

Action Language for Climate Change

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Abstract

The past IPCC communications prefer emission to forcing metrics, so bullets are highlighted instead of shooting effects; the neurolinguistics would show that in humans mind, there is not direct link between emission and global heating effect and climate change less, even education & marketing efforts by two decades, people empathy is little for gaseous emissions reductions.

Unfortunately, marriage of Equivalent CO2 Tons with Carbon Markets and correspondent UNFCCC speech, created a disruptive “high level language” used by political leaders, that is not practical at emergency, proved by the long discussion for Article 6 at COP-25->6. The alternative way begins by abandon carbon metrics and directly talk colloquial ecology energetic language, using magnitudes of International System units SI.

This provide an ethical protocol with equity for straight deals, an (ESTEFAM) Ecological System for Transaction of Energies, Fluxes, Actions and Masses.

Also, Action concept is not used properly, linked to his social meaning, without explicitly show the required physical action kind, we highlight his very precise meaning, linked to least action principle in nature, a simple rule to harmonize human activities with Earth Planet. So, People ignore that Actions +A+ & -A- increases heating and -A+ ☹️ and +A- 😊 cools earth, as article explain, and is the simple way people can act properly with environment.

This conclusive article, not demonstrates transdisciplinary uncertainty matters, only propose new dialogues ways with certainty, in global heating climate change, dangerous times, a short road to implement well known (IPCC) solutions, using alternative indigenous neurolinguistic.

Keywords

Climate, Action, Harmony, Forcing, Energy, Ecology,

Article type

Please mark (X) the type of article for submission:

<input checked="" type="checkbox"/>	Original Research Article A piece of original, interdisciplinary research. Up to 10,000 words inclusive of all text, references and some figures.
<input type="checkbox"/>	Essay An opinion or think piece which has a lower standard of evidence required to justify conclusions than a research article. Approx. 3,000 words.

Introduction what we know and how is tell

The actual state of IPCC knowledge assures over 97% certainty, that global climate change has anthropogenic origin with greenhouse gases emissions atmospheric accumulation as principal cause, adding land use change and degraded ecosystems effects, including oceans. This has altered the Radiative Balance of Earth with Outer Space, because accumulated greenhouse gases-AGHG trap infrared radiation from land, generating a positive radiative forcing unbalance of]0.6 to 1.8[w/m², representing an extra incoming energy to biosphere, equivalent to explode more than ½ Million Hiroshima bombs every day of the year, every year. The greenhouse gases are numerous family with different heat potential and media life, in importance order follows CO₂, CH₄, NO₂, and a long list of Fluor compounds that, at high atmosphere alter O₃ content, generating the Ozone hole; also many organic volatile compounds, +H₂O. The last has a short lifetime in atmosphere so, is not consider as GHG but, it is and determines global precipitation regime. It shows the first IPCC incongruence with colloquial language, defining Climate Change without consider atmospheric H₂O net content role, fundamental for precipitation regimes.

Paleoclimate research shows, thanks to deep ice records CO₂ trapped and spectroscopy studies, a close correlation of global medium temperature with CO₂ atmospheric content, in part per million ppm. The CO₂ ppm content has change during industrial era, from around 276 till now 412 ppm, a 50% more, today increasing at a superior rate ~1ppm yearly. Paleoclimate records shows, this content has not been experienced by earth since ~800,000 years before, and it assure a global temperature change, referred to pre industrial era, superior ~1.5°C, that is actually the registered medium temperature change over continents, with an ocean sea surface temperature delay, because high water heat content, SST has change ~1°C.

All Science predictions about evolution of local climates are coming confirmed, increases of floods and droughts, dramatic decreases of glacier extension and volume, ocean level increases with coastal areas retreats, climate variability increases with sporadic storms, heat waves and annual precipitation regimes changes, desertification and forest fires increases, migration, etc. all part of daily or weekly news, summarized from peer review publications, processed by IPCC

These physical facts, the anthropogenic origin of climate change and catastrophic consequences has been of public knowledge since last century, early eighties and IPCC First Report confirmed in 1992, then with less certainty. So, to solve this earth energy unbalance, was created UNFCCC the united nations frame convention on climate change, following the Kyoto Protocol, which pretended that market rules can solve an ecologic problem: the humanity relation with planet. Then IPCC creates the: Equivalent CO₂ Ton = total heat forcing by an atmospheric CO₂ ton in a century, clearly not a reproducible experience so, is not a unit, only a useful commodity that served two decades to delay real solutions and install an inappropriate carbon market metric, a disruptive language in governments leaders, not useful for a global emergency.

This article does not demonstrate transdisciplinary uncertainty matters, or deny GHG forcing, only proposes new ways of dialogue, in dangerous times by global heating climate change, the short road to implement well known solutions, using alternative indigenous neurolinguistic.

The disruptive emission language and forcing dialogues to repair planet Earth

A mathematical neurolinguistic proof that carbon market metric, is a disruptive language, was performed at 2013 and PNUD-Peru was informed; habits make it continue operating, specially in high level Authorities, a linguistic mistake that corrects every day colloquial language, spoken by indigenous and cult people and assumed as no valid for purpose of carbon market, designed to solve climate change emergency, became a problem for the problem to solve; the article is at chapter 4 of book <http://hvr.cd.com/FINATURAL.pdf> . Also, in chapter 2.3 can be find the table

Comparative metrics table of carbon market vs forcing, made for Peruvian Congress 2011

Carbon Markets / CO ₂ Equivalent Ton VS	Energy Flows = Climate Forcing in w/m ²
Markets "measure Equivalent CO ₂ tons" trapped, avoided, reduced & give C bonus	Energy flows describe well dynamic relationships between systems
Metric reduces everything to "Equi.CO ₂ Ton" based on carbon markets MC rules	A general metric applicable to everything based on International System of Units SI
"Equivalent CO ₂ Ton" is a commodity "unit"	w/m ² is a reproducible derivative unit
Carbon metric demand arbitrary conversions	Metric applicable to any ecosystem
Reduces processes from the perspective of CO ₂ and the market	Temporarily assess warm-ups or cooldowns
Assessments in "Equi.CO ₂ Ton" are gaseous	An evaluated effect has some precision
Project alludes to coal market E.g. REDD+ Reduction of Degraded, Deforested, +?	Project designation is direct, e.g. Soil Conservation, Forests and Biodiversity
Markets refer only to additionality	Consider greenhouse gas accumulations and the role of ecosystems
Reflects current & historic GHG emissions	Reflects global warming due to country &
UNFCCC controls deals between countries	...also, by region, city, company...
Maintains unfulfilled Kyoto protocol	It has binding legal physical consequences
It only recognizes emissions and their reduction according to carbon markets	Recognizes any active FR(+) & FR(-) in the Planetary Energy Balance
Speak about emissions: reduction, avoided, subtraction, increased...	Describes ecosystem warming and cooling
Eqv.CO₂Ton = J?, \$?, Ton?	w/m² = MW/Km² = <u>K KW/Km²</u> √ √ √

In the same [book](#) at chapter 2.8, Maxwell equations and harmonic solution for electromagnetic

$\oiint E \, dA = \frac{Q}{\epsilon_0}$ $\oiint B \, dA = 0$ $\oint E \, dl = -\frac{\partial \Phi_B}{\partial t}$ $\oint B \, dl = \mu_0 \left(I + \epsilon_0 \frac{\partial \Phi_E}{\partial t} \right)$	$\nabla \cdot E = \frac{\rho}{\epsilon_0}$ $\nabla \cdot B = 0$ $\nabla \times E = -\frac{\partial B}{\partial t}$ $\nabla \times B = \mu_0 J + \mu_0 \epsilon_0 \frac{\partial E}{\partial t}$
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Light wave propagation, was used to compare if model of market social economy can fix to Maxwell equations, giving harmonic solutions, but do not; instead a ecologic community model adjust very well as a good solution to harmonize humans and nature. Here the conclusion table

<i>Comparison of the Harmonic Adjustment of 3 Models of reality interpretation, where propagation velocity depends only on the medium constants ϵ and μ</i>		
*Electro-magnetic	Market Social Economy	Ecological community
Electric field E	Banking β	Nature N
Magnetic Field B	Society S	Community ζ
Electrical Charge q	Money (£, ¥, €, \$...)	Energy e
Electric Current J	Citizens J''	Commoners J'
Electrical permissiveness of vacuum ϵ_0	bank permissiveness - credit accessibility ϵ''	energy permissiveness nature accessibility ϵ'
Vacuum Magnetic permeability μ_0	social inclusion – permeability μ''	Community inclusion – permeability μ'
Propagation velocity C $C^2 = 1/(\epsilon_0 \cdot \mu_0)$	Propagation velocity V'' $V''^2 = 1/(\epsilon'' \cdot \mu'')$	Propagation Velocity V' $V'^2 = 1/(\epsilon' \cdot \mu')$
Wave equations of E and B are adjusted harmonically and allow us to deduce the electromagnetic nature of light waves, which travel at constant speed C	Conditions imposed de facto, bank rent and acceleration of the economy, generates conflicts when adjusting V'' It is not easy to harmonize high propagation speed when try adjusting ϵ'' & μ''	The least action principle, and renewable energy sources communes use, do not generate conflict, V' can be whatever wanted and it is always possible to find ways for harmonize ϵ' and μ'

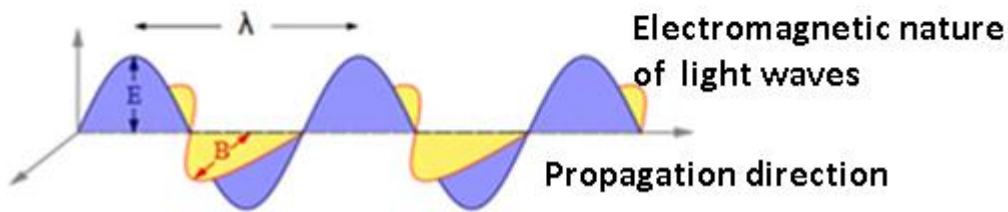
$$\nabla^2 \mathbf{E} = \frac{1}{c^2} \frac{\partial^2 \mathbf{E}}{\partial t^2} \quad \text{Light Wave Equations}$$

$$\nabla^2 \mathbf{B} = \frac{1}{c^2} \frac{\partial^2 \mathbf{B}}{\partial t^2} \quad \text{Electric and Magnetic}$$

$$c = \frac{1}{\sqrt{\epsilon_0 \mu_0}}$$

Because

$$\begin{cases} \epsilon_0 = 8.89 \cdot 10^{-12} \text{ F/m} \\ \mu_0 = 4\pi \cdot 10^{-7} \text{ Tm/A} \end{cases} \rightarrow c = 2,99 \times 10^8 \text{ m/s}$$



The electromagnetic E-B wave harmonic solution, has same constant propagation speed C, that depends only of constants of the medium, as $C = 1/(\epsilon_0 \cdot \mu_0)^{1/2}$

At same [book](#), chapter 1 explains concepts of physical action and least action principle (lap)

$$A(J.s) = \sum \{ Ke - Pe \} \cdot \Delta t ; \quad \text{lap in nature } A \approx 0$$

A positive Action is the sum of developed kinetics energies and consumed potential energies at period of observation Δt . So, negative Action decreases kinetics and increases potentials at Δt . In natural processes, Action always take the path to be the less possible; least action principle, lap, is also a simple way to express second thermodynamics law.

This permit to reckoning that Actions +A+ & -A- drives global heating and climate change so, to cool Earth we need Actions -A+ & +A-. These simple results summarize all what people need to know to act with an ecological ethic, to repair nature with equity (as next section explains).

Also, because an energy metric is ecological, simply this justifies a colloquial language for collective, transdisciplinary, ethical intelligence to harmonize Giga-humanity with Mother Earth

These 4 magnitudes complete a value set: energies, fluxes, actions, masses (*we use forcing or fluxes alternatively for energy flux that change climate*) that serve to perform a mathematical physic Euler Model, which describes any natural process with desired precision & so, we can express : **quantitative ecologic energy description in time is equivalent to a Euler Model.**

Last phrase enables an ecologic transaction system of energy, flux, action & mass -ESTEFAM so, two stakeholders can celebrate an interchange agreement, with independency of economic financial matters, or UNFCCC emissions protocol, with equity rules described at next table. Remember at review F= forcing, A= Action, Pe= Potential energy, Ke= Kinetic energy

ESTEFAM: Ecological System for Transaction of Energies, Fluxes, Actions and Masses

Physical Index: CC	Ecological Debt 2D to offset by	Restoration R Certified	Compensation- C offset Eco-Debt	Total Reported Ecologic Income
Parameter	Planet Estate	Vulnerable population	AGHG - LULUC	GLOBAL
Observed	Past Consumerism	Consciousness	& Engineering	RESTORATION
Energy Work Labor : J	Burn of fossil fuels' + LULUC'' = ~ -2Pe >> 2Ke	Forestation & Biodiversity Labor => ~ Pe+''	Battery potential+ by renewable energy Pe+'	Increase Biodiversity + Clean Energy Σ Pe''+ Pe+ ' + ~ +2Pe
Net Flux Human Forcing : w/m ²	AGHG F' ≈ ~ 1 w/m² + ~80% deforested planet LULUC= F'' F' + F''+ = ~ 2F+	Σ Biodiversity, photosynthesis, forest, ice condensed water -Energy flows = F''-	renewable energy conversion and storage into batteries, tanks = F'-	Tempered Cooling Σ~ = F'- + F''- = 2F- ~ = -2F+
Human actions Jh; Nms, Ws ²	Burning fossils + Deforestation = ~ 2A+	Nature Restoration A-''	Renewable Energy System Enact A-'	Earth Reparation 2D + R + C ≈ = Σ 2A+ A-'' A- ' ≈ 0

+ A+ & - A- origin CC Nature Least Action Principle : $A = \sum [Ke - Pe]. \Delta t \approx 0 \Rightarrow$ counteract CC: $- A+ \& + A-$
 Ecological system for transaction of energies flows actions & materials*

ESTEFAM

Where: A Action Js (Nms) // Kinetic Energy Ke & Pe Potential energy in J: Joules // m meter
 Δt observation time in seconds s or h hours /// F forcing in W/m² (Watt=J/s)
 Debts + Restoration + Compensation [2D + R + C = ~0] /// LULUC Land Uses & Changes

This proposals summary table can be read first by columns and after by rows, sets simple rules for ecologic Earth state reparation at long time, avoids financial bargains & controls by UNFCCC

The ESTEFAM transaction system is a proposal for deals with equity, between North and South countries, (based in a statistical historical record where South territories has provided food, energy and materials to North economies, receiving only little money in change). Of course, is an oversimplification to represent S sources countries and N Nerds economies inequal relations that during industrial era till today has driven world to dangerous climate change global heating

ESTEFAM assume everyone agrees that degraded Earth state today represent an extinction risk for humanity so, is acceptable an ecological contract between humanity and the planet, instead of economic social contract assumption that environmental damage are externalities, a clear ecologic mistake, being all in just one planet. Indigenous people treat mother earth as a living entity and is well know his capacity to live preserving land without degrading so, ESTEFAM assume his ethic and treat Earth as a stakeholder in dialogues to repair ecologic debts. We will back here later but, is important let clear, ESTEFAM is not an economic deal, is a review table.

Ecologic debts with earth, bring actual dangerous climate change, a catastrophic global heating, burning fossils fuels & deforesting madness, mining spoliation, environmental crisis by global contamination, and developed countries accumulating big capitals. Because, transfer of money always amplifies physical actions A+, imply that financial economy increases world kinetics and decreases nature potentials energies, in direct proportion to inversions. Also, would means that any required money under ESTEFAM stakeholders, must be budgeted independently, without money transfers in between, but this require more explanation and other discourse as follow

Action & forcing language to cool earth and avoid danger anthropogenic climate change

A recent paper publication by Karina von Schuckmann and 37 co-authors based on oceans temperature observations shows that, world heating level or forcing has increased his medium value from 0.6 to 0.8 w/m² since 2013 to 2018. James Hansen shows in 2013 that this is a daily earth heating increases equivalent to explode 400,000 Hiroshima Bombs (533,333 in 2018). This huge additional energy amount, by accumulated greenhouse gases heating effect plus land use and land use change- desertification, deforestation, high speed roads & urban buildings -, increases free internal energy at biosphere so, at the poles and mountains ice melts, ocean level and contamination grow, as hurricanes frequency and intensity; floods follows droughts, precipitation regimes change and water availability puts in risk agriculture and so, food security, the biodiversity is extinguished, decreasing globally by 74%(LA 94%) since 1970 till 2018; the intensity of forest fires increases, so now consumes land in one fire, what XX century fires consumed in a decade; all generates human global migrations by climate risks of around hundred million yearly, a deadly weekly chronicle of anthropogenic climate change has arrive.

Actual consumerism economy is the direct responsible, a simple proof is show, taking numbers in account like in year 1920, to get 1 calorie of food was needed 0.8 calories of farmers & now industrial agriculture need 9.5 calories; an inefficient and ineffective production to favored fossil industry enterprises & capitalist system.

The kind of ethics or arts needed to avoid our collective suicide is not more productivity lines, must follow conservation instinct as specie, and regenerate earth following one easy rule, the least action principle used as collective intelligence, for efficacious environmental decisions. This physical earth state diagnostic and remedy recipe, need a strategy to get social impulse, www.sana.org.pe is one, and we needs more, similar...

So, for any person uses least action principle as master, the only thing we need to improve is, teach fundamental distinction between energies, by qualitative value, kinetics K_e and potentials P_e ; so then, easy calculate his physical Action= $\sum \{ K_e - P_e \} \cdot \Delta t$, at period of observation, a very simple precise and useful decision.

A- Action minus means decrease humans world kinetics and increase nature potential energies, anyway, anywhere an unsaleable ecologic responsibility argument that cools the earth, & +A+ the original sin, heats the world in direct proportionality to money inversions, independent of human ethics. Intelligent men keep innate preservation instinct, it allows us to turn 180 degrees from heating + A+ and - A- to => -A+ & +A- cooling. To understand Nature Physics Philosophy, you don't need go NASA, just wise knowledge

Also, teach energy flux or forcing to all people, is a qualitative change in schools' philosophy, this is fundamental for any agriculturist, photographer, biologist, optical and anyone that want to understand earth functions or life laws. Also, is a fundamental concept to made land energy balances. Knowing that a w/m² = MW/Km², is illustrative.

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Additional reflections

We let clear that, these ecologic solutions are not directed by economy, it is direct economy. principally because we are part of nature, and looking responsibilities on flat ground, within earth and humans, we can imagine historical capitalism market relation were a small flux of North money-£¥€\$ went to the source South, and a great flux of several materials went to N Nerd\$ with great profitability and materializing capital at North, instead, at source territories, social economy get depressed; the TINA Thatcher phrase: *there is no alternative*, is a confession

To put money on the table is not an equity rule in relations of humans with Earth; There, the depressed South sources need to geopolitically increase nature potentials $Pe+$ with $A- > F-$. NN must compensate these efforts with equivalent $A-$ & $F-$ by implementing renewable energy systems so, in a equitable ecological contract or ESTEFAM rules, lands finally get $2F-$ & cool.

Here an Example: responsibilities are differentiated between S of N, both common $F+$, must promote $F-$. If voluntary labor effected to restore potential nature energy along the S, the N can provide ecological compensation with RES renewable energy systems by using ESTEFAM rules. This way Earth is compensated for past ecologic debts with $\sim 2F-$. We repeat here just for novelty, but barter has always existed, so ecological interchange could be of any kind, but measuring with precision: E, F, A & Materials, helps to make agreements with equity between N, S and Earth.

(Because All, Historical Global Market debts with Gaia Madre Earth Pachamama only can be repair, regenerating territories, water sources, water sinks, forest, biodiversity nature land and energizing people homes, with use of all local renewable clean energy systems +water +Andens platforms at Andes & Rocky's, Alps, Himalayans, Hindus, Kushs, with basin towns returning all biomass, as Rathan Lal indicate and also, doing recurrent snow augmentation operations, with communities, by scattering from UAV N2L liquid cold air over super cold clouds, at mountain glaciers. (The story for repair and regenerate earth is long but was part of a bilingual poster at Rio+20 here at the end <http://hvr.cd.com/KUYCHYR.pdf>)

Ecologic debts are for real, the old social contract deaths, mean that guilts are no more undercover, new ecological contract between Giga-Humanity and Mother Earth mean Peace in space-time (Pacha). Natural rules broken by the world, if continue, is TINA Thatcher reborn, the capital rent & productivity fascism. The Action needed for sustainability, are $-A+$ 😞 & $+A-$ 😊. Questions arise, is "lap" collective mind intelligence possible at Giga-humanity level? Sure.

Suggestions for IPCC improvements

Sure is important the emission and his atmospheric accumulation state to change for less, but the emissions speech for climate actions of any kind (~~adaptation, mitigation~~) is not useful, what needs to be on stage at words market is nature regeneration & clean energy, in vogue...

Can the IPCC Change his role, from papers reviews and go direct in to –Action, like effectively increase Biodiversity by Jungles planification, as collective Giga-humanity, without a penny? ... as agroecologist do in many places and examples show here <http://hvrcd.com/perccp.pdf> What the UN countries spends yearly doing statistics of gaseous emissions for UNFCCC, haven't change the actual environmental crisis by GH&CC, so we have at news today California Fires(CF) and a lot more around the world, plus internal combustion of fossil fuels at emissions levels like before pandemic, the business as usual continues, mean hundreds millions efficient (CF), is perform daily by humanity, look like white terrorism, especially if we know that, to keep in moving things in nature we only needs Newton first law, sum of forces equal zero...

The uses of machines by men start early at human history, the use of machines that intensively and efficiently use nonrenewable fossils energies, start with industrial age, this explain why now 1 calorie of food require input 9.5 more, instead preindustrial values of 0.85 that sustained in human labor and photosynthesis, returns more by less. So, industrials' are worry about £¥€\$ & energy efficiency on machines, instead of efficacious human physical actions in history.

An example illustrate why IPCC must improve his speech from efficiency to efficacious & move from emissions to actions. We know that fossil fuels were formed in millions of years and that we have burned it rapidly let's say in 3 centuries; even with a great uncertainty in the numbers, Here is defined for *processes life efficacious* $\zeta = [\text{useful action} / \text{action used, to get}]$. Example, for oil, we see the burning process as useful action and, its formation as a geological process. We can observe for Oil Life Effectiveness $\zeta = E_u \cdot t_u / E_f \cdot t_f$. In practice this number depends of energy a few, but of time, a lot. The burning turns out to be very ineffective, also burning is a process of little efficiency. Efficacious Oil burning is a Zero point followed by many zeros 0.000..X , same criteria is used at mining, felling of trees, programmed obsolescence and planned human life culture, based on a social contract full of avaricious economy, not effective.

The actual climate crisis can't wait UN-2030 or reviews of models IPCC 2050, the carbon budget and new atmospheric sensitivity, demands us to now quarantine fossil machines and capital productivity, until environmental fever show signs of improvements, uses your legs and arms combined with machines of clean, renewable, local energy. Humanity is the closer source of distributed renewable energy, with a minimal peak power superior to 700GW; the Sun, oceans, forest, rivers, winds, atoms provides enough to get ecological harmony with mother earth.

PLANET (SOCIETIES (MARKETS)) <-> ECOLOGY (SOCIOLOGY (ECONOMY)). The inclusion of sets shown, gives certainty about the order to proceed with the paradigm shift, today the financial rules imposed on policies, inverts natural order of the sets, prioritizing maximum profitability, is a very useful invention for capitalists that, prioritized became dangerous. The Economy must abandon social contract and accept ecological contract, as ESTEFAM described before, where Earth rules need to be accepted or new generations are condemned to a dangerous planet, with severe extinctions probability. IPCC science neutrality is not allowed in a matter like this.

Conclusion

Finally, COVID-19 pandemic has shown the resilience of educated class, so to improve humanity resilience to the problem of energy and climate, education in energy concepts and practice in renewable energy systems, together with regenerative ecological agriculture are the best strategy to avoid extinctions. So, citizens have a lot to learn from new IPCC role and indigenous spiritual heritage

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