survival, preferably stimulate them.

Additionally, the traditional energy sources are “hibernated” passive substances which do not damage the environment around their sites, and are converted into energy by chemical transformation through burning. Burning and created but unused energy burdens the environment. However, renewable energies are not substances, but energy processes sustaining the integration and survival of the dominant Earth cycle-courses, which are exploited, that is rerouted, directly –without burning or other chemical pollutions. In this case, energy dissipation burdens also the buffer zones of the Earth which absorb pollution. Energy exploitation by using renewable energy sources is essentially more efficient than traditional (ignition- or boiling-based) energy development methods, thanks to the fact that it uses physical processes to transform energy into energy –without involving burning or other polluting chemical processes. This is its great advantage. However, a much greater disadvantage is the ignorance and large-scale brutal just as random interference with the Earth’s energy balance (homoeostasis). This is the basic difference between the effects of energy development by using traditional methods or renewable energies.

Since the renewable energy resources are no substances, hence –in the geographical sense– they do not possess occurrences. Thus they are non-local, that is, not confinable by country-frontiers, air spaces, territorial waters and inner frontiers. Consequently, several countries or continents cannot be owners of these energy streams since they are the wealth of mankind, or rather the Gaia. Accordingly the utilization of renewable energies is public or home affair of humanity, which will be regulated by United Nations sooner or later. But the UN has to allocate the relative quotas of renewable energy exploitations for individual countries. Each country will be an owner of such a quota. Every such national development strategy or plan is irresponsible which do not accept and apply these UN standards.

Based on the above premises, the author publishes its brief opinion regarding future energy resources. Writer of this article considers that mankind can only solve its energy issues by controlled ***thermonuclear fusion***. Energy development by fusion reactors would not qualify as traditional energy development method; moreover, it would generate approximately thousand times energy release than those, and would impose demands on environment in order of magnitude smaller scales. (Besides, the fusion reactors would not

increase the carbon-dioxide concentration of Earth, further –opposite to thermonuclear fission power plant– they do not produce radioactive waste.) Mankind cannot walk astray for long, and cannot be consumed in the future by alarmists´ green worries or their pseudo-scientific soft-heartedness attempting to uphold the past, when it comes to scientific progress, to such extent as to deter or suffocate advancement. (Life demands scientific advance sooner or later by crises.) In the author's opinion, use of thermonuclear energy can be safe, pacifist and calming. This is so because the atomic bomb perfected by nuclear powers, beside fear, has played a stabilizing role which gave mankind peace of more than 60 years without other world wars.

However, until the development of thermonuclear fusion reactors, the following energy production methods must be favored, or the following types must be constructed or extended at larger scales, because –according to the author's calculation– these have the slightest interference and pollution in the earthly environment. 1. *Building or extending traditional nuclear (fission) power plants*, 2. *Biomass utilization* (burning of wood, straw, etc. not included) 3. *New hydropower plants* built on rivers or lakes. In addition, the energy-saving just as the increasing of efficiencies of primary and secondary energy exploitations and productions, further the rediscovery of optimums for the transformations and transportations of these energies etc. is evidently important and indispensable. However the total energy utilization does not decrease because –in case of known technologies– the needs of energy utilization will increase more largely than the energy-savings.

Of course, there are other energy development methods besides the three preferred ones that also do not use ignition or burning. (Such are the heat-waste recovery power plant engines. These technologies aren't yet functional, but the author already prepared a feasibility study regarding this issue ten years ago [4].)

Naturally, the above considerations do not mean that renewable energies and power plants cannot be used at smaller scales or within limited periods of time, but their large-scale –for example 33% scale– utilization must be abandoned for good. Namely, this permanent energy subtraction is able to push the biosphere into the state of heat death –independently of every other natural-environmental disaster, for example the doubtful climate catastrophe. Since the unlimited utilization of available renewable energies is irreversibly solidified all over world, so the mankind will face a series of unforeseeable biosphere's disasters.

Figure 4 *The final countdown*
The blasting chord is already sparked

References

[1]: Milan Meszaros, *Preventive Economic Development Strategy*, http://works.bepress.com/milan_meszaros/1

[2]: Milan Meszaros, *Dynamic and Organic Development 1-3***,** Real Green Alternative, Vol. **1** (No. 2 September), pp. 6-10, 1994; Vol. **1** (No. 5 December), pp. 3-6, 1994; Vol. **2** (No. 3 March), pp. 3-4, 1995. *: Historically, the mankind produced the electric energy through the heat energy. The humanity boiled the water –by any production of energy– in the power plants for the production of electric energy after all. As the Alpha Group Laboratories Association sees, this is an archaic technology in our age. During this production, the dissipation of the heat energy (entropy) is a giant quantity. Opposite to this enormous heat-noise dissipation, *the heat-emission does not occur in any emission-table*. Thus *the mankind possess a* ***"heat-noise-blindness"*** *concerning the harmful matter emission*. But this heat emission will be the mostly responsible for a possible global warming (including some regional ice-ages). Namely, all technological processes induce energy dissipation or rather heat emission as a secondary product. The facts are that ca. 80% of this heat is radiated into the air, but the ca. 20% is emitted into the (waste) waters. Therefore, *the heat-waste background radiation is an intrinsic energy-source for the decomposition → recovery pole and function.*

[3]: Pielou, E. C., *The Energy of Nature*, The University of Chicago Press, Chicago and London, 2001.

[4]: Milan Meszaros, *Perspectives in Energy*, http://works.bepress.com/milan_meszaros/5