Implications of Global Peak Energy

This is as "Big Picture" and most broadly categorical stroke of the brush as it gets: the global world as a whole in aggregate totality is now fastly running out of energy, and we have peaked in late 2019 in terms of both the quantity and quality of high-density energy sources available for our collective use.

... that nest egg you saved up is not going to be there for you for the simple fact that the global useable energy is gone... the purchasing power of money was always almost entirely inflated by the availability of cheap and abundantly high-quality energy (and the “work/productivity multiplier effect” derived thereof) and the assumption that it would always be the case of remaining exercisable and actualizable into perpetuity.....

For every calorie of food that is consumed, on average nine other calories of energy were required to produce it. When the first barrel of oil was produced back in 1850's the global world population stood at just 1 billion people. Since oil was first discovered the human population on earth has exploded over 800% in this very short period of time and this would never have been possible without the existence of cheap and abundant energy dense hydrocarbon resources that directly powered and fueled the mass production of food required to sustain such artificially high population levels.

A gallon of gas contains about 132 million joules of energy, or the equivalent of nearly two weeks (actually six weeks if considering 8 hour workdays) of manual human muscle power and labor. Currently the minimum wage is $7.25/hr and with gas at $2.8 USD per gallon, this roughly translates to acquiring 2 gallons of gas per hour and obtaining the energy and work/force multiplier of almost a factor of 672 times for the lowest paid member of society. By some estimates every American has somewhere between 200 to 8,000 'energy slaves'.

Currently you can buy 1 kilowatt hour of power from the grid for about ten cents. But imagine what it would cost you to hire a worker to pull a car of 2,500 lbs., using a pulley with a factor of 1:40, from the ground to the top of the Empire State Building. That's at least a day's of hard work or $200 to $300 in money terms. This perfectly illustrates the huge subsidy modern industrial society enjoys while the oil age will last, which is not too long anymore.

If you look at our planet as an isolated physical system (3-D sphere in vacuum of ‘outer space’) then from a physics, mathematical, energy and entropy/thermodynamic standpoint it's clear that we have already used up (collectively on global scale) the vast majority of the high-density, high-quality, high EROEI, "low entropy" energy sources on our planet, while at the same time our human population is higher than it's ever been before, whilst many of the developing countries are still trying to jump on the capitalism bandwagon and chase their own version of the American dream by propelling upwards the quality of life, living standards and GDP/energy-usage-per-capita of their own citizens... all the economic models of modern times are based on the axiomatic and ‘a
priori’ assumption of infinite perpetual growth... and none of the models account for the fact that by all accounts back in late 2019 we have already globally peaked...

Money is just a mere abstract symbolic token representation of the ability of cheap and abundant higher EROEI (Energy Returned on Energy Invested) energy to do ‘work’ on our behalf. No amount of funny-money fiscal policy can change the fact that the underlying physical system that powers absolutely everything we do has ran out of energy. It does the world absolutely zero net-benefit to expend more energy to extract, process and make usable an energy source than the energy we can get out of it, regardless of how much money someone is willing to pay for it. Likewise, Ethanol as a net-energy-sink (basically converting oil to fertilizers to grow corn and then reconverting corn back to fuel) also does nothing but serve to make our collective energy problem that much worse regardless of how much the government is willing to economically/price subsidize for it.

When the quality and quantity of energy available to us continues to decline and decrease, then proportionately so does the value or purchasing power of the money that we hold... for that money was a mere representation of the ‘multiplier-effect’ of energy/work and the resulting productivity that cheap energy had amplified and enabled. But with the energy depleted so too does our money become worthless.

In high school and through much of our higher education we are all taught the concept of the “time value of money”. We are told that if we save a little and put aside a portion of our money to allow it to grow (“make your money work for you”) that by the time we retire at age 65 or 70 or older, that given a reasonably sustained interest rate and steady overall rate of return of the growth of our savings due to compound interest, etc it would have amassed into a small fortune of a few million dollars or more.

All of the above is indeed predicated upon the assumption of perpetual and continuous global growth. In pre-agricultural times when there were no forms of monetary accounting nor any surplus, we consumed what we had and when we had it, and anything extra that we set aside would either retain value or lose value over time, naturally and even from a physics and thermodynamics and entropy standpoint, it would certainly never “grow” in value. So taken in aggregate and in general, the growth of an individual’s savings or “investments” is directly coupled to the overall ability of society to grow as a whole. By deferring expenditures and putting that aside and allocating that portion of their monies to go towards capital to helping society and civilization to continue to expand, populate, and grow, the individual is repaid in kind at the end of his or her life as their investment in the entire pool is conflated with the overall growth of society. By putting a piece of their money into the pie, their individual slice grows larger as the entire pie as a whole expands.

In the long run, and from the bigger picture perspective, a net-positive rate of return-on-investment overall in aggregate is only possible in whole of society if that society or global civilization continued to grow as a whole... Continued global growth is only possible if we are able to consume more and more resources as well as have increasingly abundant access to usable energy of EROEI density sufficient to power modern global civilization and it’s continued upwards growth.
Given that our modern civilization and globalized economy/world is predominantly powered by fossil fuels and hydrocarbons as the main source of energy, and given the fact that we enjoy and are indeed direct recipients of this "multiplier of work/productivity/wealth" enabled by the use of (still relatively) cheap and abundant oil, natural gas, coal, etc it stands to reason that as we approach the final global limits to energy consumption growth, so will our aggregate economies contract... by most estimates global production of conventional oil peaked back in 2019, and there is no turning back...

There is no debate that we have long since passed peak discovery curve. And there is no doubt that all production/consumption curves must necessarily follow and trail their discovery curves/peaks...This is basic logic, math, physics...

Nothing in the short term will be able to replace in masse nor fully substitute the vast energy deficit left by both the decline in quantity of fossil fuels and the drop in quality (EROEI) of the limited quantity still remaining. Renewables such as solar are currently subsidized by governments economically and entropically by leveraging our existing fossil fuel infrastructure, and solar is a net energy sink as far as modern civilization is concerned given we require at least EROEI of 7 to just survive (15+ to thrive) and the rate limiting factor of lithium, battery technology, rare-earths all add up to the infeasibility of solar as a renewable solution.

The "energy payback time" of renewables means it will incur a permanent 'energy taxation' on all work/productivity/interactions in society somewhere between 20% to 40%, and this a thermodynamic physical energy taxation that comes before any government taxation (resulting in a total collapse of global economies and permanent macroeconomic depression everywhere) and that is even assuming there are enough raw resources to scale up (and later maintain) renewables to replace fossil fuels in mass in the first place. (there is not)

None of the renewables are energy dense enough (high threshold of EROEI) to power modern society at scale and certainly not the kind of globalized world we have become accustomed to... for example solar has an energy payback of 2 to 3 years currently... that means for the first three years of a solar project you have net sunk energy into it and don't make an energy profit until after that period. Then after ten years or so you have to expend even more resources and energy to replace/maintain the panels and turbines. Whereas oil has an energy payback period of exactly zero days, you can use it immediately to provide net positive energy and it is both a means of energy and storage of energy. The problem with solar and wind is that it needs energy storage, and there are not enough lithium, copper, nor rare-earth in the world to be able to build enough batteries to store enough energy to scale to the entire world's current energy consumption levels even if we could achieve 100% renewable sources... (solar, wind, hydro, etc)

Even if we solved nuclear fusion or fast breeder reactors today it would still take another three decades to fully scale up, and our global civilization cannot avoid the common collapse in the meantime...
Given that globally economies will shrink as a whole, given that our total access to energy both in terms of quantity of energy and the quality of remaining energy will continue to steadily decline over time, and since clearly it has been established that modern global wealth is entirely dependent upon its access to energy; it is inevitable to assume anything else other than the reality that as the aggregate amount of real energy, resources and wealth on our planet falls off a cliff and we enter the long decline/collapse that we will have a massive surplus of the "symbolic human construct" that we have used to "count up, tally, measure, represent and account for energy, resources, wealth, etc out there in the world." and therefore with a bunch of existing money no longer able to find/pair/bind with their corresponding resource/wealth counterparts out there in the 'real world', we have a situation of hyperinflation whereby all currencies and monies will lose the vast majority of their currently perceived value and purchasing power... those that get out fast and convert to real hard assets and tangible resources first will be much better off than those left holding fiat currency or digital cryptocurrencies...but in truth almost none will be spared as the current situation is more akin to the Earth being one giant 3-D "Easter Island" in space and we have used up all the high density 'free energy' that accumulated over the course of billions of years in a comparative blink of an eye (roughly 150 years since the Industrial revolution and most of it on the backend of the last four decades)

Wealth creation is actually the extraction, conversion and consumption of energy. All other forms of wealth are merely derivatives that are layered on top of and powered directly or indirectly by the underlining energy infrastructure of society/civilization. For billions of years, through a process of photosynthesis and thanks to the natural energy from our closest star the sun, our planet has steadily built up a massive reserve of energy, mainly in the form of hydrocarbons underneath the ground. And yet in less than 150 years since the industrial revolution began, we have globally already consumed more than half of all available hydrocarbons and nearly all of the sweet crude, high density EROEI, and other easy-to-extract low-hanging-fruit energy sources on earth. The implications are indeed foreboding.

Modern civilization is built upon both the expectation and the requirement of perpetual infinite growth in order to be sustained, and its tenet is one of always borrowing from the expectation of future growth to use as collateral to pay for the present/current debts and expenses... essentially it is the most massive high level Ponzi Pyramid scheme of the ultimate form of kicking the can down the road that humanity has ever conjured up or invented... From fiat currency to fractional reserve banking systems to petrodollar hegemony and quantitative easing, etc it is simply the way we have structured our society and our financial systems by assuming that we will always grow ourselves out of debt and using the assumption of tomorrow’s growth as collateral for today’s level of expenditures. The issue is modern society and thus growth as we know it to be, are both entirely predicated upon the prerequisite ability to continue to extract, process, convert and consume energy at increasingly faster and faster rates. Indeed, our entire global civilization is wholly dependent upon the sort of specialization-of-skill, just-in-time logistics, and economics-of-scale that only a massive interconnected global population sustained by very high-density net-energy sources (hydrocarbons) could provide.
Pertaining to the “Net Energy Cliff”, modern civilization is highly dependent upon high thresholds of EROEI (Energy Returned on Energy Invested) in order to sustain the sort of globalized Just-In-Time structures needed for modern society and trade, and to prop up the sort of high standards of living and at the enormously high levels of carrying capacity (almost 8 billion humans) that we’ve all come and grown to be accustomed to in the so-called modern world for the past hundred years or so...
The human body is 70% water. You don't have to lose the very last drop of water in your body to die. Once you lose 10% of water weight you are severely dehydrated and at the edge of death, by the time your body lost 20% of its weight in water you are already dead. Likewise, modern civilization doesn't have to run out of oil before it dies... We are already margined to the hilt and basically the entire system is like Gamestop gambling on margin and we need continuously growth in order just to sustain the fabric of globalized society, any slowdown means the entire house of cards come toppling down! In terms of high quality conventional oil the world has already peaked back in 2008 and now we are relying on unconventional shale, fracking, etc etc to make up for the energy deficits but like turning the knob faster and faster towards the Hot side of a shower as the hot water starts running out, we are only delaying the inevitable and making the collapse cliff that much more steeper when it finally implodes upon itself...

Back in the golden age of oil for one barrel of oil energy expended we could drill, extract, process and make usable about 100 additional barrels of oil, that was an EROEI ratio of 100 to 1. Now we are barely at EROEI ratio of 10 to 1. All the sweet crude is gone, there are no more low hanging fruits, it’s just the dirty, sulfuric, hard to extract/drill and energy intensive to process/refine tar stuff left now... so even the quality and density and usable energy we are getting from the remaining hydrocarbons under the ground have reached terminal point of diminishing returns... when you have reached "peak" oil and have approximately half of the reserves left underground, from an energy perspective you really only have 10% left in the gas tank even though the meter says it's still half full...
Infinite growth in a finite environment is a mathematical impossibility. Human population growth tracks precisely that of bacteria growth in a Petri dish right before it encounters rapid die-off as it hits its resource constraints...

![Graph showing world population growth over 5 million years](image)

It is perhaps all about the so-called ‘second law’ of thermodynamics. Which is also intertwined with the concept called the "arrow of time" in our physical universe. Nature abhors a vacuum, we simply live in a universe in which entropy maximization/optimization is the highest order directive. It is the only real imperative, if you will, that drives everything else. Indeed, life itself and including evolution by natural selection, etc... are all direct and inevitable consequences of this so-called optimization of entropy maximization.

Due to the 2nd law, the evolution of the neocortical regions of our brains in the homo sapiens species, intelligence evolved in humans because there was so much energy potential in the ground, such energy gradients required an advanced mammalian species to come along in order to truly take advantage of it and help it speed up the inevitable journey of low entropy to high entropy. The evolution of intelligence in biological lifeforms such as humans and the emergence of complex systems (math, science, written language, human society, social networks/civilization, specialization of skill, economies of scale, industrial revolution, the computer age, etc) are the
direct result of the impeding march towards optimization of equalization of energy gradients. The purpose of biological life is to disperse energy. Nature abhors a gradient, thus open physical systems all embody the law of being driven by the dispersal of energy, continually attempting to achieve equilibrium.

Humans are thus in a very real sense sunlight transmogrified, temporary transient waypoints in the flow of energy. The tendency for life to become more complex over the past 3.5 billion years is not due simply to pressures of natural selection, but also to nature's efforts to grab more and more of the sun's flow. (or the take the broader view that natural selection is itself emergent property driven by the same thermodynamic principle: increasing entropy and decreasing energy differences.) Complex, cycling, swirling systems of matter have a natural tendency to emerge in the face of energy gradients. This recurrent phenomenon may even have been the driving force behind life's origins as genetic code (the digital database of DNA serving as blueprint for carbon based biological molecular machines) might have served as another primordial mechanism, acting as a catalyst that could increase energy flow toward greater entropy. In this larger context it would seem that organized structure and hierarchical organization emerged and developed because they provided paths for increasing energy flows.

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The Great Reset
In a post-UBI/UBS (Universal Basic Income/Services) world in which income is decoupled from work, machines taking over for physical and intellectual labor, and the cost of all labor from janitors to CEO across the board reduced to mere electricity or electric costs of running the AI inferences, then more important than ever is up keeping and perfecting the aesthetic physique in both genders, especially now that women have and will continue to become much less reliant on men for resources, therefore decoupling status, wealth, intellect, power from that of attraction in terms of mating strategies.

The true value of any man is not defined by how much money he makes nor how spiritual he is nor how much weights he can lift, nor by how hard he works, nor how smart he is, etc but that it is actually measured by the beauty of the woman he partakes and behold. In essence, Beauty being the most honest signifier in any woman, the real measure of success of a man is if he can obtain an extremely beautiful woman in his life to love and to hold, everything else is secondary.

The true measure and real value of a man is derived from the aesthetic quality of the women he beholds. Sexual reproduction through evolution by pressures of natural selection is the ultimate "end" to every other "means" for biological life, including that of human life. From the perspective of a man, the greatest success he could ever possibly achieve in his lifetime is the pursuit and attainment of incredibly beautiful women and the access and opportunity to mate and reproduce with them. Aesthetic feminine beauty conveys form as the essence of function; and in human terms personality being inextricably correlated with physical appearance, we do judge a book by both its content and its cover – as one cannot be separated from nor exists independently of the other. Thus a man should be judged predominantly by the beauty of the mother of his children because that is the only way he can elevate the genetic status of his offspring and win the sexual reproductive fitness lottery in the process of his pattern/code propagation. All other measures and yardsticks of value, worth, achievement and success in life are nothing more than mere higher-order artificial constructs abstracting away from the only thing that actually matters.

Indeed, in this regard it is not the aesthetic beauty of a man's woman that is the litmus test of his actual worth, but rather it is the other way around, as its really everything else in life that are the approximate abstractions and token derivatives of this aforementioned singular and direct value and measure, for everything else in his life, and everything else in society itself all builds upon this uniquely singular distinction of value.

Absolutely everything else that a man could ever conceivably achieve in his life all work towards maximizing his reproductive fitness by securing the most attractive woman that he can possibly obtain. Abstract concepts like 'net worth' did not exists before the invention of agriculture as our nomadic hunter and gatherer ancestors had no notion of the concept of accumulation of wealth. Nor does a surplus of knowledge retention and amassing of information serve him any other purpose beyond the initial advantages that applications of such intellect can achieve towards his pursuit of extremely attractive women.
And it is true that biologically we are not that fundamentally different from our nomadic hunter and gatherer ancestors whom evolved and lived on the grassy plains along the river and who had no concept of abstractions such as accumulation of wealth or the massing of knowledge, or saving for retirement, etc.

We are thus hardwired to instinctively find most salient, compelling and visceral the elements of being alive, and it is this that truly brings out the most genuine forms of happiness in each of us. There are many perspectives in life but I choose to think one of the greatest of them all is the enjoyment of femininity, there is nothing more alluring than to take in the raw essence of such a sensually captivating woman, such an emotively poignant woman, and to be graced by the view and the gift of her absolute tenderness, total vulnerability, and flowering surrender.

But the "aesthetics-first" approach is not the same as being physically fittest, nor muscurally strongest, nor does it mean excelling at sports. It simply is aesthetics for aesthetics sake, and here the "means" and the "ends" are one and the same. We all find ourselves in the unique situation of being stuck in between a rock and a hard place in that we are still in some aspects beholden to our vestigial traits of eons ago and the remnants of our evolutionary past, and yet find ourselves in a new age in which a lot of what used to have mattered have been rendered all but redundant and obsolete from a functional perspective.

For example, women prefer taller men because as humans we evolved in the tall grassy plains in which the early proto-men who were able to stand up taller and more erect were also able to better see both potential prey and avoid possible dangers in the distance, yet in today’s society where food is no longer a real concern for survival (in fact due to automation and economics of scale less than 1% of the US labor force is actually involved in the production of food) and the inventions of modern day weapons such as firearms affords the average human more than sufficient protection against the largest of wild and aggressive animals, (not to mention that 911, Police, and the Law and Order infrastructure has all but outsourced individual protection to the abstract concept of the State) there is no longer the functional advantage nor the survival need for women to prefer physically taller or muscurally stronger men, (and yet they still do) hence the visceral preference has long been entirely decoupled from its evolutionary functional underlines. The undeniable fact is that there is a very long lag time, if you will, between the circumstances that our ancestors evolved under from an anthropological perspective, and that of the actual modern circumstances that we find ourselves in today. In essence, we now collectively exist in a state where our rewards are no longer directly associated with actual survival, and many things like men's preference for beautiful women are much akin to the peacock’s runaway sexual selection. Beauty serves itself, and is its own intrinsic meaning, value and good. Aesthetics and pleasure for their own sakes. We are to enjoy pleasures that have underlining mechanisms which no longer serve any true or active function. There is no better example of this than perhaps couples having sex while wearing condoms or on contraceptives.

Thus, in all aspects of life we should understand how Mother Nature really works, but adapt it to our current environment and modern surroundings and learn how to allow ourselves to take advantage of the pleasures of life (which are primitive and evolved during the cavemen and stone age eras) whilst at the same time mentally and emotively separating, casting aside and disassociating them from the underlining mechanisms that they used to (but no longer) serve. After
all, there is nothing natural about driving a car across town to go lift heavy plates on a contraption called an exercise machine, when in reality a physically fit body used to signify that a man lived an active lifestyle and took risks, these days modern men who no longer need to hunt and fight for their food and daily survival merely create the illusion of Tarzan by undergoing an artificial contortion routine of hitting the gym, lifting heavy iron, using fitness apps and taking protein powder. So to that end, and in furtherance of what we are already doing anyway, the absolute best strategy and approach for any man in improving his own physicality especially as it pertains and relates to gaining attraction and appeal from the opposite gender, is to take that of the "aesthetics-first" approach and asymmetrically concentrate on looking good, first and foremost, instead of worrying about being healthy or being strong or being coordinated. Exercise and lifting weights in pursuit of building the most attractive bodily physique that his genetics template will allow him to become is number one priority above all; everything else, such as like actual health, raw power and strength and the amount he is able to lift, bench, etc and other aspects such as eye-hand coordination and "sports skills" etc come secondary (and are unimportant) to the 'a priori' aesthetics imperative.

The real question that I, as an average man, ask myself is if hypothetically I could actually be with a woman just like her, how would the rest of my entire life be different from an emotional and experiential perspective. I imagine that the hedonistic pleasure that I am able to constantly and perpetually derive from the enjoyment of her most perfect feminine aesthetic beauty, elegance, and grace would permeate and expand into every other aspect and component of my entire life, thus making the highs even higher and even the lows far more bearable, perhaps even enjoyable when cast under such a different light and unique perspective. Her presence, her essence and her beauty would simply serve as a sort of tint that colors and reshapes my entire lens and view on life. While objectively nothing in my external world reality may change, I know that subjectively everything changes forever. Life would simply never be the same again for me.

That sort of ubiquitous, expansive, and pervasive happiness and joy obtained from chasing, catching, and loving such an existential supremum beauty is the absolute pinnacle of existence for a man. There is nothing better or more compelling than to be able to glance at such a beautiful creature and realize anew for the first time, every time, just why she is so captivating and to re-examine her absolute memorizing beauty in such awe-inspiring wonderment. Such beauty is devastatingly distracting, and it overwhelms the senses, and yet it is calming and soothing. It nurtures and feeds, inspiring and evoking it's counterpart masculinity. Deep down, I do believe that to be able to finally behold at long last in the flesh the physical instantiation and exact embodiment of the sort of idealistic, archetypal and classic quintessential beauty would actually be enough for me. Enough to be fully contented, immensely satisfied and happy forever. Being in that state-of-being and that zone-of-awareness feels like finally coming home and being fully completed. That illusive missing piece of the puzzle resolved.

Indeed, any man lucky enough to have a woman like that would surely feel like he had won the ultimate prize in life. Every time he makes love to her he would instinctively know that he was experiencing the very best life had to offer him, and that nothing else could ever be better nor more sweeter than that. To wake up with her by his side in bed, such satisfying experience could never be topped, duplicated or substituted by anything else he could ever hope to do on this earth or in this life. To be loved by such a woman is perhaps not an achievement earned but a gift freely bestowed. If love is such an intensely powerful force of life, then perhaps there are none more
compelling, more liberating, more exhilarating and more intensely moving than to be truly loved, fervently, deeply, most endearingly loved and loved back in return by a woman like that.

As a man I can think of no higher highs nor more perfect of perfections than this. In the entire domain, range, and spectrum of the totality of all reality and existence, taking into account and consideration the vastly enumerable palettes of qualia, such categorical perceptions, analytical overlays and neural correlates of consciousness, and the aggregate mosaic of the emergent structures of all accompanying emotions, emotive constructs, experiential flows, sensations, feelings, moods, modes of existence, states of beings, and possible moments and experiences etc, if I could only make one singular wish in life, it had always been just this. I would want above all else this to be the real center of my life that everything else revolves around, and she being the central theme and fabric and tapestry of the story of my life.