LOW TECHNOLOGY INSTITUTE
WHITEPAPER

LOW TECH NEW DEAL

No. 1

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The Green New Deal (GND) has garnered support and opprobrium since it was published. While this plan at least acknowledges the problem of climate change and identifies the proper scale of our reaction, we can point to large gaps in the plan that must be remedied: All this construction while still limiting emissions? Who will truly profit economically from this plan? How do we pay for it?

The biggest gap is that this plan is essentially that it is a way to continue an anthropocentric, high-consumption way of life. LTI is not opposed to this or any other point of view per se. If we could continue to live a human-focused, materialist lifestyle with no negative repercussions to ecosystems, other living creatures, the climate, or society, then by all means *laissez les bons temps rouler*. But this isn't the case.

The most basic restriction to our carrying capacity is solar radiation: it drives wind and water cycles as well as provides direct (solar panel and heating) and indirect (biomass creation and combustion) energy. We get about 280 BTU/ft²/hr at noon from solar radiation, but the average solar panel gets four hours of "full sun" per day and panels capture about 50 BTU/ft²/hr[1] as a rough estimate. The US consumes about 9.727×10^{16} BTU per year.[2] If we wanted to get this much power from the sun, we'd have to build enough solar panels to cover 47,795 mi², or about the size of the state of New York. This doesn't take into consideration the creation and installation of the panels, transmission losses of electricity (maybe 1 percent/100 mi), etc. We won't go into the total energy-generating capacity of non-carbon-emitting energy sources, but suffice it to say, we can't generate enough electricity to simply switch over from fossil fuels. This means we have to reduce our use of energy. We did a whole podcast about how Buckminster Fuller visualized our reliance on energy "slaves" (Low Tech Podcast, No. 34).

With these two points in mind—anthropocentrism and carrying capacity—let's turn to what could be considered the Low Tech New Deal. Unfortunately, it is not as enticing as the GND for most of us living comfortably today. It

1 https://www.solarpowerrocks.com/solar-basics/how-much-electricity-does-a-solar-panel-produce/

2 https://www.eia.gov/energyexplained/?page=us_energy_home

would require an equally large societal reorganization, but instead of one that ignores the costs of getting there, the LTND would get us to net-zero emissions and long-term sustainability. While our way of living would be unrecognizable in some regards, the biggest change would have to be our outlook on life and what it means to live a good one. Warning: this will not be easy or popular.

The Low Tech New Deal

We must lay out the two criteria that we are trying to meet with this deal. First, any solution to the climate crisis must bring our emissions down to net zero as quickly as possible (and maybe even reverse the harmful levels of CO_2 in the atmosphere). Second, continual growth is not possible in a finite world over enough time. Thus our solution must be sustainable into the distant future for ecosystems, non-human life, and human life alike. This means it should be a stable-state economy and way of life for us and our surroundings, neither growing to consume everything nor fading away to nothing.

Low Tech New Deal Three Rules

1. **One Among Many:** We must recognize that human beings are just one of many organisms on the planet. Human beings' ability to think has enabled us to overvalue our position on Earth. While we can out-think insects, they out-eat us, out-weigh us, and out-number us. Metacognition, or our ability to think about thinking, ourselves, and our place in the world, however, has endowed humans with hubris. These abilities have granted us an out-sized influence on the world and dominion over other organisms, but with this power comes responsibility. We have been shirking our responsibility and abusing our influence. We must take a more objective view of life on Earth and use that perspective to reign in our arrogance.
2. **Natural Mimicry:** We live in a post-Englightenment society and (most of us) believe that science and careful study can lead to greater understanding of the world, often through experimentation. Nature has been running experiments in survival for over four billion years, since the beginning of life on Earth. Species successful in the long term have three things in common. First, they depend on the sun or sun-derived products for subsistence. Second, they have built-in mechanisms to avoid depleting their resources. Third, they can utilize a wide variety of resources to reduce risk. We should work to emulate nature's successful experiments.
3. **Simple > Complex > Complicated:** We purposefully complicate our lives and call it progress. Living depends on five actions: sleeping, eating, drinking, breathing, and eliminating (plus procreation when we discuss the continuation of species). From a minimalist point of view, everything we do beyond fulfilling these five-plus actions is an added complication. We must eliminate the complications, reduce complexity, and champion the simple and straightforward solutions. The more of our five actions that we can see to for ourselves, the better.

First, three rules we as a society must agree to live by.

We have derived three central rules for long-term viability, which we will use to guide our choices in the LTND (see previous page, box).

Second, how to get there from here.

Our society is in an airplane and the fuel is running out. We can choose to land the plane now or continue flying until we're on empty. An emergency landing today is inherently better for long-term survival than attempting a crash landing tomorrow. If it is not clear to you already that we are in this predicament, please stop and read the conservative IPCC special report found here[3] and summarized here.[4]

We have been posting on the blog about the future of our global society in terms of energy, economy, society, and food since 2016. What follows is a scenario that weaves these ideas together. When possible, links are included to previous posts that give more background and reasoning behind the shorter descriptions here. And now, without further ado, on to the plan.

> We need to take the next five years and massively overhaul how society lives with the goal of completely eliminating our dependence on nonrenewable resources.

That's it. That's the plan. Let's look at what that means on a practical and personal level.

The GND talks about a nation-wide build up of infrastructure and the economy, but this ignores how humans function as individuals, households, and communities. It is hard for us to see results when we are a tiny percentage in a massive effort. It is psychologically easier to do things in your own community because you'll see the results. Therefore, we call for individual-, household-, and community-scale solutions to this problem but across the industrialized nations, as much of the nonindustrialized world can live without nonrenewable resources already (sorry, these are broad strokes without nuance, but desperate times . . .).

Starting now and continuing over the next five years, every person must evaluate his/her life and determine how s/he will live without fossil fuels and other nonrenewables. Stop reading for a minute and think how this might affect you and your life. I'll wait. . . . Now what can you do in the next five years to create a self-sustaining life? Most of us will have to quit or curtail our jobs over this period as 80 percent[5] of jobs are in the service sector. Many jobs will still exist after the transition: doctors, teachers, physical and mechanical work, etc. If your job is not providing a direct service to your

3 https://www.ipcc.ch/site/assets/uploads/sites/2/2018/07/SR15_SPM_version_stand_alone_LR.pdf

4 https://lowtechinstitute.org/2018/10/09/ipcc-special-report-summary-and-comments/

5 https://2016.trade.gov/publications/ita-newsletter/1010/services-sector-how-best-to-measure-it.asp

new community, you'll have to be doing something else with your now-free time. For most of us, this will be growing food.[6]

Before industrialization, every large-scale complex society — whether it is the Romans, Egyptians, Maya, Chinese, or Mesopotamians — had about a ten-to-one ratio of food growers to craft specialists. We don't have to go back to this ratio. We could split our own time this way: ten hours of growing and preserving food and one hour on our cottage industries. This may sound bleak, but with our advances in communication and plant science, perhaps we can get this ratio closer to 5:1.

As absurd as this sounds, consider how much of our food today is completely dependent on fossil fuels for fertilizer, processing, transportation, etc.[7] Without the concentrated source of energy, our labor increases greatly. In five years, we won't be able to build all-electric tractors; think of the mining and production alone. We can, though, create enough self-reproducing powerhouses that are fueled by marginal and renewable plant matter: horses, mules, donkeys, and oxen.

In the households and communities across the country, intensive gardening will have to become widespread. We have no other way of feeding ourselves when we no longer have fossil-fueled transportation of fruits, vegetables, and staples from California. Ironically, the suburbs will fare well, as most suburban homes have a large enough yard to grow a considerable amount of food. Cities will have to drastically reduce in population[8] as they just don't have enough space to grow food for current residential density.

Communities should be limited by a few common-sense rules derived from other species that have learned to live successfully in large communities (e.g., ants and bees). First, each community must have a population maximum and the limit should be determined by the catchment area. A catchment area will support its population by providing enough food, water, building materials, and space. Some areas will support greater populations than others. Coasts are ecologically rich and more people can live on the resources available near the coast than in high mountains, for example. Currently the United States has about seven acres per person. Ecologically diverse and rich areas may support people on as few as three or four acres per person, while other areas might need seven to ten acres per person.

Communities should be defined within geographical areas: a watershed, around a lake,

6 https://lowtechinstitute.org/2016/11/10/hiatus-post-the-importance-of-agriculture/

7 https://lowtechinstitute.org/2019/02/05/basic-stances-industrial-agriculture/

8 https://lowtechinstitute.org/2018/03/08/basic-stances-social-organization-part-1/

along a river, a valley, etc. For some communities, it makes sense to live together densely, leaving the rest of the catchment area open for careful use. In other areas, people may prefer to spread out evenly across their territory. In all, though, communities should average about a hundred square miles and have less than ten thousand people (>6.4 acres per person). At this scale, one could cross the entire catchment area in less than an hour by bicycle. More importantly, people would know one another again. And, as most of the resources for a community would have to come from their own territory, the residents would have a vested interest in maintaining the ecological health of their surroundings.

These dispersed communities can choose how to govern themselves and their catchment area. They can experiment with different subsistence methods. Successful strategies should be shared among communities and failures can be avoided by others.

Humans thrive on knowledge and communication, so creating a robust communication infrastructure may be more important than a large energy grid. Maybe we'd create a text-only internet (which would reduce bandwidth use) to maintain our distributed knowledge across the globe. Perhaps this would be done with radio waves instead of cables. We have produced enough materials for recycling and repairing technological equipment for some time into the future.

As the five-year period of transition progresses, people and communities would have to become more and more self-sufficient. Each year, every individual, family, and community would be asked to audit themselves: "what nonrenewable resources am I still using and how can I/we create a new system to stop using them?" Long-distance, industrial food will be replaced with home- and community-grown products. Existing buildings' utilities will have to be converted: from city water systems to smaller household or community ones, from heating with fuel to passive solar, and from grid electricity to household or community generation, for example, as these solutions will vary by location, ability, and taste. Transportation networks will lose gas and even electric-powered vehicles, as the supply chain to maintain even "green" vehicles has not yet reached self-sufficiency. Waterways will become viable again and our existing roadways will experience less stress with foot, bicycle, and animal-derived transports become common again.

This can be paid for because we have no choice: if you choose to live in a house, you must pay for a roof or build it yourself. In a changing world, products and resources are more important than the yardstick of social capital used in today's society: fiat currency, that is, money. We are only stewards of our resources, not owners, and because resources ultimately derive from the earth and sun, they do not belong to any one person. Thus the richest among us have the enviable opportunity to help the most

Condensed Plan Points

1. Complete secession of the use of nonrenewable resources by 2025, including all fossil fuels. Redistribution of populations into communities of no more than 10,000 people spread across the landscape according to geographically bounded "catchment areas."
2. Communities must decide together, democratically, how to rule themselves and create a stable-state subsistence economy using only the resources available to them in their catchment areas.
3. Each year, people must audit themselves and their communities and look for ways to reduce nonrenewable resource use. After the initial five-year period, this audit will continue to evaluate the state of the catchment area's ecology to monitor for declines in any renewable resource or ecological system.
4. Resources found in these catchment areas must be distributed in a fair fashion, as decided on by direct democracy

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people by divesting their assets. Conversely, the poorest among us will get what has been owing to them due to systemic inequalities. "Socialist!" some will cry. Consider the alternative: our society collapses and 99 percent of the people have almost nothing and the top 1 percent have over 40 percent of America's wealth[9] and 50 percent of global wealth.[10] Do you want castles to make a come back, further squandering resources and time? Wouldn't it be better to be proactive and use that wealth to create a sustainable human society now? Or put it to a direct vote — it won't be 99 to 1, but it could be close.

Third, what the long-term outlook would be

If you were to visit one of these communities in fifteen years, you'd recognize much of the persistent infrastructure, but its use and modifications would be new. You'd feel at home in the society, but note the massive changes that have taken place. You'd eat well but be asked to work hard.

After the transition, our energy comes from the sun, wind, water, and animals.[11] Some solar panels power electronic equipment,[12] but as solar panels[13] cannot be built by the average person with locally available resources, their use is limited and maintenance is essential. The sun does better in heating homes and water with DIY

9 https://www.washingtonpost.com/news/wonk/wp/2017/12/06/the-richest-1-percent-now-owns-more-of-the-countrys-wealth-than-at-any-time-in-the-past-50-years/?noredirect=on&utm_term=.b51800be29d5

10 https://www.cnbc.com/2017/11/14/richest-1-percent-now-own-half-the-worlds-wealth.html

11 https://lowtechinstitute.org/2017/03/15/future-energy-generation-solutions/

12 https://lowtechinstitute.org/2017/02/28/the-problem-isnt-electricity/

13 https://lowtechinstitute.org/2017/03/06/future-energy-generation-level-i/

systems than generating electricity.[14] Wind power[15] also creates some electricity, but it does better with putting the kinetic energy to use directly: pumping water, turning tools and wheels, etc. Waterways are carefully tapped (diversion channels instead of dams) for small-scale hydropower, like the wind, used for some electricity but mostly in kinetic tasks. Traction animals[16] provide real "green" solutions for jobs that require more horsepower, literally, than a person can provide.

Our food comes from our neighborhoods and outlying areas within our catchment area. Some communities chose to live close together and have fields outside the town. Others have homesteads spread across the catchment area. Yet others have devised novel distribution across the landscape, but all are eating food grown nearby. Vegetables, fruits, and tubers provide most of our calories, and while some grains make their way onto our plates, much is fed to our animals, some of which ultimately end up in our larders and fill our butter churns. Few ancient societies traded staples (Rome is the best and worst example, as many administrations succeeded or failed due to the availability Egyptian grain shipments), and trade is restricted to shelf-stable goods of high value. With our robust communication network and knowledge of biology, many "hacks" have surfaced, helping us grow a wider diversity of food than would be expected in our varied climates.

Our infrastructure and economy grew out of our previous age. Roads and houses have been repurposed for long-term use. Mansions and McMansions have been converted to be energy efficient and now house multiple families in their many rooms. Roads last longer with lighter traffic and require maintenance and repairs. Some communities experiment with a sharing economy with little need for currency while others have tried a free market system. Yet others invented novel ways to structure their economies, but all systems must be agreed upon by democratic vote on a regular basis; any economy that has become too one-sided can be reorganized by a vote.

Society has changed, but in large part it has also stayed the same. "Face time" is in person and a community of 10,000 or less people provides a diversity of opinions and interests so that we spend our leisure time with people doing things we enjoy. Many jobs still exist, as we need healthcare, education, and specialized services to maintain our infrastructure and ecosystems, but those with these tasks are also connected with subsistence activities. We have sports teams and sometimes play against our neighboring communities. Itinerant merchants travel from catchment area to catchment area with goods, but news is spread through radio and the "text-net." Wikipedia has grown exponentially, as have specialty forums for now-disparate experts to keep up to date on the latest advancements in their fields.

Is the Low Tech New Deal Feasible? Is it Desirable?

The answer to these questions will vary by whom you ask. Technically they are feasible, but the real question is what collateral damage are we willing to ac-

14 https://lowtechinstitute.org/2018/04/19/basic-stances-energy-electricity/

15 https://lowtechinstitute.org/2017/03/14/future-energy-generation-level-iv/

16 https://lowtechinstitute.org/2017/03/13/future-energy-generation-level-ii-iii/

cept to achieve them? I did not address population,[17] for example, which may decline or perhaps could be maintained at the current level in such a situation (across the world today, we see population levels remain constant through birth-rate reduction when both sexes are educated and valued more equally).

I also fail to address the existing pollution in our ecosystems. As part of this five year plan, each community is going to have to deal with heavy metals, toxins, carcinogens, and other things we've dumped into our environment. This may mean that some areas are uninhabitable or must be left to rewild. This may cause us to further reduce our space per person, but I think we are up for the challenge. This would remedy another short coming of this proposal, which is wild space, which the nonhuman life on this world needs to survive. Although our new way of life would be easier on the landscape, we may have to concentrate down to three or four acres per person to leave a third of the world wild. Perhaps these are large designated areas as well as interstitial space between communities.

I anticipate the overwhelming majority of people in the US today would say that the LTND is undesirable. It is of course everyone's right to have an opinion. My response, however, is to ask anyone who says "no, this is not how I want to live," to suggest a better plan that meets the criteria laid out above: net-zero emissions and long-term, stable-state economy, subsistence, and ecosystems. Your critiques are welcome, but please provide a better solution where you find faults. Simply throwing up our hands and saying, "this is a terrible idea because nobody will want to live like that," is not a valid critique: I refuse to live in a Mad Max future because everyone tears down solutions without presenting better alternatives.

The reason that this is so difficult is because we don't want to give up our current way of life, but unfortunately our descendants won't have much of a choice. It is up to us to give them something stable to inherit now, while we still have time to choose.

This is part of a series on the proposed Green New Deal, originally posted March 7, 2019. See our website for an archive of all related posts: lowtechinstitute.org

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17 https://lowtechinstitute.org/2018/03/29/basic-stances-social-organization-education-and-population-part-4/