Introduction

1. You Are Here

We think we know what we are doing. We have always thought so. We never seem to acknowledge that we have been wrong in the past and so might be wrong in the future. Instead, each generation writes off earlier ones as the results of bad thinking by less able minds, and then confidently embarks on fresh errors of its own.

Michael Crichton

This is not a book about climate change. This is a book about responding to the global crisis threatening all humans, animals, and plants throughout the world. In his essay, *Deep Adaptation: A Map for Navigating Personal Tragedy,* Jem Bendell claims that people should "reassess their work and life in the face of an inevitable nearterm social collapse due to climate change".

For Bendell, the story should start with the climate change tragedy and the collapse of what we call *our civilization* and go from there. The story of this book does not start there. This book starts and ends with personal choices and with the ability to form a community not just to survive but also to thrive.

The truth is that no one can accurately predict the future. How much of humanity will survive and for how long is a complete unknown. The ideas described in this book are worth implementing regardless of climate change, even if it was somehow magically reversed. The Separation of people from nature has been considered the source for cultural

advancements, as science, art, entertainment, philosophy and the like have not been seen in the animal kingdom. Unfortunately, along the way, this separation has also been a cause of physical, mental and social degradation, not to mention causing harm to the planet and all of its inhabitants.

This book will deal with the past, the present and the future because the issues remain the same. People imagined themselves to be an extension of the gods or gods themselves, and their hubris became their downfall, in the same way that it has been the downfall of Babylon, Egypt, Greece, Rome and all other major kingdoms. After the imminent collapse of society as we know it, when people learn to reach an equilibrium with nature, they will be able to thrive, even if that takes a very long time.

Throughout the book there will be a lot of straight talk: unflinching criticism of humanity and its enterprises. That said, the pages of this book will also show faith in the human race. Warranted or not, this book is suffused with a sense of community, love and co-operation, preferring a possible positive vision on that of assured self-destruction and perpetual war.

There is no need to wait for the forces that affect our lives, whether they are our friends, family, bosses, workplaces or governments, to start making better decisions for the way we interact with the planet. Along the way, pre or post-apocalypse, there will be naysayers, there will be obstacles, there will be temptations. There will be a sense that perhaps none of it matters, that we are all just drops in a stream of negativity and waste.

The focus of the book is on personal choices, both in a spiritual as well as a practical way. Some of those can be made even within the constraints of the mass-consumerist society. Other choices will need a supportive infrastructure. The infrastructure will probably not be provided by the state or by corporation and will be needed to be built at the hyperlocal level.

This book is not about the ego of its authors. It is totally free of charge to be read online and has no print version. It has no copyright as it contains the shared wisdom of many people. Feel free to use it as you wish for your own needs. If the Internet and society starts breaking down, offline versions will be made so that it could still be available for reading.

2. Let There Be Change

Imagine yourself standing on the edge of an enormous cliff. This vast precipice spreads away from you in either direction as far as you can see. You're so far up to the edge of this cliff that your toes are hanging out into empty space. The vertigo sends waves of dizziness across your vision.

Standing next to you, also with their toes hanging over the edge of this cliff, are your family, your friends, your co-workers. Your neighbors and the mail carrier are there too. In fact every single human being on the planet is standing on this cliff edge extending in either direction into infinity. And not just the humans are there either. The pets that you care for, the birds that visit you, the deer and rabbits you occasionally see, and even the whales you watched on television are all there on the edge of that cliff.

You look down, and the bottom is so far below, shrouded in mist. The future in the depths of that expanse remains hidden by it. And yet…. every year, you chip away a couple of millimeters of rock from the edge of that cliff face, right below your feet. If we were actually standing physically in this situation, each of us would rush from the edge of that cliff as quickly as possible.

So the question is: *why don't we?*

For many years, we've seen it, talked about it, written about it and protested it. Nevertheless, ecocide continues to escalate and human activity on the planet continues to impact large swaths of life, including humanity itself.

Let us look directly into our reality, which is much more than an inconvenient truth. This reality is one

that each and every one of us has learned to deny in order to protect our comfortable lives and our financial systems.

The Web Of Life

We have mistakenly taught ourselves how to exist separately from the web of life and have believed ourselves to be superior, developing into a culture of Takers. We ignored the laws of nature and took advantage of its gifts without limitations. The consequences are evident everywhere and in our hearts - our hearts contract and harden with pain. We learned how to be cynical, how to deny and discount the *others'* wisdom.

Climate is a manifestation of the complex and awe-inspiring engagement of life -- with soil, water, air, and fire. Life creates the conditions for the vitality, prosperity and health of all creatures. It does so everywhere on the planet, in harmony with whatever local conditions exist.

The Gift

We've been losing our ability to see the wondrous gift that is life. Our gifts are no longer expressed as much because they do not have a place in the economy of limitless expansion we embody. We are confused, constantly looking for our way back to the gift, and in its absence, we fall into disease, depression and addiction.

Earth

As a result of human activity, the earth is eroded, compacted, mined, salinated and poisoned. Living soil has turned into dead earth, covered with concrete, suffocated, and depressed. Forests have turned into deserts. Countless species have become extinct.

Water

As a result of human activity, fresh water has become still, wasted, scarce and polluted. Springs have been emptied, aquifers have been salinated, lakes are drying up, and streams are turning into sewage channels. Floods are eroding the land, the sea is polluted, coral reefs are dying, fish populations are collapsing.

Trees

Trees are victims of “development”. They are cut down and violently trimmed. They are planted in unsuitable conditions for growth. Entire ecosystems that depend on trees are collapsing alongside them. Humanity keeps eliminating the planets lungs to make way for short-term and short sighted needs.

Fire

The ability to almost magically create fire has given people an edge over all the other animals on earth. Starting from the industrial era, humanity has been careless using its advantage, and slowly destroying all other forms of life on the plant. People have been using the treasured energy from the bowls of the earth and turn it into pollution that disrupts climate and destroys life.

Air

The generous air absorbs all the pollution that human activity creates. Humanity’s enterprises make it so much harder for nature to regenerate by constantly being bombarded by the pollution it generates. Species that are dependent on air are hurt and die. Increasingly stronger storms are obliterating habitats and contribute to desertification.

The Animals

The lions, the bees, the snails and the turtles - species with stable populations just a few decades ago - are all disappearing in front of our eyes. Animals in exploitative farms suffer unspeakable torment and humans are still not satiated.

Action

The sum of human activity has brought us to the brink of extinction. We experience this extinction with our flesh - in physical and mental diseases, in the loss of happiness and beauty, and in the rise of stress and anxiety.

Each and every one of these atrocities against the vitality, beauty, health and regeneration of all life on earth, including humanity, contributes to the systematic crisis we are experiencing - a crisis we call climate change. The public discourse on “climate change” fails because it attaches itself to the growth and consumption paradigms. Measuring emissions severely limits our perception and veils the full extent of the ecocide and destruction taking place.

Until now, the language of the machine, the language of numbers and profit has tempted us. We kept believing in the story of the machine and it, in turn, swallowed us and our messages. This is how we developed solutions like *green cities* and *recycling*, without getting the real change our hearts have been crying out for.

The landscapes we knew as kids continue to vanish. The trees continue to be cut down, water and air become increasingly polluted, and regardless of scientific advancements manifested in drugs, humans continue to suffer from physical and mental disease.

The life-devouring machine is so immense that its decentralised slowdown is not easily noticed. The more we work towards ending our cooperation with the insane story of unlimited growth, the faster we can all move towards an existence of joy.

Now the halt is enhanced by an opposite movement of extinction rebellion, and the fostering of renewed life.

In the name of that Life, today, we stop believing the story on which the capitalist machinery runs.

There is a much more effective story which we choose to believe instead:

Now is the time to give up our so-called superiority, and halt all systems disruptive to nature. We must quit the management role to which we’ve entitled ourselves, and take up the service roles to which we were destined and rejoin the family of life, of whom we are the offspring. . Be silent, be modest, observe and relearn from our bodies, from the trees, from the soil, from the water and from the other animals - how to live on planet Earth

We choose to stop disrupting nature’s wisdom. We are telling a new story about humanity's role - a story that has been here from the beginning, one that is not measured in numbers and does not require scientific research to back it up. We can tell the story directly from our heart - we recollect the pieces and tell it shamelessly and fearlessly. We choose to

not be The Takers anymore. Like every other living being, we'll be Leavers, using up only what we need for our physical and mental wellbeing and for our survival.

We mistakenly transferred the responsibility and the authority to the governments, the corporations, scientists and engineers. Instead we wish to express ourselves in direct action here and now. The braver we are in the face of impending doom, the more we gain joy and health.

Where Do We Start?

With The Body

A complete system and habitat has been severely injured by climate change, consumerism and modern technology, imminent in the lack of soil, clean air, pure water, flourishing trees, healthy food, movement, self-actualisation and love. Through understanding the body and restoring it, we can connect to ecological restoration in our wider environment.

Across the planet, we need to stop producing anything that is hurting our bodies and we need to shut down any establishment that is detrimental to our health.

With The Tree

Each of us has an embedded spiritual and genetic connection to the trees that were our home for millions of years and that still are sustaining our very existence by being the lungs of the planet. Now every tree is threatened or already suffering from violent trimming and destruction. Let's speak on behalf of the trees, as they are the sacred representatives of our heritage. We are dependent on the trees and they have many lessons to teach us.

Systematically, we need to immediately stop all activities that hurt trees on a large scale. Humanity might think it’s really advanced with its science and forces of destruction but to be honest nothing science has come up with is as good as a tree.

With The Soil

Let us return life to the soil. We will peel back the concrete and allow every piece of barren soil to receive organic matter and grow foliage.

Towards that end we shall embrace the imminent demise of mass production, mass development and mass mining. Like the other animals we’ll live locally, blessed by the soil, and only migrate with the power of our own bodies.

We must stop calling the sacred treasures of nature *resources*. We must stop exploiting them for near-term gain, for living beyond our planetary means. Today we stop believing the story of *development*, even that of *sustainable development*.

We want to go back to following nature's lead. We mourn the loss of biodiversity humanity is destroying. The Earth is crying for our action. All actions, large or small, are meaningful even if they don't seem to solve the climate crisis directly. Let us raise our voices and learn to once again nourish our bodies, our trees, our houses, our environment, our relationships and our gifts.

Today we declare that the only sound development is not standing in the way of the Earth and its regenerative systems. Whatever we create has to follow the path shown to us by nature.

With The Tribe

Humanity cannot go back to the source, to what has been working for millions of years, before our expansion and transformation of the planet. There is no turning back time or reversing who we are. The only way to go forward is to re-learn the tribal way of being aligned with nature with nature, skills long forgotten and discarded and incorporate those back into our existence.

The role of the tribe is not to fix the Earth but to re-create and sustain an equilibrium of existence and limit its destructive effects to the minimum. It is not our job to clean the air, to replenish the sources of fire, to purify the water and replant the trees. We are not the guardians or custodians of the other beings on the planet.

Instead we should limit our harm and stay out of nature's formidable healing powers that we cannot fully comprehend, as much as we try.

Today we ask "How, then, shall we live?" and then brave a path of change to try as best we can to answer, to really live once again in joyful self-giving.

3. The Science

If we pollute the air, water and soil that keep us alive and well,
and destroy the biodiversity that allows natural systems to function,
no amount of money will save us.
David Suzuki

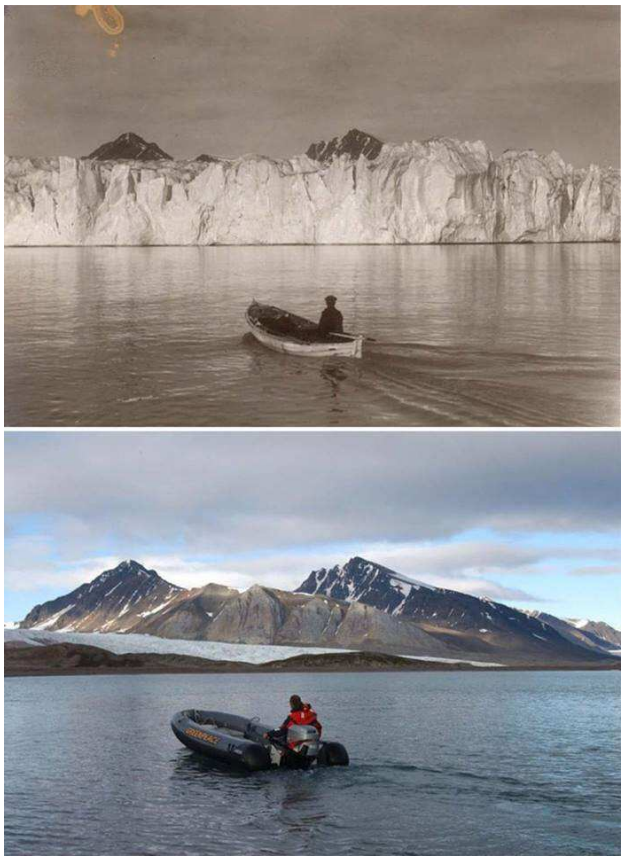
One thing that is evident by now is that climate catastrophe is looming ahead and that it is almost exclusively caused by human actions, based on the available data and research.

Humans are affecting the climate by releasing greenhouse gases such as carbon dioxide, methane, nitrous oxide, and black carbon into the air. On top of that, humanity is also removing wild forestland and replacing it with agriculture or grazing land, paving over soil, covering large areas with pesticides, filling the ocean with chemicals, plastics, and agricultural waste, and more.

Understanding the environmental factors which create our present global warming situation is important to get a sense of the recommendations given in this book. Making the changes to human culture and infrastructure presented here is more than just worthwhile, it's supremely critical. The science is clear on this and the established effects are deeply humbling.

Christopherson and Birkeland (9th ed) discuss global warming, describing the phenomenon as an increase in the average surface temperature of the Earth. Climate change or Climate Chaos, are terms now more commonly used, and “refers to a long term alteration… of the climate system” (99).

A trend of overall warming and more extreme weather events has been observed over the years. Some important data stands out that points to the phenomenon of global warming.



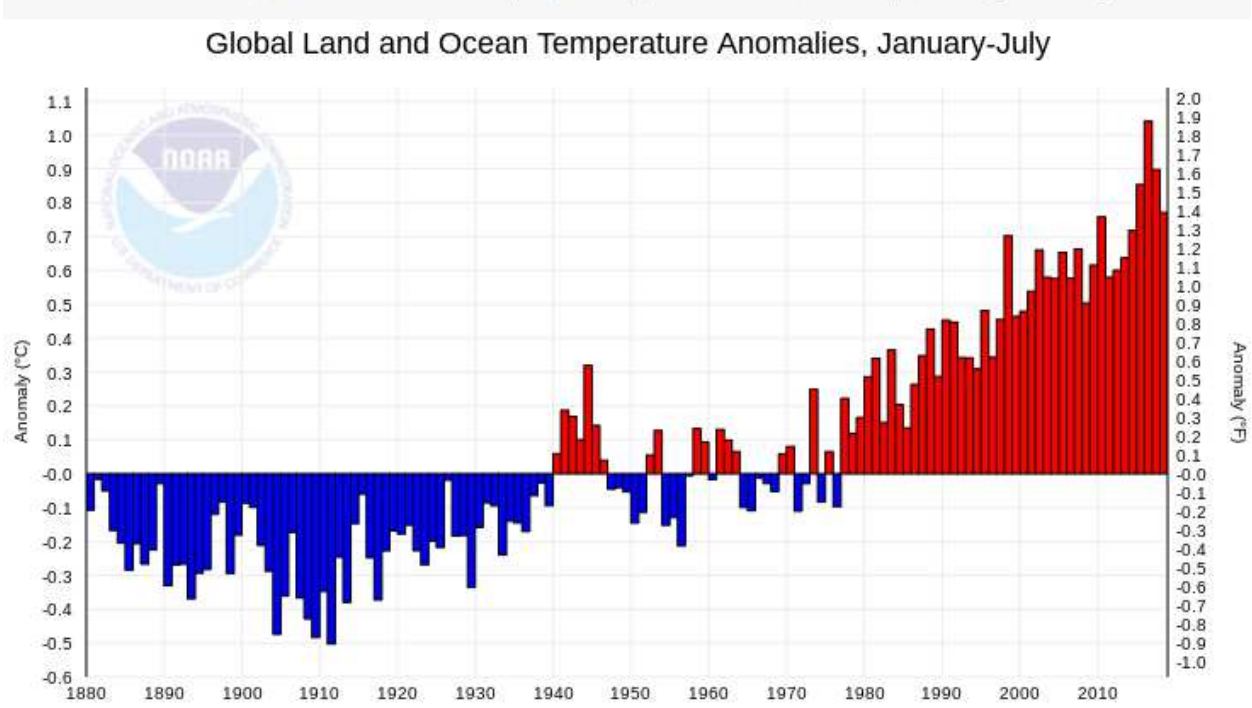
The Arctic - 100 years ago, and today.
(Images courtesy of Christian Åslund and Norsk Polarinstitutt)

Warming across Earth has increased dramatically in the 150 years since the onset of the industrial revolution. The Intergovernmental Panel on Climate Change has been releasing special reports stating, “Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels.”This may not mean a lot to the average person, but consider it from a different perspective. The ice age that brought us the wooly mammoths was 5°C colder on average than that of the 20th century. Meanwhile scientists estimate that, by the end of this century, global temperatures will be 5°C ***warmer*** than the

20th century. The decade of 2006–2015 was 0.87°C" warmer than previous years (IPCC 2018, A.1.1). Already, warming over the arctic has increased almost threefold more than the average warming found in temperate regions. In general, there has been greater warming over land masses when compared with sea surface temperatures (IPCC 2018, A.1.2).

The National Oceanic and Atmospheric Administration produced the Climate at a Glance report. It shows that nearly all of the years since 1940 have been significantly warmer than the 20th century average, with the greatest warming being felt since the turn of the century.

Figure 1: Climate at a Glance: [Global Land and Ocean Temperature Anomalies]

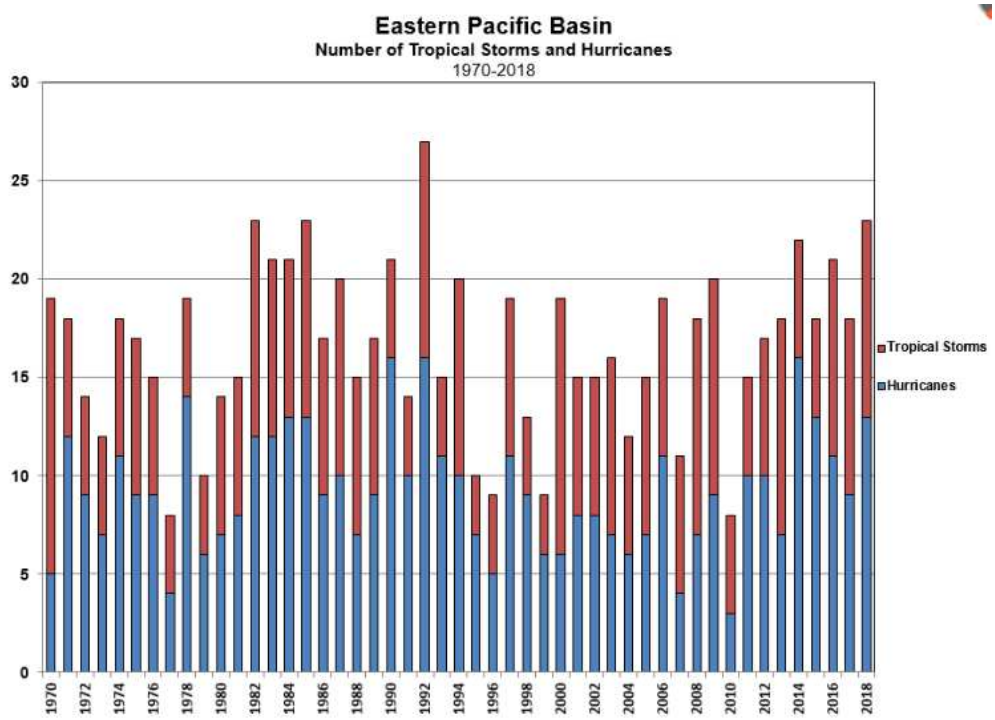


BBC journalist Matt McGrath reports on the World Meteorological Organization, and released an analysis of five major climate databases showing that the 20 hottest years on record have all occurred in the past 22 years. Higher temperatures lead to more extreme weather phenomena that impacts everyone. (McGrath, BBC News, 2019).

Christopherson and Birkeland describe warm air as having more capacity to hold moisture (there, 155). In addition, warm water has more evaporation of moisture to air. These two physical features taken together suggest that warming atmosphere and moisture systems will contain and release more water in storms over the land.

The combined effects of warmer temperatures and affected weather systems has been documented by NOAA in its State of the Climate in 2018, describing specific numbers of storms from the 2018 season. The report states that the number of tropical storms in 2018 was above average for the East Pacific basin, with 23 named storms, including 13 hurricanes and 10 that became major. The average for this region (using data recorded 1980-2000) is 16.5 named storms and 8.9 hurricane events annually. Figure 2 represents the data recorded since 1970.

Figure 2: State of the Climate 2018



No discussion of global warming would be complete without a reference to CO_2 emissions data. Figure 3, taken from Elemental Geosystems Figure 8.28, outlines the emissions released by industrial nations across the world in 2015. This shows that over half (53%) of emissions were released by three industrial countries. The proportion of emissions released indicates a greater contribution to global warming trends in the creation of climate change by China, the United States and the European Union. Other data might reveal different

quantities, but the point is that the majority of emissions are released by the wealthiest nations of the world.

Figure 3: Carbon dioxide emissions from fossil-fuel burning in 2015: The top 20 countries

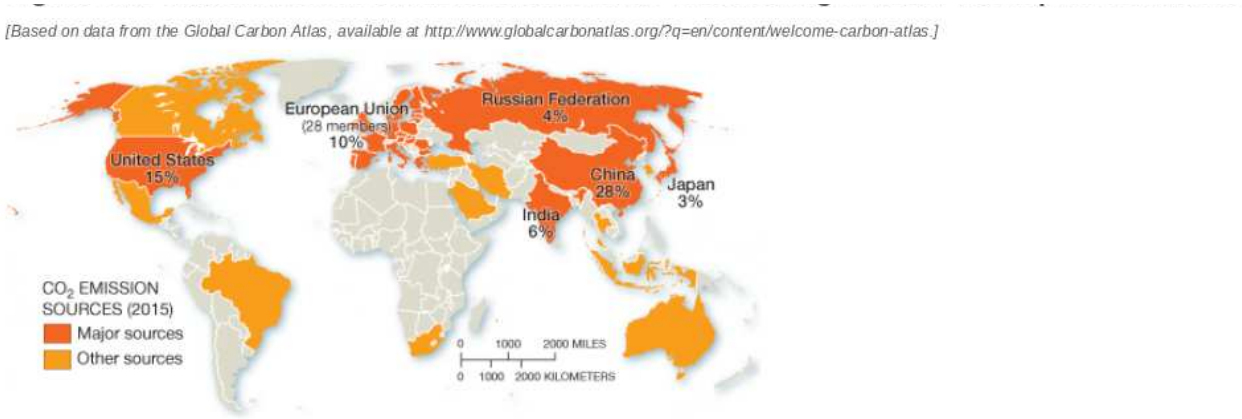
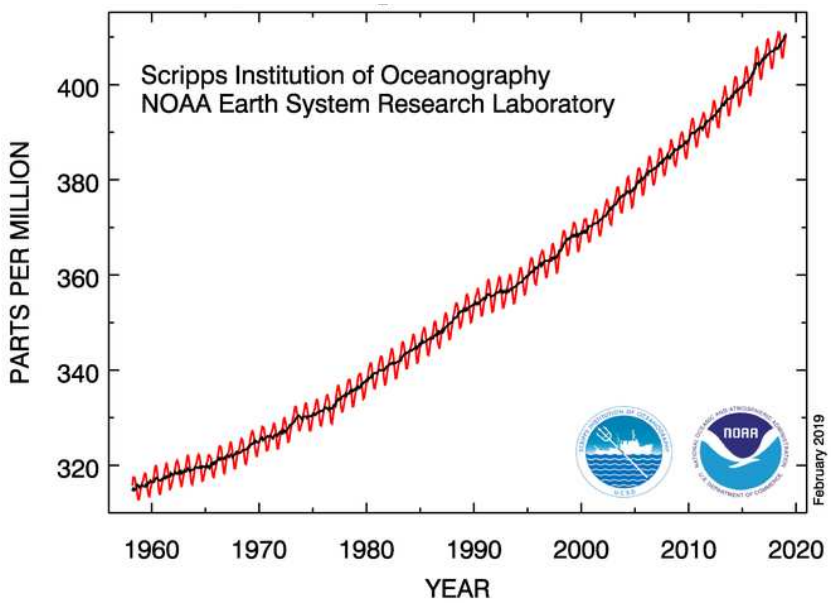


Figure 4 taken from Ancient Forests of the Pacific Northwest by Elliot Norse, indicates a trend of increased CO_2 emissions recorded over a 30 year period at a monitoring station in Hawaii at Mauna Loa.

Figure 4: Atmospheric CO_2 at Mauna Loa Observatory



Christopherson,Et Al. explains that increased CO_2 content leads to increased radiative warming by trapping more longwave radiation received by the sun (260). This warming property has been labeled the Greenhouse Effect, so-called for the effect of insulating heat within the atmosphere. Global warming is a natural consequence of greater CO_2 emissions.

Because of the increase in global average surface temperature, the planet is now seeing more hurricanes and tropical storms form in the Pacific and other oceans. Global rise in temperature has had wide ranging effects, including alterations to precipitation patterns, snowpack quantity, and global currents of warm and cool waters in the sea. Taken together, this describes our changing climate system, proceeding forward to an uncertain future. One thing that's certain is,the "warming from anthropogenic emissions" which have already occurred, will persist for many centuries to come. This will lead to further long-term impacts to our climate and hydrosphere in the direction that humanity has already seen (IPCC, 2018, A.2).

Globally, the amount of greenhouse gases released into our atmosphere is so enormous that it's measured in *millions of tons per year.*

Carbon Dioxide (CO_2)	Black Carbon (BC)[ɻ]	Methane (CH_4)	Nitrous Oxide (N_2O)
37,886 mt per year[‡]	7.2 mt per year	361.75 mt per year	11.01 mt per year

Table-1 Summary of greenhouse gases released internationally in order of the level of influence.

[‡] This figure was calculated according to data from IPCC (49Gt * 76%) (2015, fig. 1.6)

[ɻ] Estimated emissions for BC from (T. Bond et al. 2010, 13 Sec.3)

Carbon dioxide and black carbon are mainly released by motor vehicles, while methane and nitrous oxide are mainly released by conventional large-scale agriculture and livestock farming (which we'll talk about in Chapter 2).

The severe environmental impact on the Earth as shown in this data should have had everyone,including our governments, panicking a long time ago. They should've made some emergency plans and started implementing them right away. However, that did not happen for reasons we'll talk about next.

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4. Denial and Hope

Traveler, your footprints are the only road, nothing else.

Traveler, there is no road; you make your own path as you walk.

As you walk, you make your own road,| and when you look back

you see the path you will never travel again.

Antonio Machado

The issue of climate change is so huge, and the required steps to be taken are so all-encompassing that absolutely everyone, even the wonderful people who contributed to writing this book, often feel overwhelmed in dealing with it. To be frank, we all just do what we can.

It is our sincere hope that this book will be useful, providing practical suggestions people can adopt in their own lives. And hopefully, one day, most of humanity will adopt them too. The book aims to provide more inconvenient truths than those typically provided by everyday climate change evangelists.

It is not difficult to understand why many climate activists, scientists, advocates and gurus try their best to avoid many of these areas. It is understandably frightening to risk antagonizing the people who hire you, who fund your studies, pay for your lecture, buy your books or donate money to your campaign.

Some suggestions in the book are dramatic enough to bring about the toppling of our current way of living (at least in first world countries), as humanity adopts policies based on principles of degrowth. Understandably, letting go of our convenient, yet wasteful lifestyle is

frightening for so many people. Humanity will be steering into a great unknown. But people can take comfort in the understanding that it will be vastly less painful than the certainty of catastrophic climate disasters.

The 2020 pandemic both showed people how vulnerable a global mass consumption system is. It also showed us that it's possible to reduce consumption and traffic. Humanity should not be waiting for pandemics and climate disasters to change its ways. The information is all there and it all points a certain direction, as we'll be shown in this book.

Not every chapter in this book will be able to offer an obvious or perfect solution. Hopefully this book can provide a starting point for the important discussion which people need to start having. The hope is that the book will encourage people to be brave, going against decades of conditioning.

Aiming for so-called "perfect" or "radical" solutions than aim for solutions that might move us in the right direction but not quickly enough to survive. Therefore, the book focuses on more simple low-tech solutions that do not require complicated new technology. It does away with *greenwashed* solutions as those invariably require a great deal of mining, manufacturing and shipping. We do not endorse ideas that solve one problem while making other problems the planet's ecosystems now face worse.

The proponents of Positive Deep Adaption feel that it's time to stop worrying about *whether* the end times are actually on our doorstep. Instead we can focus on what can be done in earnest to mitigate its worst effects. Humanity must prepare to live in a world where the collapse of the world economy due to the burden of climate change is inevitable..

That said, this book is NOT meant to promote a feeling of gloom and doom. Once people stop allowing themselves to be crippled - emotionally, spiritually and physically, by a society addicted to consumption, they will possibly lead happier and healthier lives. Once society stops its obsession with expansion and people start modeling their lives after nature, they will enjoy fresh clean air and the multitude of wonders in the outdoors while feeling more relaxed in their lives. They will no longer stare at their screens all the time, instead returning to person-to-person communication. People will once again learn to enjoy the simple things in life, such as touch, movement, singing, dancing and community.

What's needed is both serious and radical solutions which can be put into place right now. The solutions offered in this book are ones we feel have a strong chance of reducing the

severity of our collective calamity while helping humanity adapt to it. These Solutions are the kind people can adopt for their own lives, but our communities could definitely use help in implementing them.

People often criticise Capitalism as the root of all evil, but as shown in this book, Capitalism is merely a variant of what humanity does, a way of organizing mass production and globalism through technology and controlling it via mass media.

In the 20th century, Gandhi realized the damage the British empire was doing to India. It was not merely that fact that India was under British rule. More importantly, the occupying forces were imposing a new set of paradigms that changed the ways that India was built on. The British used their power and influence to impose globalism on India (as well as other countries) and destroy the ability of villages to be self-sustaining.

Gandhi then created the Non-cooperation movement which didn't just aim to bring self-rule to India but also the use of local languages, clothes and other local customs. Anything that contributed to the British government finances or accepted their culture was banned.

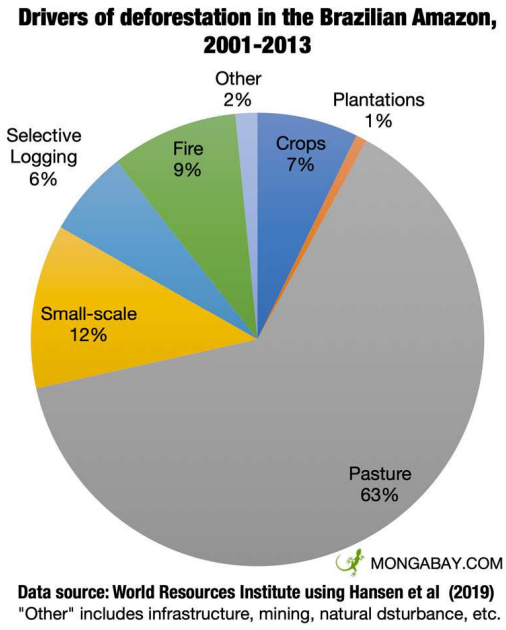
Similarly, the only way to shepherd us to the inevitable future is to similarly not cooperate with capitalism, industrialism, mass-production, mining and all the myriad other ways in which the Earth and the animals on it become subjects to the harsh rule of humanity. Each of us will need to change what we do in order to achieve this, sacrificing something to get there while gaining a lot from connecting to nature and a simpler way of life.

This book offers many ways in which this can be done, while recognizing that there is no one perfect way or one-size-fits all path to change. All the book can do is to encourage and show ways large and small to get to non-cooperation with the forces of destruction threatening our survival on this planet.

Food

1. Veganism and Climate Change

A good place to start when dealing with climate change is what people eat. What people choose to eat has great consequences on the environment. Transitioning to better practices could ensure the continued existence of humanity on the planet.



While at this point some effects of climate change might be unavoidable, if society understands the ideas presented in this chapter, some of the worst of it might be avoided as the planet would be given room to heal.

Evidence presented here will show how farming animals is wasteful at any scale, whether it's in ancient agricultural communities, current factory farming practices, alternative organic free-range animal farms, or possible future post-apocalyptic living.

What does eating a hamburger or quesadilla have to do with climate change? After all, cows don't create the kind of CO_2 emissions that cars and power plants do. They can emit some amount of CO_2, but in much smaller amounts (Prairie & Duarte 2007,

Calverd 2005). The main way animals raised for food contribute to climate change is through two other gases – methane and nitrous oxide.

Methane gas has 72 times the impact of CO_2 over it's 25 year lifespan (after that methane itself breaks down into CO_2 which causes yet more damage). Worldwide, 317 million tons of animal-based foods that humans process contribute a whopping 7,817,250,000 tons of CO_2 equivalent *every year* (that's almost 8 gigatons annually).

The other highly damaging gas, nitrous oxide is roughly 300 times as harmful as regular CO_2 and the raising of animals for food contributes roughly 1,000,000,000 tons of CO_2 equivalent every year. On top of that, there are emissions involved in the transportation of most animal products around the world and the special refrigeration needs of meat and dairy products.

Emissions are not the only issue with animal consumption. To offer just one example, consider oysters and other shellfish. Many people enjoy eating them, giving no thought to the critical role these animals play in keeping the oceans clean and free of pollution. The marine reef habitat is so important to the health of our oceans. As it has been so devastated by human consumption, it is now threatened with extinction.

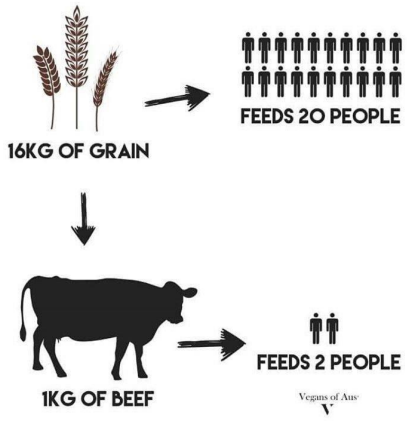
For residents of wealthier countries, where plant-based alternatives to meat, dairy and eggs can easily be found at major stores, the decision simply comes down to choosing one food over another, almost a no-brainer. It is also in the best interest of these people to start getting used to the idea of a post-industrialist society where only certain kinds of foods will be available as discussed later in this chapter.

Most people living in less-affluent parts of the world are able to enjoy a plant-rich diet by default, simply because meat is so much more expensive there. The only people who might find it particularly hard to transition to plant-based nutrition would be people living in extreme cold weather conditions and people of low-income living in a first world wealthy countries where meat and dairy products, as well as fast food places, are subsidized by the government. If you have to work two jobs and don't have time for meal prep, you would probably sustain yourself by eating the most accessible,

affordable and addictive foods, even if that would cause a lot of painful health problems in the long run.

In a way it looks as if capitalism is thoroughly intertwined with the consumption of meat, dairy and eggs, exactly BECAUSE they are wasteful (more on that later). A single cow in the United States will eat about 13 tonnes of food per year. And the return that a rancher gets for that is about 254 kilograms (560 lbs) of saleable meat. With a vegan diet on the other hand, the food goes directly to people where it gets turned into human energy. You could feed the same amount of people with less soil, water and energy inputs when everyone joins in sharing a plant based diet.

There is still *some* degree of waste and harm to the top soil in commercially grown produce, as well as harm to animals who no longer have access to their habitats or are killed in the process by herbicides and pesticides. Still, the math confirms that we all have more food on the table with plant-based meals. After all, most soy and corn grown by agribusiness gets fed to animals who live their whole lives confined to a feedlot. If instead you simply farmed that land for plant-based food, you would cut a lot of the production waste resulting from commercially growing animals for food, [while providing more protein, and expanding the availability of food].



That wastefulness appeals to the capitalist view of society because that kind of waste contributes to the GDP as well producing jobs for a lot of people. That logic is understandable; after all nobody wants to be responsible for whole regions going under and massive loss of jobs. The elephant in the room here, is that this kind of inefficiency can't be supported for decades into the future. As caring beings, we are concerned with what we eat and how it's grown. This is why the truth about GMO crops used to support the animal exploitation industry is shunted to the sidelines.

The waste and inefficiency isn't the only issue to address here. There's also huge amounts of pollution caused by the single most dominant way of raising animals, factory

farming. Pollution cleanup, and the jobs that they create can have some short-term benefits for the economy, but destruction of land and water have dramatically larger negative effects down the road.

Consumption of meat and dairy is also a great harm to people's health. Many books like The China Study and How Not to Die lay out scientific evidence to support this. As we stated earlier, this same wastefulness is considered helpful to the economy. Thousands of doctors and dozens of drug companies depend on the vast sums of money spent treating illnesses that are easily avoided.

As veganism becomes a persistent movement and the health benefits become more clear, an ever-wider variety of stores and restaurants have come to include clearly marked vegan options, even when those businesses also serve animal products

The sad truth is, if people don't start making changes in the way they lead their lives now, starting with the way we eat, eventually, all living things (plants, animals, and of course humans) will be negatively affected. The planet is quickly exhausting its ability to support us, and it's very probable that the sixth mass extinction level event has started happening.

However, changing society's habits as well as reducing waste inherent in farming animals could be too much for society to handle without understanding the faults in our current consumerist, perpetual growth-based economy, as we'll discuss next.

2. Veganism, Consumerism and the Earth

Veganism is NOT the same as eating a plant-based diet. People go on a plant-based diet for a variety of reasons, some convinced to do it because, scientifically speaking, it offers the greatest health benefits, as discussed in length across various books like *The China Study* and *How Not to Die*, blogs focused on the science of nutrition such as NutritionFacts.org and documentaries such as *What the Health* (2017)

However, veganism extends beyond what a person eats, in that it involves a greater awareness of our relationship with other living beings with whom we share this planet. So, while vegans enjoy a plant-based diet, their lifestyle also aims to avoid harming animals in as many ways as possible. This can include avoiding clothes made from animal skin, not visiting zoos which profit from confining animals, and gardening without pesticides. Vegans try to expose the harmful ways of animal farming as a form of abuse and torture to the animals, especially in the dominant factory farming. As much as they can, vegan animal rights activists shine light on the dissonance between what's on a person's plate and the way in which it gets there. They tell the stories not told. They show how cows get artificially inseminated, how life expectancy drops for caged animals, the depression of animal life in zoos and circuses and other such stories people would rather not know. There is a definite parallel between people not wanting to know what's involved in getting the meat, milk and eggs to their plates and people now wanting to hear about how their daily actions bring about climate chaos.

However, as most vegans still live within a mainstream capitalistic culture, it is difficult for many to recognize broader issues pertaining to veganism. For example, many people fail to see how driving a car or flying in an airplane is affecting the lives of wild animals. Some vegans might get really excited when buying new vegan shoes. It's hard to admit that these shoes are made from plastic, require toxic materials to make, and are shipped from far away. The story of how stuff made is really important to

understand. It can be asked whether a product is truly vegan if it has no animal parts in it but its productions contribute to the loss of biodiversity on our planet. Some products made from recycled materials and organic components are definitely better than others, but any newly made product will have some ecological footprint involved in making, packaging and shipping it.

To illustrate this, over the last few years, in the animal rights movement, there's been quite a shift to holding demonstrations where everyone wears black T-shirts. Creating a common identity in any movement is an essential component, which helps motivate people and creates a sense of pride and belonging. However, unbeknownst to many, there are awful consequences to wildlife in the production of these shirts, specifically with regard to non-organically grown cotton, and the dye involved in coloring them.

Textiles leave one of the largest water usage footprints on the planet and dyeing factories are an especially big problem. For example to make a single T-shirt it takes a shocking 2,700 liters of water. Cotton accounts for 2.4% of the world's crop land, but uses 24% of global sales of chemical insecticides. Even if the cotton is organic, as Timo Rissanen, Assistant Professor of Fashion Design and Sustainability in New York says: "The world doesn't need another organic cotton T-shirt. We have enough to take us through the next 20 years."

The textile dyeing and finishing industry is also hugely damaging to aquatic life. It is one of the most chemically intensive industries on earth, and the No. 1 polluter of natural waterways (after agriculture). The dye houses of India and China are known, not only for exhausting local water supplies, but for dumping untreated poisonous wastewater into local streams and rivers. Creatures live in these rivers and streams and drink from them. How would *we* like our homes and drinking water polluted with these

same toxic chemicals? Sadly, dyes used to make these now common animal rights vegan T-shirts are all synthetic, and as mentioned, have a large environmental impact.

The industrial dyeing of cotton is so toxic and harmful to wildlife and the environment, vegans shouldn't be needlessly supporting this.

Vegans should be asking, is having new black T-shirts really worth the cost to the wild animals (not to mention the people) of the world where the cotton is grown and the chemical dyes are used? Vegans are advocating for healthier, more compassionate and environmental source of food, while wearing newly created and transported shirts using toxic black dyes.

Hopefully, as the link between veganism and climate change grows more evident by the day, vegans can lead the way in helping humanity buy itself some more time. Vegans can be in the frontline of change, helping humanity save wild animals and plant life by advocating for adoption of principles of low-resource use and radical simplicity.

A frothing river of waste from the toxic waste produced by garment industry at River Yamuna, India.

Photo: Express Photo by Abhinav Saha

A bag with embroidery is one way to share a message

The idea of being careful about how clothing is sourced has long been a part of the animal rights movement. In England, in Leicester (birthplace of the word Vegan!), during the 1980s-90s unbleached organic T-shirts were being used to spread the vegan message with words and drawings printed on them.

Most people care about wild animals, but disregard them in their daily choices, not wanting to make connections between their actions and the suffering and death they cause to these animals. When consumption happens beyond our needs animal lives are harmed unnecessarily.

As we advocate in the other chapters of this book, choosing to live simply, is a way of recognising and showing respect for other animals on the earth. It is the only way to help prevent habitat loss. The issue of habitat loss should be on everyone's mind, as without their habitats, wild animals simply perish. Habitat loss is the inevitable result of consumerism, mass-produced agriculture, mining and pollution. In a world where even some devout vegans will not give up their consumerist way of life, mass extinction has already begun of all vertebrate animals that are not bred by people is inevitable and,

studies show. Rampant consumerism also affects sea life, butterflies and bees. It might seem that if we only limited the use of single-use plastic and changed our agricultural practices we could possibly slow down the loss of biodiversity. However, that might not be enough to reverse the damage humanity is doing to the planet and its inhabitants.

Veganism is clearly about having respect for all animals, whether they are domesticated or wild and free. However, veganism needs to go beyond the liberation of animals and the ending of animal exploitation. Choosing to be vegan often involves us making unconventional choices in various aspects of our lives. It specifically implies that our moral and ethical concerns for animals go beyond the effects of our dietary choices.

There is little awareness as to what is happening to animals in the world to support consumer habits. Vegans living in economically rich countries have knowledge of what is happening to the creatures being exploited and used. However, a big gap in their knowledge is what is happening to the wild and free creatures as a result of how most people in consumerist societies live. For example, when new homes, factories, roads, schools, etc. are built, who considers those animals presently living on the land? Or creatures who feed from that land or pass through?

While vegans in wealthy countries do reduce consumption and harm in their food choices, the vast majority of them are still consuming, harming, and polluting in many other aspects of their lives; far more than the average Indian, African or South American who are on a non-vegan diet.

Using land for farming animals (or for any other purpose) involves destruction of the habitats of wild animals. The largest portion of this in many places is for farming animals, but this process is also done for things seen as normal for many vegans. For example, using cars and planes, living in a big house, production of more stuff than we need, and recreational drugs and drinks. All of these things need land and have a toll on the lives of wild creatures.

Even when drinking your coffee, if you care about wild animals, consider how much land (over 2.5 million acres of land in South America alone) is tilled to create this

mono-crop, land that could be an animal habitat in a planet where such habitats are disappearing at an alarming rate.

Pollution from manufacturing industries, travel, energy production, farming and mining all cause a loss of life in rivers and oceans while affecting the soil as well. When we pollute the air we pollute the air all the creatures breathe as well. When we pollute the water we pollute the water other creatures drink too, and the home to many. When we pollute the earth we pollute the soil that grows plants that wild animals eat. This is a reason why choosing to live simply is a way of recognising and showing that we share the earth, as our future is intertwined with the ability of the planet to maintain its biodiversity.

3. Whole Food Plant-Based Diet

One thing encouraging more people to embrace veganism and vegetarianism is the growing availability of plant-based foods which mimic the look and taste of meat and dairy products. *Mock meats* and other products are available because people want to continue eating foods they are used to and enjoy. For many people, these products ease the challenges of adopting a different lifestyle, and in that sense, they can be seen as a positive step in the right direction.

There is a problem, however, in thinking that vegan *products* are overall a positive thing. When compared to whole foods in their natural state, processed foods have disadvantages both in terms of their impact on our environment, and their potential impact on our health.

Vegan products are typically sold in supermarkets with the same bright packaging that wraps meat, dairy, and other packaged highly-processed foods. Alternatively, the majority of whole foods can be had from the produce aisle or from bulk bins, involving no packaging at all. Better yet, you can grow many whole foods yourself or get them from a local farmer who agrees to provide them without packaging.

In terms of health, processed vegan foods are a far cry, from whole foods in their natural form. A whole food plant-based diet offers numerous health advantages. Doctors, biologists and nutrition experts are now recognizing a multitude of ways that whole plant foods promote health in each body system. It is now known that plant-based food has the power to prevent, mitigate and even cure many of the

illnesses plaguing modern society. From major killers like heart disease, diabetes, and obesity, to less severe yet problematic issues like acid reflux, constipation, and acne, plant-based foods have been shown to reduce the incidence of these conditions, allowing the body to heal.

In a post-industrial society, hospitals in their current form might be difficult or even impossible to sustain, and people are understandably concerned about the quality of health care that will be available. While energy intensive medical equipment might not be sustainable, a shift in focus to prevention of diseases by means of promoting healthier dietary habits might actually contribute to a much healthier society.

Such products are typically cheaper to produce than animal based products, unless the latter are subsidized by the government. The reason for this is, making plant-based food doesn't require the expense of maintaining living creatures.

While offering society a path to less waste in food production with elimination of the need to spend resources on feeding and otherwise taking care of animals, it is hardly a good starting point to a more sustainable future. Replcatarianism, that is staying on the standard american diet (SAD), but with alternative plant-based products will hardly get humanity to the place where it needs to be in the post consumerist, post industrialist society. Instead, it's high time people consider switching to a whole foods plant based diet.

As society focuses on local production of food and deals with inevitable food scarcity, it is recommended to start changing what people eat today rather than starve later. People need to re-adapt to eating locally foraged or self grown raw foods. They would need to adjust to eating food made in a simple fashion from local and seasonal sources rather than the current practices only made possible by consumerist culture and energy intensive kitchen appliances.

A good example of important food that is easy to grow and provides a lot of nutritional value is edible leaves. Unfortunately, the current mainstream diet in countries influenced by consumerist fast food style eating originating in the US has little of it.

That said, people going to their current doctors with health issues might hear them saying something along the line of getting more exercise and eating vegetables - but what *are* vegetables?

Many people think of cucumbers, tomatoes, peppers, even cabbages or carrots when they think of a *green salad.* However some of those are technically fruit (tomatoes and cucumbers), or roots (in the case of carrots). In this case our language and dietary habits have caused a bit of confusion.

To make things simpler let's use in this section the term garden fruit to describe tomatoes, peppers, cucumbers, squash and the like. People also eat brassicaceae vegetables like cabbage, broccoli and cauliflower. Finally, leaves will describe lettuce, spinach, celery, mallow, mangold and more. While these are often described as *green leaves*, there are also edible purple and red leaves that are both delicious and nutritious.

Pop culture has had the popular Popeye eating spinach out of a can and multiple scenes in TV and movies of parents telling their kids to eat their greens. Even though that delivers the message that eating leaves is good for you, most of these scenes also depict how these kids really hate eating the greens. As people stop making their own food in favor of eating out, ordering out and purchasing ready made meals, the idea of eating leaves has become strange to people in affluent countries, reserved to a certain variety of health nuts.

What are the benefits of eating leaves? According to Dr. Greger, the calcium in dark leafy green leaves actually is absorbed in the body better than the one that's in cow's milk. The potassium in edible leaves is anti-inflammatory and can prevent stroke and heart disease. Edible leaves are a good source of iron, zinc, antioxidants and magnesium. As mentioned, edible leaves belong to the category of whole foods, and thus all the minerals and vitamins they provide are more easily absorbed in the body than supplements. While multi-vitamin and mineral supplements might sustain a person in a fallout shelter for a while, it is better to have the skills to grow edible leaves yourselves or even just develop the ability to know what the ones already growing in

your climate look like. Edible leaves can help you keep your muscle mass up, reduce the risk of kidney stones and can help preserve your cognitive abilities. Like other plant-based foods, edible leaves contain fibre that greatly helps the body's digestion process.

Green leaves require comparatively low maintenance and high-wielding group, recommended to both the fledgling as well as the advanced gardener. Not only are they easy to grow, they provide multiple crop cycles and some yield throughout the year. It's easy to harvest them and they fill out the garden with pleasant and soothing colors.

Edible leaves can be eaten as-is without any preparations but also work well in a wide variety of recipes for both cold and warm dishes.

For all of these reasons it is necessary to reestablish edible leaves into people's primary diet to prepare for a future where getting accustomed to eating those will literally save humanity.

Transportation

1. Fossil Fueled Transportation and Climate Change

As for the systems - humans created them all - humans can change all of them.
Charles Eisenstein, "Climate - A New Story"

Thousands of discussions and speeches have brought up the idea that making ‘x’ (like choosing a plant-based diet) specific change would be the equivalent of removing ‘y’ number of vehicles from the road.

However, the obvious solution which so many people overlook, is the idea of simply *removing vehicles from the road in the first place*. As stated earlier, an enormous cause of carbon dioxide pollution is the motor vehicles being driven individually by people in wealthier countries. In 2015, humanity’s global motor vehicles contributed a whopping 7.7 billion tons of CO_2 (that’s more massive

than two Mount Everests) in only one year. (IPCC-AR5 Ch8 Fig-8.1). Recently in the United States, transportation surpassed electric utilities as the largest greenhouse gas emitter.

There is a second major contributor to this tale of climate transformation, which even fewer people know about. It's called Black Carbon, and it's far more important. It should surprise you to learn that black carbon is estimated to have 2000 times the impact of CO_2 (and that's the most conservative figure).

Most people, when they *do* think of black carbon (or "soot") think of container ships or fireplaces. What people don't tend to realize is that the largest source of black carbon actually comes from the millions of diesel engines around the world. Through a bunch of really complex math, it is determined that the world's diesel cars produce an astounding 2.5 billion tons of equivalent greenhouse gas emissions. That means diesel vehicles alone add ⅓ as much more to the already monstrous footprint of the world's cars and trucks.

On top of that, black carbon also speeds the melting of snow in the arctic. This happens when black soot lays on top of the snow which causes it to absorb more sunlight (kind of like a mini-greenhouse).

So if cars are so harmful, how can people get around the city? That would depend on where they live, of course. Some forward-thinking governments have created impressive train lines and dedicated bus routes to make it easy for residents to get where they need to go. Often these go hand-in-hand with quality bicycle routes and wide sidewalks. However there are many countries where the addiction to 20th century thinking has stifled such advancements. Additionally large groups of people live outside of cities. Some due to the attraction of

low-cost property and others because they are growing food. In either case, all humans will have to find a means to live close enough to others in order to share mutual support.

Climate catastrophes will eventually make mass transportation impossible and even biking more difficult. This means that the most valuable course will be to build relationships with people close by and to create a support network within the walkable radius. Before the technological age people did not live by themselves or in a small family unit like they do in affluent countries. Instead, they shared their time, their tools, and their labor within their community. The same will undoubtedly be true as we transition to the next era. As living in or near small towns and living in suburbia will no longer be an option, a self-sustainable community based way of living that will employ walking as the main mode of transportation will be described later in the book, in Chapter 9.

2. The Joy of Transitioning to Human Powered Transportation

Cities are books that you read with your feet.

Quintin Cabrera

Most people in our modern times have assumed that faster mobility inevitably results in a higher quality of life. Movies, commercials, and public opinion all reinforce this belief. But surprisingly, there is in fact a fast drop off in personal happiness once mobility gets above a certain speed and distance. Traveling in separate metal boxes and constantly jostling with each other for the constantly inadequate road space tends to bring out the most primitive and aggressive instincts in people.

By contrast, there are a huge number of advantages that come with reducing the use of engine-powered transportation. It may help people to enjoy longer, healthier, and more stress-free lives while reducing the harmful impact which we are having on the planet.

It may seem strange to accept, yet there is real evidence that living a fully compassionate life, which includes being car-free, is valuable not only to the health of our world, but is also valuable to our physical and emotional health as well.

The exercise involved with human powered transportation options such as walking, biking, skating and skateboarding helps us live longer. After all, Inactivity is the fourth leading cause of death worldwide and it contributes to a lower quality of life for millions of people in wealthy countries. For people over 60, walking just 15 minutes a day can reduce the risk of dying by 22%. So while some people will spend precious money on a gym membership and then feel guilty about not going, people can instead enjoy regular exercise simply from traveling to normal destinations. This keeps everyone fit as well as reducing our risk of disease.

Active travel also makes us happier – People who switch from a long auto commute to a walking trip experience as much happiness as someone who's fallen in love. We can all let ourselves fall in love with our commute just by slowing it down. The fresh air, relaxed pace, and calmness plays a large part in raising our 'happiness quotient.'

It is understandable how, for those unaccustomed to being in touch with the elements, the comfort of the car and its climate control might sound more appealing. Once a person gets accustomed to enjoying the simple pleasures of the outdoors again, the experience of walking or biking through rain becomes just a part of the great adventure that is life.

In areas that don't exist just to serve cars, people biking or skating around enjoy more varied ways of getting places, possibly taking different routes on a whim. This takes out the boredom often found in neighborhoods where only one or two roads connect all the way through.

Speaking of not targeting an area solely for car use, the more often that biking, skating and walking is built into a city, the more space can be freed for other important activities such as growing more plants, possibly on raised beds, in what was once a driveway or parking lot.

The whole world is different when experienced directly, without being in a closed and soundproof metal box. It is a world where a more intimate connection to our surroundings, to people and nature can once more be relished.

One of the many benefits of this healthy lifestyle is the increased connections people get to build. Amazingly, every 10 minutes commuting without a car results in 10% more social connections. These social connections provide enormous benefit to our well-being. They help fight depression, improve democracy, prevent disease, and even help us live longer.

Seeing the street as a place to BE, rather than just a through-way, helps us to foster a greater sense of community and connection within our neighbourhoods.

When travelling by foot or by cycle, spur-of-the moment conversations are possible, perhaps asking someone on a date, or point out some beautiful scenery to a passerby. Just imagine what it's like to commute to work and say hello to a random friend every single day. On a bike or skateboard one could enjoy more daily interactions with people, as well as being more aware of scenery details. Released from the confines of an

enclosed metal transportation box, it becomes easy to stop and check out a beautiful garden, browse at a yardsale, or take a new route just for kicks.

These issues are even more evident when children are involved. Those children who walk or cycle to school get to develop a more detailed mental map of the streets and neighborhoods near them. Even more impressive, they have better concentration and advance more easily in school. It definitely helps children achieve a coveted goal of spending more time outdoors.

Obviously people who use cars find them convenient, and this is made only more so by the priority that politicians give to motor vehicles. The irony here is that not only do they take up more time and money, but they also hamper people's general satisfaction with life. So what could motivate people to put up with all of this?

Unfortunately, satisfaction is too vague for most of us to put into words. What exactly is this satisfaction? Well the best way to put it is that it's the experience of having a positive experience throughout the day.

Now, what do most people associate with driving? Well, things like traffic, searching for parking, high costs, and of course other drivers. These are only the things seen on the surface. But since the frustration with these problems doesn't have an immediate release, they often show up in more subtle ways down the road. For drivers, the stress from long commute times has been tied to road rage, heart attacks, and a whole host of other problems.

Conversely, with human-powered transportation there is the freedom from the endless noise of car alarms, traffic, car horns and the [not so] occasional crash. The

noise caused by roads has an enormous adverse effects to people's health.
Just imagine, a street as quiet and relaxed as this one in Amsterdam. Of course not all waterways are this calm as rivers and canals are often polluted by speedboats (even in Amsterdam.)

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As 270,000 pedestrians and roughly 1.3 million people total being killed by automobiles, the switch to walkable cities has enormous potential to save the lives of a vast number of people. Imagine the thought of just one San Francisco hospital cutting in half the number of trauma injuries every year. Of course, as fewer people die due this transition, overpopulation will possibly be even more of an issue. That said, the car, for many people is an extension of who they are, so it just follows that the world population from an ecological point of view should be counted as people plus their vehicles and associated infrastructure.

Roads designed for car use have a particularly high environmental cost. The weight of cars going over these roads requires yearly maintenance of most roads. It's even worse in places where vehicles put on snow chains in winter, a sure way to crack roads. Bike/pedestrian friendly streets are vastly more efficient in the amount of pavement needed both for travel and parking. There is a term called a 'road diet' which essentially means switching over some space on wide arterials for more efficient uses and it's shown enormous success.

By switching to human powered transportation, a city becomes more resilient to some of the calamities that might happen more often with climate change as it does not need to rely on traffic lights. As major cities become overly congested. even on regular days with no accidents or infrastructure malfunction commuting by bike might be faster than traveling by car, especially considering rush hour traffic jams and time spent looking for parking.

Instead of a discussion pushing for a single option over all others (bikes vs. cars vs. pedestrians), it's more practical to look at car-free spaces as a general improvement in all aspects of urban life. Outside urban areas, living without a car might seem even harder, but it's something humanity will have to do as it adapts to climate chaos. It of course raises the question whether people could even live outside the cities as the need to traverse a lot land might hamper the resiliency of human settlements of the future. Sure, cars could run off solar or alternative plant-based fuels, but with food and energy scarcity that will only bring more competition for resources.

3. How Motorised Transportation is Killing Animals

The car driver doesn't intend to kill the rabbit in the way that the hunter does, but it doesn't make a great deal of difference to the rabbit.

Dan Joyce

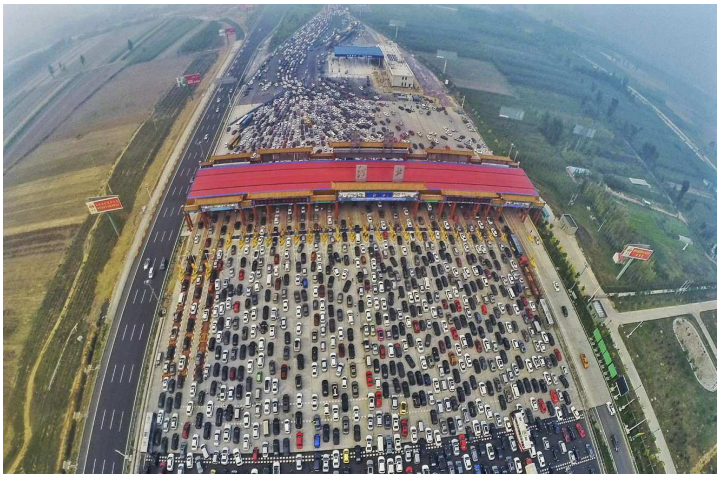
In Portland, Oregon, and other cities where plant-based food choices are common, there are many conversations discussing concern for animals who are bred and killed for food. While this is a valuable social justice issue to be aware of, it's important to realize that over 400 million animals lose their lives to motor vehicles every year, and that is merely an estimate of the animals based on what researchers can find and catalogue.

Humans may be causing harm to domestic animals by breeding them for food, but wild animals have the additional threat from roads cutting across the trails that they need for migration, not to mention the damage from noise and light pollution to their habitats.

Add to that the amount of the earth covered in tarmac/asphalt in order to make roads, parking, and temporary spots for storing vehicles (whether they're electric or not) and the space consumed grows far beyond what is needed simply by one driver.

When considering the blanket of asphalt and other materials changes our countryside, it becomes impossible to look at car parks or parking lots without seeing the *urban desert* and considering how this land that was once covered and used by a multitude of life forms must have looked in years past.

Our challenge here isn't merely the result of one person owning one car. It's also that the total number of cars owned by people increases as well. Many people living in wealthy countries own more than one car, which are used for different purposes. Families who once shared one car between them now feel that it isn't necessary.



As there is a huge market of used (ie. more polluting) cars, then even people of lower income find that they're able to afford one, including young adults. Some people choose to ditch their apartment or house to live in their car or van. While this choice might seem to have less ecological footprint than living in a house AND having a car, it still contributes to the need a huge infrastructure for all these vehicles to go around, growing every year at the expense of wild animal habitats.

It would be unwise to blame low-income people for the explosion of car culture. Middle-income people in the US can and do often have more than one car, for different uses. Middle-income to high earning families will have a car for each person over 16. High-income people belonging to the top 1 percent will have fleets of cars, and possibly their own private jet or helicopter. Of course, rich people account for a tiny fraction of the population, so while they definitely cause more destruction to the Earth through

corporations, the majority of cars will be owned by middle-income families and individuals.

So, even though the US has been growing more slowly than other countries in terms of population, the people living in it continue to rely on cars more than any other culture. However, the US does have a major cultural impact on populous countries. If anything will usher an apocalypse on animal and plant life on Earth, it is the effect of this cultural impact on others. When large population countries adopt a consumerist lifestyle similar to the one in the US, ditching low resource lifestyle and even human powered transportation to driving cars. For example, while China has a strong tradition of biking, it already has as many cars as there are people in the US. The impact of having so many cars is a multitude of issues, among them the constant displacement of animal habitats, contributing to loss of biodiversity, one roadkill 'accident' at a time.

Let's just hope that climate advocates as well as animal rights activists around the world develop an understanding of this link between relying on motorised transportation and the death of animals. Let's hope that once it is well understood that going on a plant-based nutrition is not enough to stop the loss of biodiversity on planet Earth. The impending death of all wild animals might convince people to start making radical changes in their lives like relying on human-powered transportation as their main means of getting places.

4. Motorised Transportation's Effect on our Air, Water, and Soil

Motorized transportation has a large variety of harmful effects even beyond the impact on global warming. There is a huge amount of pollution from tiny particles in the air, to oil runoff seeping into waterways to the carving of hillsides and cutting of trees for more pavement.

Imagine a stranger wandering into a person's house without asking and lighting up a cigar next to them or their children for that matter. That's essentially what is happening with auto exhaust throughout our cities. There are in fact many parallels between cigarette smoke and auto exhaust. According to the Center for Disease Control, "there is no safe level of exposure to tobacco smoke." What is less obvious though, is that 8 of the 12 most harmful chemicals found in second-hand smoke are also released in car exhaust. In fact, the parallels between driving and smoking are almost too numerous to fully describe here.

Particulate matter is an element that affects people's health the most on a day to day basis. According to the World Health Organization, more than 90% of all humans on the planet are breathing unsafe air. A great deal of the pollution in this air comes from mobile combustion factories jockeying for space along roads throughout the world.

Beyond the pollution that is easily noticeable, there are many more invisible gases which affect all living beings in subtle ways. Carbon Monoxide is the most dangerous pollutant. It's both colorless and odorless, but it interrupts the lungs' ability to deliver oxygen throughout the body which causes cells to be starved of nutrients. As with many effects of [harmful lifestyle choices] the damage may not show right away, but instead builds up over time affecting people, especially children, very severely.

Next is Benzene. Not many people are aware of this one, but it's a toxic gas found in gas fumes as well as cigarette smoke. It's a well-established carcinogen and in higher concentrations it can cause brain damage. Samples show that it's found at higher levels inside of a car then in samples taken elsewhere in a neighbourhood. This means that all of us who walk or ride bikes to get around actually end up being safer.

People growing up in a dense industrialized city learn early about smog alerts. Ozone, which is one component of smog, is considered the most widespread pollutant people are exposed to. It's created by traffic, power plants, and industry (but mostly by the first one). Breathing high amounts causes a wide range of health problems for vulnerable people like children and those who are already sick. Researchers have estimated that over a million deaths worldwide can be linked to ozone pollution. When Stockholm introduced congestion pricing (charging people to drive into the city) in 2007, new asthma cases were actually cut in half.

It's easy to confuse Nitrogen Dioxide with Nitrous oxide. However the latter does not directly harm people nor animals. But nitrogen dioxide is more dangerous than anything found in second-hand cigarette smoke. It's responsible for a staggering number of deaths throughout Europe, 14,000 in the UK and 1.2 million in China.

All of this pollution is no joke. Studies show that city residents who live closer to high traffic areas are found to have poor concentration, and less reliable memory recall than people living in cleaner air. This may be connected to studies showing that people who breathe in more of this pollution tend to have brains that 'age faster.'

"children born to mothers living within 1,000 feet of a major road or freeway in Los Angeles, San Francisco or Sacramento were twice as likely to have autism, independent of gender, ethnicity and education level."

Epidemiologist Heather Volk at USC's Keck School of Medicine)

There are those who would actually use pollution to justify the use of their automobile as protection from the noise as well as the smell of traffic, believing that the car's shell will keep them safe. Surprisingly however, the environment inside of a car is actually more harmful. Sadly too, the most vulnerable (such a children, even in buses) are exposed to very high levels of toxic gases which can cause lifelong damage. Of course, the more people make the decision to take a trip via active travel, the less pollution everyone will have to endure.

Motor vehicles impact our water systems mainly through oil pollution leaking from tankers, and car engines is a serious issue. Given that 1% of the trillions of gallons of water on the planet is fresh and available to us, the effects of polluting that water has incredibly dangerous consequences.

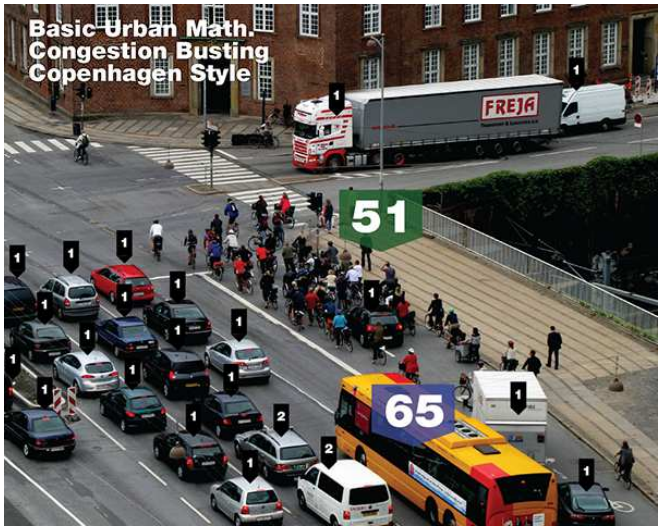
When people think of ocean pollution, they generally think of major oil spills like the Exxon Valdez or the BP explosion. Yet this is only the surface of a much deeper issue. The fact is, pollution of our waterways occurs in many different forms each and every day. And the big news oil spills like the Exxon Valdez spill (11-38 million gallons) don't even make the list of the 10 largest oil spills in modern history. Even the enormously devastating events like BP's Gulf oil spill often lose the focus of media outlets after a year or two and become lost in the background. It might

come as a surprise that these large oil spills make up less than 1/10th of the oil that humans leak into our oceans and waterways *every single day*. The largest source of pollution is that little black stain on most people's driveways. Oil which sits on pavement or in the storage tanks of gas stations will inevitably get washed into the nearest waterway by rain. Every year oily road runoff from a city of 5 million could add up to as much pollution as one large tanker spill. This is a major issue given that a single litre of motor oil can pollute 1 million litres of water, making it undrinkable.

In terms of land, autos have their impact mainly in the formerly wild areas covered in pavement for the sake of driving or parking them. Worldwide, an astonishing 177,600 square km. (68,572 sq. mi.) of land is devoted to roads. In many North American cities, this ends up being 30%-60% of a city's area.

In recent times, some forward-thinking planners are embracing the idea that it's actually roads which bring more cars and not the opposite. What will certainly seem counterintuitive is that roads have the same effect as parking. When they are removed, the traffic actually gets better. Cities such as Copenhagen, Seville, and Oslo have already learned this lesson and incorporated the changes needed to improve public spaces.

In terms of how much space is needed per person, public transportation is the reigning champion, even beyond bike and foot travel. Jeff Speck proposes that every passenger mile traveled by rail replaces nine by car. Public transit is also valuable for those with severe disabilities or for very long trips.



Vehicle Type	Average Weight	Comparative Damage
Hummer H2	8,600	21.37
Average Car	4,000	1
‘Smart’ Car	1,800	0.041
300lb man on a heavy bicycle	350	0.00006
Source		

5. What about Hybrids and Electric Vehicles?

Many people in affluent countries believe that the alternative to the pollution of gas or diesel cars can be solved by transitioning to partly (HV) or fully electric vehicles (EV). However, that doesn't take into account that millions of fossil-fuel vehicles already exist, while EVs will have to be built in order to replace existing vehicles and phase out the use of gasolene. It doesn't take into account the mining that would be required and all the construction required to make such cars.

It is one of the many examples of techno-optimism, believing that new technology will help us "clean the planet" and avoid climate catastrophe. Manufacturing of cars, much like a number of other non-sustainable practices mentioned in this book, is linked to the economics of growth mentality. Economic growth involves mining the Earth for raw materials, transporting them across oceans or continents to various factories and generating pollution in the manufacturing process. The embodied energy required to make new machines such as HVs or EVs can explain how non-fossil fueled vehicles can be as harmful as simply using the existing gas-based polluting cars. The lure of high tech state-of-the-art technology is such that even people who care about climate change would ignore the sad reality of EV manufacturing.

For example in 2017, 4.16 million passenger and commercial vehicles were sold in China, up from 3.31 million in 2009, and China now has as many cars as there are people in the US, around 300 million. Eventually, as China continues to grow and follow the lifestyle lead of the U.S., it's rapidly growing population could result in around a billion cars by 2035. At that point, if current trends continue, the world will have 1.8 billion cars to go around, perhaps even more. So, as stated before, the problems involved won't be just emissions (unfortunately a problem that is only getting worse) but also the amount of materials needed to create and maintain all these cars, and the roads needed to be created for them to go on without total congestion.

So instead of assuming that hybrid and electric cars are a ‘solution’ to climate change, it would be more valuable to examine the facts behind that technology and its real life implementation.

Take one Prius driving 10 miles a day (well below average), this will take up 20 square meters of the Earth's surface in Arizona at a solar power production facility. This is more than twice the living space per capita for a home for an average person in India who does not have a car.

The average Hybrid driver (in the US) actually drives more than non-hybrid driver! HV owners drive on average 42 miles a day (84 square meters of panels in a very sunny climate), that's the equivalent home space of nine average people (a large family) in India for the solar panels.

As many people who use electric cars do not live in sunny places so land space is required for panels and the amount of panels would be three or more times as much in some places. Relatively simple mathematics using current published data shows that in the best-case scenario, an EV must drive around 68,000 miles to break even on CO2 emissions compared to similar petrol-engine vehicles. This is the best case scenario when the CO2 emitted from manufacturing its batteries is taken into account (pre-emissions). A Tesla may never break even on CO2 emissions using this metric.

Electric car charged by diesel generator

Long-term supply of rare earth metals based on currently known resources, needed to manufacture both EV batteries and charging stations, will run out. This means EV's may not be quite the solution people had hoped it would be.

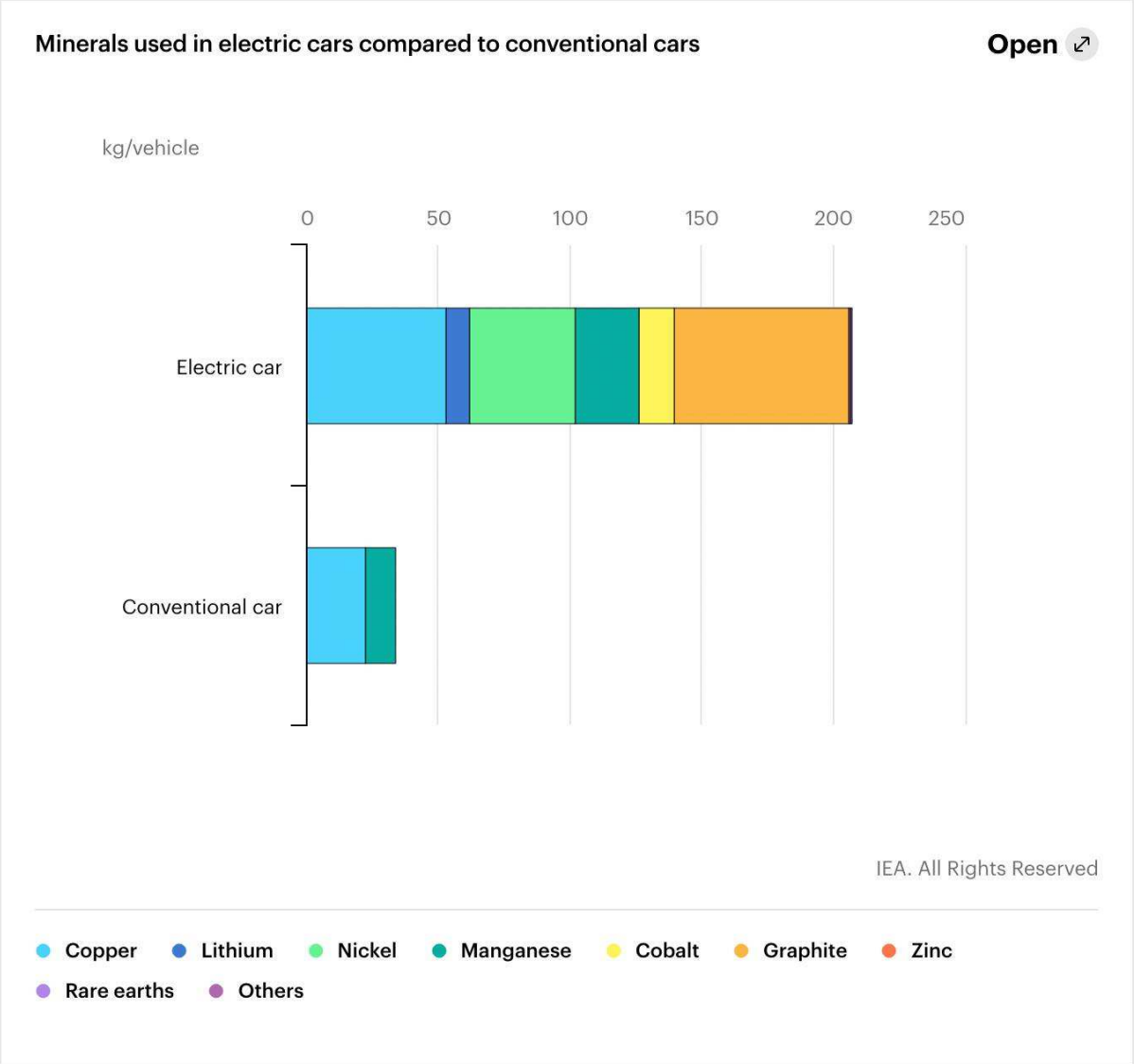
That should not surprise anyone familiar with the The Jevons Paradox. Regular gas-guzzling cars have become more efficient, so much so that some advocate for their use over the heavier electric cars, but as the Jevons Paradox explains, efficiency invariably leads to more use, more consumption or both. In a way it is like adding a lane to a highway. The highway will become more efficient, able to provide more space for traffic, but as more people choose to go through that road, as the economy expands and there are more people using more cars, soon that highway will become congested again. A good example of Jevons can be found in LED's. Despite widespread uptake of highly efficient lighting, the energy consumed for lighting has not decreased, in fact it has increased, because a change of behaviour promotes the idea that we can have more lights and they do not need to be turned off because they are so efficient now.

As the economy improves, people will want to buy these more efficient, quiet cars (when going slow, about the same noise when speeding on a highway), rather than just use the cars they already have or the ones that are already in circulation.

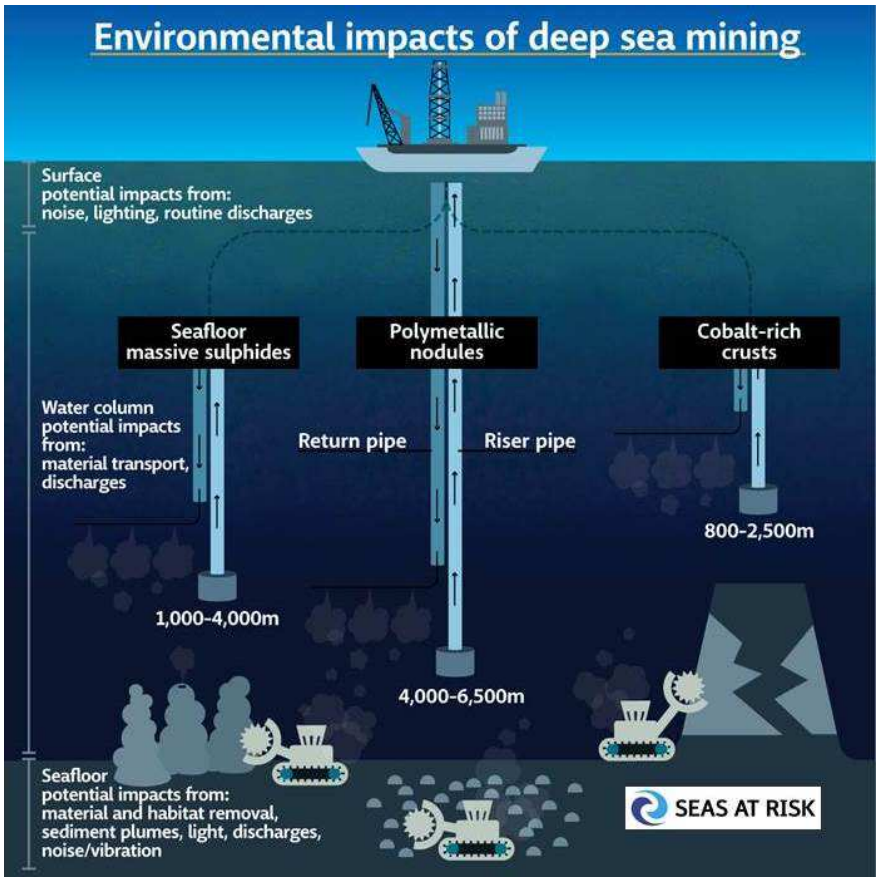
People advocating for Hybrid and Electric car users do not take into account the significant amount of embodied energy involved in mining raw materials, constructing the cars and transporting them around the world, making additional roads, installing solar panels, and the costs of maintenance for all these processes. Some people may be happy that there is a solution that can buy or manufacture the problem away that they neglect to look at the environmental footprint of these so-called "environmental" solutions.

Like your cellphone, Electric and Hybrid cars rely on their battery to operate. These batteries need cobalt and lithium to be mined from the Earth. That mining has severe environmental impacts. Cobalt mining has been devastating for people and of course

the animals of the Congo. Lithium mining in Chile and elsewhere threatens what little water supply is available. Such destructive mining activities are taking place all over the world.



Since the need for cobalt and other minerals that are used in making Lithium-ion batteries that are used in phones and electric cars, soon we'll be mining the ocean floor to make our "green" cars. What could go wrong? Probably everything.



Let's fire up our time machine and consider this hypothetical reality in which Al Gore won the 2000 US Presidential elections. Instead of making a documentary about climate change, in his second term he announced an ambitious plan to replace all vehicles in the US with electric ones. The UN is on board and soon that plan is implemented in all first world countries. Sounds great, right? Definitely will help decrease CO2 emissions. However, that plan doesn't take into account the embodied energy and metals, rare minerals and plastics needed to make all these millions of new cars. These newly manufactured Hybrids and electric cars will have large batteries, making them heavier because of it, resulting in more tire tread wearing off as particles along the road and more wear on the road itself.

It is possible to convert existing cars to electric but there would still be a need to consider the embodied energy of building a motor, battery and other important components for such a conversion.

This doesn't mean that the use of vehicles using the good old gasoline engines is preferable. It is simply that so-called *green* solutions are flawed when considering the embodied energy involved. The truth is that there is no convenient solution for our reliance on cars and other motorised vehicles. Most popular climate advocates these days think humanity (or at least the wealthy part of it) can have their cake and eat it too. Over and over they say that creating "green" jobs will sustain the GDP, growth-based economy while "saving the planet". One does not need to be a scientist to see how this strategy is doomed to fail. The real inconvenient truth is, there is no way of maintaining our current lifestyle by implementing new technologies.

6. Are Ecological Transportation Plans Ableist?

The benefits of cycling go beyond the fully-abled. For people who are elderly, disabled, and for children - roads that are more human-scaled offer a more pleasant way to get around and street crossings which feel safer and more comfortable.

It might seem counterintuitive, but in conversations with people experiencing injuries or disabilities, a great many have said that it's actually easier to get around on a bike, then to walk. it's important to use a bike that fits a person's specific challenge, and there are definitely a lot of those, as well as organizations helping people find the right bikes for them, even for people who are visually impaired!

Promoting human powered travel only seems ableist if people hold onto the mental handicap created by our current capitalistic structure, as required changes would affect everyone. The important goal in planning transportation modes is the need to have the disabled in mind when making these transitions. For now, it seems that that argument tries to block such changes even if they're only made by able-bodied people. It's true that for just any regular people it's easier to use a car to get places. Protected from rain, heat, rain and more, people can be truly passive on their commute. This of course has long term effects on the population. As people in wealthy countries typically don't exert much energy or work their muscles in their day job at the office, on their lengthy local commute, or sitting in front of the TV to eat their take out dinner and relax after a long day at work. People are basically not really using up the three meals a day that they eat.

In effect, current societal structure in most wealthy countries creates a system in which most people are ableist in a way, or on their way to becoming so.

The effects of technology on the human body are shown brilliantly in the futuristic animated movie “Wall-E” (2008), where people only interact via technology and don’t even need to use their legs anymore to move around.

Society might never reach this technological stage as climate change causes collapse before then, but the society shown in the movie is just an exaggerated version of where humanity is at already. After all, It’s a whole different experience for a kid to be on their phone while driven to school (or anywhere for that matter) in a climate controlled car than to ride their bikes with their parents or by themselves to wherever they need to go. A better society might be one where people wouldn’t have to go far to get to work, as most manufacturing and agriculture could be local (See Chapter 9). Some trade-offs will have to be made for people with different abilities, but there is much to be gained for everyone, more than merely reducing CO_2 to save humanity’s existence on the planet.

Non-futuristic technology can accommodate people susceptible to cold weather or those who find it hard to balance a bike, or people who cannot use their feet to pedal. Many of these types of solutions do not require advanced technology.

Living Simply

1. Minimizing Resource Use

You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make. - ***Jane Goodall***

Even though “simple living” is a term now popular among people who are reducing their ecological footprint, it is kind of a misnomer. Deciding to bike somewhere in the rain instead of taking your car would involve wearing more protection against cold and dampness. Ordering fast food will surely be *much* simpler than growing your own food and then preparing a meal from scratch. It all depends on your definition of “simple”.

Of course, behind these “simple” solutions to needs or wants is a whole “transparent” complicated system. To the person purchasing a product it is quite simple. But there is a whole system behind it of mining, agriculture, fabrication, printing, dying, packaging, transportation, refrigeration and staging. To make a truly “simple” decision, one

must consider all the steps that occur end-to-end, not just the very last step in obtaining an item or service.

A detailed discussion of this is to come in this chapter and the next one, but for now it's important to understand the foundation of living simply, that is of minimizing resource use. It is a way of life in which a person intentionally uses few resources, even when presented with what seem to be 'easier' options. To do that, a person that is already immersed in consumerist culture might have to go through a journey of deprogramming in a society that doesn't really appreciate people not participating in its common ways.

On the way to minimizing resource use one will find a lot of people spending money and resources to achieve "simple living", not really understanding what it actually means, that is not really considering the ecological footprint of all human transactions.

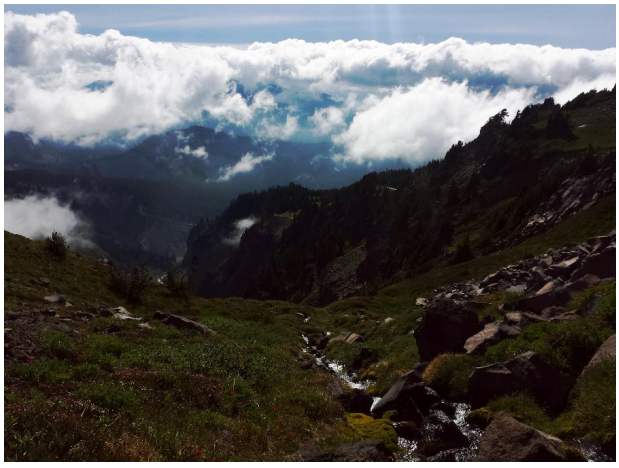
In that way, living simply will be very complicated for the person choosing that path, involves learning new and old skills as well as being better at being a social person. That person will benefit from the path to simplicity as much as reaching that goal, not to mention the benefits for society, the planet, the animals and plant life on Earth.

2. Minimalism

Minimalism is also a word that is thrown around as if it was synonymous with living simply. It seems to have many definitions depending on which school of thought one is exposed to and sometimes ends up being used as a marketing buzzword, as if it's that easy to buy simple living™.

Much of minimalist philosophy can actually be destructive, when applied in a person's life. For example, to keep your living arrangement "minimalist", a person might discard seasonal clothing only to have to buy more of it six months later. Minimalists might not keep parts needed later on to fix stuff that can break down or keep other stuff that can be used in a month or even a year. Some minimalists in the US will sell much of their stuff in order to be able to afford "minimalist" products that would need to be manufactured and sent across the globe.

To be sustainable, minimalism ought to focus on minimizing the *harmful* possessions or characteristics of our lives. Some areas where minimizing use *does* have great benefits are travel, especially for long distances by airplane, purchases of new items (especially plastic), minimizing our living space (for example choosing a tiny home over a conventionally sized home) and owning items that have many uses so that space and materials aren't consumed by multiple single-use products.



The easiest way to look at minimalism is to treat life as a hiking trip. Imagine everything that a person needs must be carried all day on a person's back. Soon enough that extra set of speakers, the cabinet full of wine, or the broken vacuum cleaner in the back of the closet all become recognized for the burdens they are. Even this metaphor shows that

minimalism should work along with a strong sense of caring for the environment as some hikers are known to leave a LOT of trash behind them.

Clearing out excess clutter leaves a space feeling clean and open which means there is room for guests, social events or even inviting other people to live with you. Clearing out a room or two, people might find that they no longer need to live in their large house and might consider moving to a smaller house, apartment or a room in a shared housing situation.

In wealthy countries people are so used to a certain form of consumerist lifestyle that simply encountering people who, for example, choose to sleep on the floor or not have a lot of things hung on walls might seem pretty weird to them. A similar phenomena might occur if a mainstream person encounters a person that will eat simple food that isn't spiced up, and doesn't have condiments added to it, like, for example, baked potato with nothing on it.

Of course, as society has a rich waste stream and products previously made, an eco-conscious person doesn't need to lead a so called "bland" life, or even wear the same clothes over and over. That said, minimal choices definitely can have great benefits in helping degrowth become feasible and also prepare us for the eventual scarcity of resources humanity might be facing in the future.

3. Zero Waste

Values that include reducing or eliminating trash have a strong positive impact in this world human beings share with others. In western societies there is often a negative opinion of 'litter' on streets and communal spaces. However, the same cities have trash services picking up waste and delivering many tons of it to other (less wealthy) municipalities to be dumped into enormous pits.

The latter type of waste is considered acceptable because it is the result of purchases benefitting industry. Which increases GDP, but the cost of this cycle of waste leads to pollution of land and water for many hundreds of years. Despite a great deal of examination, humanity really doesn't know how long it will take for the plastic already produced to finally break down, and no one has yet perfected a means of converting used plastic back into its original components, even though there is some research done in this area that might work with some plastic containers.

Every piece of plastic ever made still exists today.
Planting Peace

The modern person in consumerist society enjoys these transparent waste services, providing everything a person needs in an increasingly convenient way, and somehow "magically" disposing of all the packaging, as well as the rest of human waste. Sure, some of it will be recycled, but that process, like other techno-optimistic solutions is not

really as helpful as people would hope, as most of the stuff a person might throw to recycling will end up in the landfill.

Often, there is some complacency which goes hand in hand with recycling programs. One easy way to transition toward a zero-waste lifestyle is to simply reduce or eliminate waste pickup service in the first place. By not having the convenience of curbside pickup it becomes more of a conscious effort to bring waste material someplace for collection. If ever aliens found videos of humanity's practices in the industrialized consumerist age they might be a bit confused. They might gather that for whatever reason the human brain lost its ability to understand the concept of object permanence, as people throw their trash into *waste disposal* and then think no more about where it goes. It is *taken care of*.

The best solution to waste would be to limit consumption in the first place. Avoiding the purchase of new products and repairing or re-using what people already have are some of the relevant concepts discussed in Chapter 5.

The goal is to change the way society operates so that limiting consumption will eventually make industrialization obsolete. This will be a crucial step in preparing for an inevitable future where energy and resource intensive mass production would no longer be possible.

4. Needs Over Wants

Wants may be "easily satisfied" either by producing too much
Or desiring little,
Marshall Sahlins, Author of "Stone Age Economics"

According to the United Nations, sustainability is defined as:
*"*development *that meets the needs of the present without compromising the ability of future generations to meet their own needs."*

The key word here in this definition is NEED. How can a need be appropriately defined, when most everyone in wealthy societies considers a cappuccino or a car trip to be a 'need.'? What are the things that every one of us truly needs in order to survive? Obviously food and water are needed, not necessarily pizza and apple juice, but essential foods that give people the nutrients they need.

In all but the warmest climates people need some form of clothing. When it rains or is cold a form of shelter will be needed. There are other needs which are not necessarily physically manifested like the need for stories, shared experiences, and affection. Once food, clothing and shelter are resolved, there is little else that people would not be able to survive without on a regular basis.

By considering these issues on a daily basis and supporting friends in the same pursuit, people can all grow together, prioritizing the few things and experiences which keep us happy and healthy. It is really a different way of thinking and existing than the one typically practiced in industrialized nations. These days people in wealthy countries often obsess on social media about "first-world problems", like dealing with spam email, not finding parking for your car or being unable to get tickets to the show of their favorite band.

As resources dwindle and the effects of climate change intensify a need will arise to refocus our own private lives as well our communities. That focus should be first and foremost on resources required to ensure survival.

Learning to enjoy simple things in life can have a real impact on waste. Just imagine going on a local trip by foot versus the huge waste of flying to a place like Disneyland to spend the day there. For sure a simple trip will be nothing like the complicated one, and requires a fair bit of disentanglement from capitalistic culture, but possibly might provide just as much entertainment. It does require building a certain skill set, such as using your own imagination and being able to enjoy nature and each other in ways that might be obscured by technology and mass media.

Luckily there are still communities around the world that have not lost some of these very important skills due to adverse effects of modern technology. People in consumerist societies can look up to and learn from them while not necessarily putting them on a pedestal. Even though these communities lack current technological advancements like television and the Internet, they somehow seem happier just dancing, singing and fooling around in whatever gifts nature gives them. These types of communities are often thought of as *primitive* or *undeveloped*. Instead, it is suggested to look at them as inspirational the rest of humanity makes its transition to becoming a more sustainable society.

5. Do It Yourself

A large part of living simply and decoupling yourself from a consumerist way of living, is to do things yourself. As mentioned before, to grow the economy and increase the GDP people need to pay other people for services. As the economy needs to constantly expand, citizens of wealthy countries are encouraged to NOT do anything themselves.

Commercials tout how easy it is to clean your house with your automated cleaning robot while TV shows illustrate how convenient it is to enjoy junk food delivered to your house. On the phone and now the Internet, a person in wealthy countries can basically pay all their troubles away or so it may seem. Don't have the money to do it? A myriad of money lending schemes will help people make their lives as comfortable as possible. Anything a person can possibly need and a few things perhaps didn't even realize the need for, there is a product especially created for them.

A counter movement to this is the DIY (do-it-yourself) path. It steers us toward reliance on our own wits and technical know-how as well as shared community knowledge.

Making stuff will be discussed in detail, in Chapter 5, but for now let's discuss the broader implications of doing things yourself, not just making our own products.

One of the reasons people rely as much on purchased products is that much of the people's time is spent on commuting to work, working and commuting back home. The rest of people's days are often spent with their kids, relaxing, doing mainstream leisure activities such watching sports games and movies, playing computer games, or surfing the internet.

An activity such as making your own healthy meal seems like a major chore to people who lead a mainstream lifestyle in the so-called "developed" countries. While relying on

products got its main initial boost in the 1950's boosted by TV and magazine advertisements, at that time women were still mostly housewives, some as their primary occupation. That means that homemade meals and other DIY activities that were passed on from the previous generations were still in vogue.

Soon enough, an avalanche of products came to replace the old ancestral knowledge of our grandparents. The digital revolution of gadgets and computerized services only worsened the effect of focusing on easy and comfortable solutions.

The downside of all of this is that it makes it hard to lead a simple life when paying a reasonable amount of money can fulfill all your supposed needs and wants. In a way, a society of leisure makes it more difficult for people who do not have cellphones and cars to achieve their goals or even hold a job. As life chores become easier for the bulk of the population in a wealthy country, it is even frowned upon when a person chooses to do things the hard way. Why walk or ride a bike when a person can more easily take a car to wherever they want to go? Why make a meal when so much food can be at a person's doorstep in less than half an hour?

There are great benefits to doing things yourself. Washing your own clothes, growing your own food and making your own meals helps a person to be connected to the elements, and the ingredients that stuff is made of. Knowledge can be gathered on how things are made so making it harder to obscure truths about how the world actually operates.

It does require a person to spend more time doing things by themselves rather than relying on paid services and goods. Living a low resource life is obviously easier when a

person doesn't have a full time job or a job at all in the traditional sense. Luckily, a lot of the things a person living simply would do will require less spending of money therefore depending less on a paycheck. Living in a community makes that lifestyle even easier for a person to share in the great wealth of skills of people in the community.

Learning how to build or make stuff does take practice and patience, but in the modern age of youtube and other tools, it becomes much easier to understand how to create something by seeing how other people are doing it (standing on the shoulders of giants). Beyond learning from the Internet, there are also opportunities to volunteer in exchange for skills, to attend community events such as fix-it fairs, or even just to offer free help to a neighbor. The skills learned and friendships gained by sharing not only help to make us better people, they build community and raise the consciousness of everyone involved in a project. Even if something a person makes gets stolen or damaged, the skill to make it remains forever, allowing for easy repairs down the road.

Sometimes there are initial costs for building something ourselves, and sometimes not. Borrowing tools or using tool libraries can reduce the burden here while other times it may be possible to barter or trade for access to other tools.

As a person gains more knowledge of how to build something, these skills can be taught to others, or used to help people who can't do something themselves. Each of us has different comfort and ability depending on our experience. When people work together, one's fabricating ability can fillgaps in someone else's ability, creating even more social bonds, allowing us to advance as a community. There's great benefit in working in groups to take advantage of everyone's unique talents. The bonds created often blossom into friendships that can last for years.

Communities can offer workshops to members where they can learn DIY skills face-to-face. For example, Portland, Oregon, has Fix-it Fairs, offering classes teaching people how to protect items they have from the seasons, how to reduce household energy use, how to fix and mend their own things, etc. .

Ecovillages around the world have curricula designed to teach skills for fixing tools, mending clothes, and any other skill that would help people extend the period of use for items they already have. Hopefully schools around the world will also adopt teaching these kinds of skills, facilitating transition to a more localized economy.

6. Living Without Money

There are many anecdotes of people who choose to not use money, from YouTube bloggers trying it for a week, people who do it for a year to people who've been doing it for a long time.

Of course that typically pertains to first world people who go outside of the system, reprogramming themselves to not rely on having money anymore. However there are millions of people around the world who rarely use money, if at all.

A moneyless lifestyle flies in the face of conventional thinking, not only in wealthy countries who've managed to exploit resources, but such thinking remains unconventional also in socialist or colonized countries as well.

Communities possessing more wealth are convinced that the wealth which they possess brings them happiness. They put faith in advertisements which offer convincing myths centered on the joy and satisfaction of a particular purchase. Meanwhile, groups without wealth are similarly convinced that obtaining wealth, or at least symbols of wealth, will also bring happiness.

There is a wonderful story about an American investment banker who happens upon a Mexican fisherman in a small village. He compliments the man on his catch and tells the local that he should work harder in order to earn more money so that he can retire and relax in a small fishing village. The lesson here is, why spend so much effort to become

successful, when a person can enjoy the peace and relaxation that can be had right now by appreciating what they already have?

The great deception, which all groups and societies that are influenced by this story fall prey to, is that not only does wealth not solve many problems, it actually can cause a great many more. Whether it's the fear that a possession will be stolen, or that a purchase will be of lower quality than was expected, or that someone will quickly invent a newer and better version of a gadget; there is always fear and sorrow associated with purchases.

On the other hand, imagine the many qualities and experiences which are enjoyed at no cost and yet bring us enormous happiness: listening, sharing, trust, conversation, kissing, stories, hugs, games, holding hands, and so many others. To put it simply, any authentic personal experience can be had and shared without the use of money.

Now think of the many things that both wealthy and poor people strive for: vacations, movies, jewelry, alcohol, cars, name brand clothes, soda, makeup. How many of these things actually have brought a person happiness for more than a brief period?

For people who succeed in acquiring these objects of desire, the satisfaction only lasts for a few minutes before the harsh reality sets in. The brief high of a material purchase comes from the dopamine that fires when picking fruit, or finding the perfect branch for a hiking stick. Corporations take advantage of these evolutionary traits to help drive up sales. These functions of our brains benefited us as hunter gatherers, but are now put in overdrive in a typical shopping mall, or when browsing online on sites like ebay or Amazon.

There's even a psychological affliction where some people are so attached to the brief high from a new purchase that they become addicted. Since the satisfaction is so brief, it requires many repeated purchases to keep from having to face withdrawals from that drug.

Meanwhile, the development of a lifestyle centered around community and sharing satisfies our emotional needs without the destructive effects on our savings or the

environment. A low money or even zero money existence pushes us to use our creativity in order to solve problems and this problem-solving skill remains with us forever. The experience of sharing a project, or learning from someone can't be stolen from us the way a car or a cellphone can. We are being systematically denied the experience of community, so that retailers can sell this experience back to us in the form of "retail therapy", sports fandom and TV-based comradery.

Moneyless living means more satisfaction and more concentration on being in the present. It's closer to the existence of a wise yogi, a sensation similar to hiking through the woods.

In many societies it may not be possible to completely abstain from money, and some efforts to do so are actually criminalized. However, a person can move towards an existence where needs are obtained through alternate means. As with other transformations it is likely to happen gradually for most people.

Developing the skills needed to enjoy a moneyless existence takes time, patience, courage, and humility. Few societies (especially in wealthier countries or regions) teach the kind of skills needed to enjoy this life. It isn't simply a matter of moving to the desert and living in a cave. Living with little or no money in a society that does not focus on communal living can be harsh without having good interpersonal skills. The bonds of sharing cannot be experienced without trust in other people and a lack of attachment to predicted expectations. For people who do reflect those values, the rewards reach far beyond immediate comforts.

The Hierarchy of Need Fulfillment

1. Lazarovic's Buyerarchy

"There's a revolution that needs to happen, and it starts from inside each one of us. We need to wake up and fall in love with the Earth.

Our personal and collective happiness & survival depends on it."

Thich Nhat Hanh

Maslow's hierarchy of needs is a theory proposed by Abraham Maslow in his 1943 paper "A Theory of Human Motivation" in *Psychological Review*. Almost as a takeoff rather than anything to do with the original theory, Canadian illustrator Sarah Lazarovic proposed a new pyramid shaped hierarchy, called "Buyerarchy of Needs".

People already immersed in a lifestyle of minimizing resource use would immediately recognize the logic of this diagram. Unlike Maslow's hierarchy of needs, however, this pyramid-shaped diagram does not illustrate a theory of motivation. Rather, the motivation is quite clear: you've got a need to get something, so how do you make it happen in an ecologically sustainable way?

The only thing that could be added to this hierarchy of need fulfillment (as we call it) is the category of "Sharing" (See 5.3.1), somewhere between "Use what you have" and "Borrow".

Sharing is different from borrowing since the owner of the item is the community rather than another person or family. That said, sharing is similar to borrowing in the sense that you have to return the item so it could be used by another. In other words, the difference is that when with the concept of sharing, the community has the ownership, not a single person or a unit of people (such a family or a couple). You do not return an item to its owner because they procured it, but rather you make it available so that other people could also use it. If your friend gives you a book to read, you will probably return it to the owner, your friend. If a family buys a carpet or a spoon, it would be shared by family members. Nobody will ever say that they are borrowing carpet walking privileges or a spoon.

The discussion of Bolo'Bolo and community-living in Chapter 9 will show how the sharing concept extends to a community where most of the resources belong to the entire community.

In third world countries and pre-Capitalist society, this type of hierarchy is quite common. Societies did have money for a long time before capitalism came to dominate our system of governance, but the buying part of the hierarchy pyramid was minor compared to how it dominates our culture today.

Now it seems that in first world countries, money is the answer to everything. Do you need anything? Go to a store, or even just find what you need on the Internet and order it. If something is broken, it seems that society no longer encourages you to fix it when you can just as easily (and with less fuss) get a new item and throw the old one away. The old item will simply be taken by garbage trucks to the landfill.

In consumerist society if you fix something yourself, you are actually hurting the economy. Afterall buying stuff encourages growth and increases the GDP. And the making of stuff means people get to keep their jobs or get new ones. Even if you own a product that you are currently using, it might not be green or ecological or have the latest features, so it's time according to some commercials you might see on TV, to throw it out and get a new and improved one.

Consumerist mentality is indeed the main cause of climate change and other planetary worries as well as being the reason why society cannot seem to solve this issue when simple solutions are readily available.

Switching to a simple living way of life, having fewer needs, is indeed valuable to decreasing your ecological footprint. However, it is impossible not to need anything. Even if people have clothes, shelter and food, they still would want to live a full and happy life, perhaps learn to play an instrument, spend some time reading a book, means to travel or paint in nature. They will also need healthcare at some point. It's unavoidable.

There is a large and unseen impact resulting from the buying of things produced far away. The main cause of this harm is from something called embodied energy. This is the energy needed to produce any given item as well as the journey that a product takes to get to you. Just imagine the major operation needed to mine rare minerals in Africa, then the ship taking those to a huge manufacturing plant in China, then again on a ship or an airplane to take across the world to the US, carry it by truck to a shipping location and from there to a huge store (itself a major energy and resource consumer.)

One of the goals of this book is to help you figure out what to do when you're in need of goods or services. The other goal would be to prepare you (as much as possible) for a future where the top of the pyramid (buy) might be gone. This could happen because of a collapse of the world economy due to climate change or due to any other sociological change.

A lot of the recommendations provided in this chapter might seem like a burden on the individual as well as society. After all, why spend all that time when a person (in some countries) can just use their own personal genie lamp in the form of money payments?

Following the hierarchy of need fulfillment (instead of just jumping to the seemingly easier solution of fulfilling needs by the most convenient way of shopping), might provide a source of joy, pride and a sense of accomplishment at having not contributed to global human waste. It might also provide opportunities for fun interactions with friends,

neighbors and possibly people in your community you wouldn't otherwise talk to or meet. It can enable people to adjust to an existence that is not focused on monetary exchange, a skill that might prove essential to our collective future.

2. Use What you Have

“He who knows he has enough is rich.”
Lao-Tzu

Poor people are the most environmentally-friendly people on the planet, more so than affluent people who can afford to buy the latest “green” products. If you can’t really afford new things, you would think twice before throwing something away. In a culture where a lot of people are poor, repurposing or upcycling will be considered first. It is disheartening to see how there are so many organisations around the world that are trying to treat poverty as if it’s sickness that should be eradicated while studies show that affluence is bringing us closer everyday towards societal and planetary collapse.

The first step in not adding to the pile of products mass-manufactured every moment of humanity’s continued existence is examining the resources that are already available to you. That means first asking yourself “do I really need the thing I think I need?”. Is there something you already have that could fulfill your need? In essence, even if you live in an affluent society (and if you’re reading this online on your computer you probably are) you can train yourself to think as if you had NO money to spend. This will require a major change in how people think about fulfilling their needs.

In affluent countries, modern technology like the Internet allows you to immediately buy almost whatever you desire (as long as you can afford it) and get it delivered within two days and up to a few weeks. You don’t even have to get dressed and go out to a store or a market. Why would you even be tempted to use what you have when you can order something new just for variety and send it back to the seller if it doesn’t work for you?

A poor person would know that a torn garment that cannot be mended can be turned to scraps used to mend other clothes, made into another item, or used to help you clean

your kitchen or dust your living room while and affluent person wouldn't bother with all of that as they can too easily purchase anything they might need, just around the corner.

Using what you have also means trying to fix broken household items, and mending shoes and clothes. In this day and age, much of the stuff people buy in consumerist societies has planned obsolescence incorporated into its design so that manufacturers can eventually sell more products. Environmentally conscious people can resist this by trying to repair an item even if it's time consuming or just as expensive as ordering a new one which is the sad reality in affluent societies.

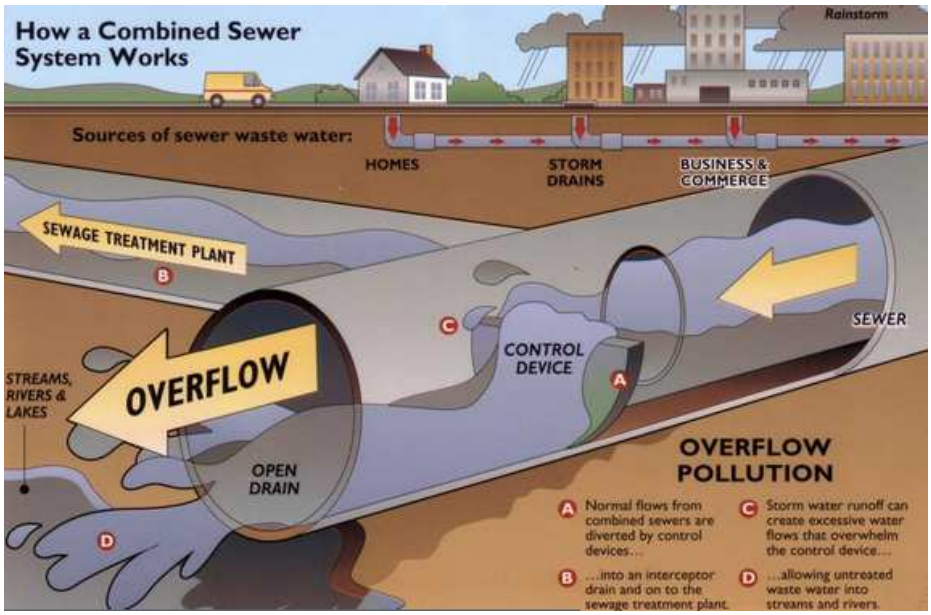
The good news is that there are movements in some affluent countries to reverse this trend. For example, in 2015, France enacted a law intended to ban appliances designed to be replaced rather than repaired.

Another example you would find in Portland, Oregon as well as some other select cities in the form of Repair Cafés, where volunteers fix household items, mend clothes and perform bike maintenance for free are held roughly once each month. Performing maintenance on your belongings as well as fixing things can have a great positive impact on reducing CO_2 emissions. It definitely helps that these events are free of charge as the cost of fixing household items in a specialized store can sometimes be more than what the items are worth.

One can only imagine how much better it would be for the environment if there were more of these types of events to go around.

The idea of trying to use what you have applies to energy too. People may not be willing or able to eliminate house heating, or city water/sewer. However, there are many ways of cutting down use of these resources. If most of the population lived in well insulated structures and used extra shower or sink water for the garden it could possibly offset construction of an entire power generating plant.

Even your human waste can be used instead of having a whole system to *dispose* of them. Urine is actually a great fertilizer for your garden while your feces can be used to create compost. We'll discuss these in detail in Chapter 8.



Using kitchen scraps to create compost also falls under the category of using what you have. It's really important to realize that in a world where growing food locally will take center stage, we can't afford to think of food scraps as trash when they will likely become a very important commodity. Yes, making our own fertilizer and compost takes some work. Without question, it is way easier to buy fertilizer and compost and have them delivered by large trucks. However, as with changing from fast food to slow food, or deciding to walk or bike instead of drive, ultimately these habits are more sustainable, and more rewarding to us physically and spiritually. It is also easier to accomplish these tasks when they are supported by a larger community.

3. Borrow and Share

Even in an ultra-capitalistic first world country, most families share things, like a living room or a kitchen. Not that corporations are happy about it. They keep trying to sell more and more conveniences so that even within a family unit, sharing has become minimal. For example, families used to gather around one television set but now it is not uncommon for each member to have their own television set, or use a phone, a tablet or a computer to watch TV shows or movies separately.

In Israel, people used to share just about everything in the socialist kibbutzim. As time went by, capitalism and other social issues tore into that way of living, but that model has definitely inspired other types of communities we'll be discussing later in the book.

Any community is bound to have something that residents can share with each other. Even the U.S., known for its ultra-materialistic tendencies and ultra-capitalism, has a totally free library system that surely falls under the category of "Sharing". Instead of buying a new book, you can check it out from the library, and you can also go there to use a shared free Internet.

In Portland, Oregon, and many other cities, people build a Little Free Library in the liminal space outside their house where anyone can just take a book and return it if they wish to do so. It also has a few tool libraries that allow people to share the tools they need to build their own projects or repair things.

Amsterdam now has a wardrobe library where, for a monthly fee, you can borrow clothes instead of buying them. This allows people who want variety to avoid contributing to one of the most polluting industries on the planet: fashion.

In Chapter 9 we'll discuss how sharing in community-oriented living, Bolo'Bolo style, will become the main way for catering to individual needs.

Borrowing is, of course, a long and well-respected tradition. In this day and age you can even utilize social media to ask your friends, neighbors and anyone in your social groups to lend you something you might need. Facebook has become the largest social media website for doing that, but other hyperlocal social networking sites such as Nextdoor, Rooster, Front Porch Forum and FreeCycle have also been helpful for neighbors to connect and help each other fulfil needs. On Buy Nothing Facebook groups You can now ask for things just from people who live close to you, which helps to save a lot of time and energy.

Some close-knit groups might maintain a list of things people can borrow, but experience shows these lending libraries prove too time consuming to maintain and are becoming a rarity. That shouldn't deter anyone from starting one. Hopefully, society will one day have the proper infrastructure to make community-wide sharing of all resources a reality, a concept discussed in Chapter 9.

4. Reclaim, Swap and Pay it Forward

Not everything people have can be used. People grow out of clothes and may change their tastes. They might have an instrument they no longer play or something they got as a gift but never found a use for. For a while, in wealthy countries people would just throw out whatever they didn't have a use for or got tired of. This of course would never happen with poor people who would sell stuff they don't need or give it to a family member, a friend or a neighbor, knowing that they will also get things they need from members of their community.

People are coming to realize that they can give away what they don't need, regardless of how much money they have in the bank. This movement has become known as paying-it-forward. Selling what you don't need is also a viable ecological option in money-based societies, but moving away from using currency is one of the changes society sorely needs to make, as we'll be discussing later in the book.

Originating in the U.S., a web of hyperlocal Facebook groups, called the Buy Nothing Project, followed on the heels of websites like Craigslist and Freecycle. These groups allow a person to join their local Buy Nothing group to connect with people who live close to them, offer up what they no longer want, and ask for items they need that other people might have to gift. This is a good use of resources, reducing waste and limiting the need to buy new products.

There is also a movement toward food reclamation, championed by organizations such as Food Not Bombs. Operating mostly without money, Food Not Bombs gathers food that would otherwise go to waste from farmers markets, supermarkets, food distribution services, restaurants and caterers. Food Not Bombs kitchens use this reclaimed food to prepare free meals for those in need.

Some chapters of Food Not Bombs also dumpster dive, reclaiming food that has been thrown out to garbage bins.. Anarchists and houseless people around the world have adopted dumpster diving as a way to obtain food, some of it still in packaging. They

sometimes even find in or near the trash bins, valuable electronics and other household items that are thrown out.

In cities like Portland, Oregon, people in some neighborhoods try to avoid throwing out perfectly useable stuff, knowing it will be taken to the landfill. If they are not having a garage sale, they sometimes choose to put things out in freeboxes, basically a cardboard box put in the liminal space in front of their house for anyone in need to take.

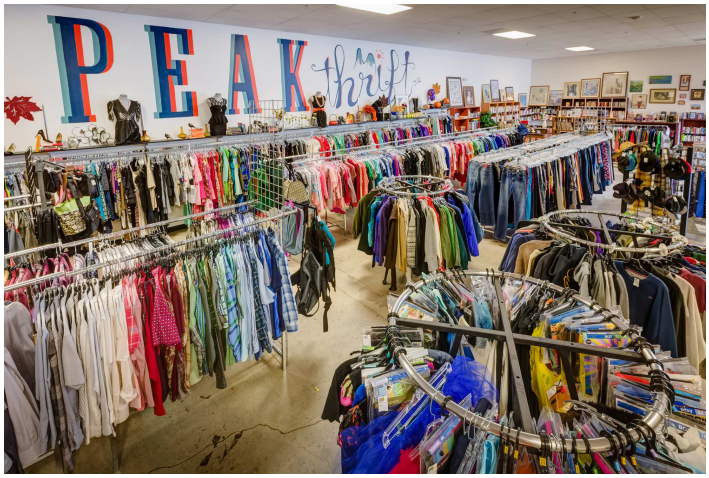
Many cities also have "Naked Lady Parties" and other clothing swaps where people try on and exchange clothes.

Some cities also have Free Stores sometimes held at churches and other community centers, extending that concept to tables and racks holding clothing and other donated items for people to take home.

To complement that, in some cities people know to take excess food and clothes to share tables, soup kitchens, food banks, homeless shelters and other such places for people in need to take home. There are even volunteer-based organizations that make it their job to get this food excess from supermarkets, farmers markets restaurants and regular citizens.

It's really helpful these days to maintain an online list of free events and resources around town, as ecologically-minded and kind people in general initiate those events as a service to the community. Most importantly there is an honest effort to not involve money in any of this, instead relying on volunteer work and donations.

5. Thrift



Some cities and towns foster a whole culture of buying previously owned clothes and furniture. Some pre-owned items are pretty expensive *vintage* ones while others can be quite affordable. Either way, people enjoy the benefits of not having newly manufactured stuff. The environmental downside to buying from thrift stores is the store's week-long use of air conditioning, land and electricity.

Some thrift stores also attempt to sell at least some new items along with the used items. Goodwill Industries, to name one, will sell you new beanies, just because they cost as much as their used equivalent. Obviously they are missing the point that some people shop there not just to save money. The more eco-minded people just want to limit their ecological footprint, not wanting their beanies to be made, packaged and shipped from a far away country for their benefit.

One positive thing is that the Goodwill offers are outlet stores (nicknamed "the bins"). These stores will see anything the *regular* stores won't or are unable to sell. In some outlets, the merchandise is sorted, but more often than not, the merchandise is simply brought out in large bins for people to sort through. You'll possibly get a variety you might not get at their "regular" stores due to the policy mentioned before of selling new low cost items instead of equivalent used ones.

Looking around your city you might find stores (such as FreeGeek, Habitat for Humanity and Restores) selling not only used items, but also items they've fixed or mended in their own

workshop to sell to the eco-minded and/or frugal customer. These might include refurbished electronics, building supplies, tools, fixtures, etc.

Thrifting can also be done online, on sites like Craigslist or Facebook Marketplace. It's even possible to search for used items when you shop on eBay, by selecting the pre-owned option. Make sure you also sort your options by distance so that, ideally, your purchases won't have to travel too far. The ability to thrift online is actually great in some ways, because it allows a person to quickly find items, and fulfill unique needs that might otherwise be difficult and time-consuming to satisfy by shopping in local thrift stores. Of course, it might also increase people's purchases. Shopping online is so easy and convenient, as your purchase will *magically* arrive at your doorstep, perhaps travelling across the world, wrapped in lots of packaging.

6. Make

In the wealthiest of countries, people have reached a point where making things is generally not worth it from a purely economical standpoint. It no longer seems worth our time, for example, to make our own soap, because time is money and anyone can buy cheap soap for next to nothing. People can even go to more fancy stores and get *ecological*, *sustainable*, *organic* soaps, so why bother?

There is a lot to be said for knowing how to make things, and having people around us who know how to make things from raw materials. In fact, things made by hand, although they often take more effort to make, can be customized and are prettier than items made by mainstream manufacturing. Many people also consider making things by hand a lot of fun!

In the commercial way of making things, revenues come first, and buyers often pay a price. The economics of mass production often means companies need to cut costs by producing items in countries where worker wages are low and safety requirements may be more lax.

Not only that, as time passes by it seems people in affluent countries have become more and more dependent on products manufactured by corporations. In order to buy manufactured products, people must work more hours, leaving less and less time to even consider making even the most basic things.

The most obvious example of this is food. Just a few years ago, people had time to prepare meals and enjoy them with their family. Now, it's not uncommon for families to eat food picked up from a fast food joint on the way home from work, because that's about all they can afford, both in terms of money and time!

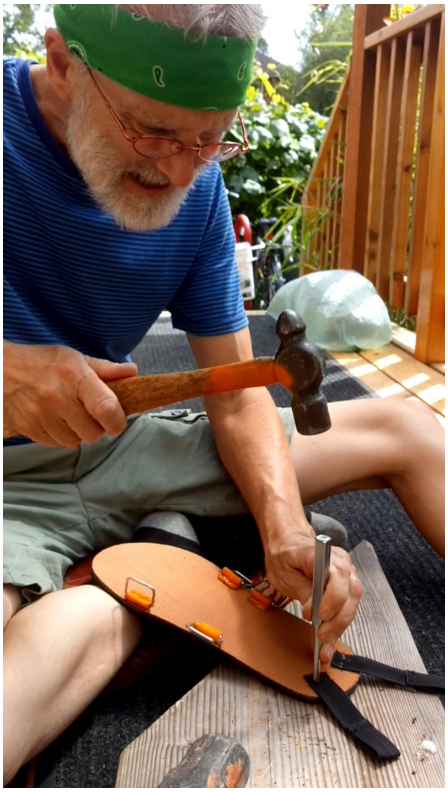
In western countries people are no longer taught how to make their own tools and products anymore. Many countries are also even becoming deprived of any small businesses around that can make (or even mend) shoes or really anything for that matter as discussed later.

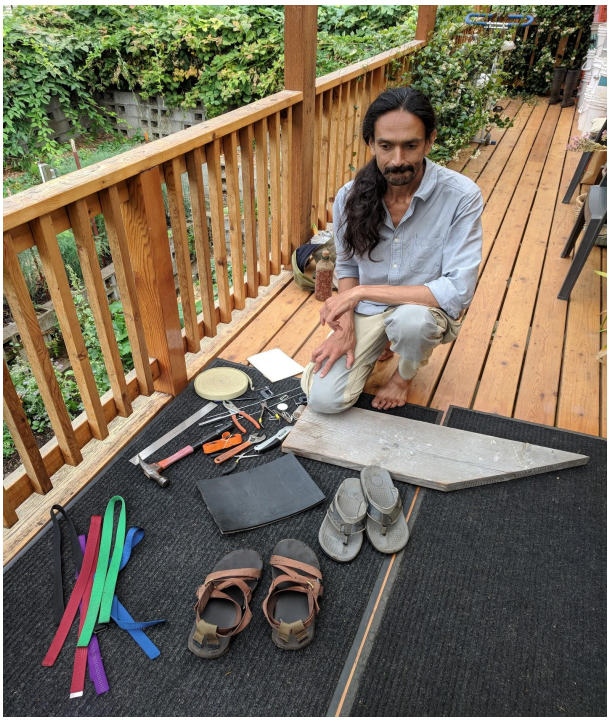
When people can't make things themselves, they lose their autonomy, are forced to choose between products which are meant to sell in high volume and as cheaply as possible. More often than not some products are made by a few or even just one corporation globally. As monopoly grows, corporations often sell the same product under different labels to create the illusion of having choice.

The process of making something might be daunting for a lot of people, but fact is, that currently there are more than enough materials lying around that can be upcycled to make many things. As long as the current system still holds, there will be multiple Internet forums and YouTube videos to help connect people to the materials and information needed. With access to information and some skill, people can make just about anything by themselves.

Access to 3-D printers and other computerized machination options can provide more options of self-manufacturing. While this use of modern technology doesn't really fall under the kind of low-tech simple living solutions offered throughout the book it can be argued that 3-D printing has much less of an ecological footprint than ordering a part mass-produced in a far away country.

Our current system of centralized mass production is likely to not survive as climate chaos ravages humanity's industrialized infrastructure. When that happens, the good news is that we'll still be left with a lot of stuff that we've already made, can fix, reuse or upcycle for years to come. However, when that eventually runs out, making things ourselves or at least having them made locally within our communities might again become a larger part of what we do, the way humanity has been doing things for thousands of years. In order for future communities to be resilient, fabriculture, the practice of making things locally, will have to become common practice.





Making sandals from repurposed materials and scraps on the back porch at Kailash Ecovillage

The short-term high of purchasing a product quickly fades, often leaving people to experience a let down similar to having a drug wear off. On the other hand, building an item challenges both the mind and body. Making something brings a feeling of pride in having accomplished something, and develops skills and knowledge people can then share with others. Learning how to build takes practice and patience. A plethora of DIY advice and tutorials are now available online, for almost anything imaginable. These skills are, for most people, easier to learn in person, but there is something to be said for being able to re-watch a particular set of instructions when needed.

The startup costs for building something can vary depending on how many tools are needed and how much experience a person has. Borrowing tools can reduce the burden here and sometimes it may be possible to barter or trade for a tool. Some towns even have tool libraries, allowing people to borrow and use tools needed for a project, rather than incurring the cost of buying tools to get started.

People have radically differing levels of comfort and ability in making things. When people work together, though, each person's skill can potentially fill in the gaps in someone else's ability, creating bonds and advancing everyone.

By building things out of used material people can learn to be more creative, a much different experience than just assembling a kit from IKEA. Our brains get exercise from the exploration of how an item can be reworked for a new purpose to extend its life. This keeps material out of the waste stream which reduces our impact on the land and the climate. There's also less concern or sadness from wasting material that was bought with money. This allows more freedom to experiment and be creative without risk.

The simplest projects can be done with a hand saw, a hammer, a screwdriver,nails and screws. More elaborate ones require some help from others. By bartering, or just being friendly, it's possible to gain knowledge about how to make a variety of things.

DIY is not just carpentry. It's also soap making, food preservation, sewing, knitting, gardening, paper making, making body care products, etc.

These kinds of projects are easier done together, with friends or in a community. People have different ways they can contribute and many tasks require a variety of skills. Working in groups can help take advantage of everyone's unique talents. Also, the bonds created by working together extend far beyond the single task itself and can blossom into friendships that may last for years and foster community living.

7. Buy

As long as our current economic structure subsists there will be a need for most people to purchase some of the things they need. There will always be a few of us at the outskirts of society who are interested in bartering for things, attempting to live with little or no money. However, bartering might not be feasible on a larger scale without some major societal changes.

So how shall we buy things? Buying a locally produced product is definitely recommended. Anything you can get that doesn't need to be flown to you or brought from far away by trucks or cargo boats has a much smaller ecological footprint.

When having to buy something new, sometimes it's worth considering more expensive items if you are able. Items costing more could mean better pay for workers, and better materials. Furniture from recycled materials might cost more than commercially produced furniture from newly mined materials, but it's worth it to buy recycled if we can limit our environmental footprint. Organic produce and produce grown using more sustainable, permaculture-inspired methods will definitely cost more, but trying to save money by buying food laden with chemicals might end up costing us more later on in terms of our health. Non-sustainable practices of growing produce affect the Earth and all the living beings on it. Therefore, any really cheap product should be thought of as suspect, especially if it's being shipped from far away.

The economics of mass-production in countries where wages are low are tilted against the small business owner. Anything a small business owner sells will undoubtedly be more expensive than something purchased online and sent from China. Sales at such small businesses are basically propped up by people who intentionally care about buying things from a local store, and are able to pay more for items. Buying something locally made can be satisfying on many levels. For example, meeting people making their own products and selling them in a fair might inspire you to eventually make you own.

Another thing the ecologically-minded shopper has to deal with is rampant packaging. It seems that the farther society descends into pure capitalism, the more packaging comes with anything a person buys. Thirty years ago, you could bring home freshly baked bread every day from the store, carrying it in your arms or a basket, with no packaging. These days are gone in most industrialized countries (with the notable exception of France), as now all breads seem to be sold in either paper or plastic bags. In some supermarkets, even fruit and vegetables are now being packaged in styrofoam and plastic.

When shopping, people often need some kind of bags to carry their purchases home. Years ago, people brought their own baskets and such to purchase goods at local stores. In the 1970s a few stores started offering customers plastic bags, the convenience of which became a world plague in the 1980s, and at present, people in the U.S. alone use 100 billion plastic bags each year.

However, not everybody was sold on plastic bags, as mounting evidence of the ecological impacts of using them became apparent. By the early 2000's, governments across the world were placing restrictions on plastic bags: from Bangladesh's ban of the bags, which clogged the city's storm drains and caused severe flooding, to Ireland's 15-cent fee on plastic bags – which reduced plastic bag use by 90 percent in just three months.

San Francisco became the first city in the U.S. to ban plastic bags. Paper bags were suddenly in fashion! However, are they really more sustainable?. After all, it takes energy to make them,

typically print something on them, then distribute them around the country. They're not really that sturdy, are often double-bagged, and even then often break down with the first use.

A lot of stores now sell reusable bags, and a few, like Natural Grocers and Aldi, no longer offer single-use disposable bags of any kind. The reusable bags are better, of course, but even they break after a while. Before buying yet another reusable bag, consider other options, such as sturdy duffle bags, that last a much longer time. You could also make your own bags if you have the necessary skills and time to spare.

A good place to buy goods or procure services if absolutely necessary is a co-operative. Co-operatives are owned by their customers or employees, and make their decisions in a democratic way. This often balances out the will to make profit with the ideals the co-operative is built on.

Beware of product labels like "green", "ecological" or "sustainable" with matching graphics on the packaging. Almost everything that is manufactured, packaged and shipped has an ecological footprint. That said, some products are better than others, causing less harm.

The best suggestion would be to do some research on how stuff is made and what happens to it once its use is complete. Can it be washed and reused? Can it be recycled?

One example of research leading to the truth is information regarding *biodegradable* products and packaging. Sounds good, right? Unfortunately, not so. Reading the label *biodegradable* might encourage a person to purchase a product, knowing that most products end up in the landfill or waste energy on the way to becoming a recycled product. However, studies show that for the most part these kinds of products or packaging are worse than plastic products. Most end up in the landfill where they emit

methane while they quickly disintegrate, and some degrade into harmful microplastics which find their way into the oceans.

If a product or its packaging is compostable, that is much different than biodegradable as you can create your own compost pile for growing your own food.

To conclude this discussion of how to buy things, it's perhaps time to talk about money. Once a person understands how the banks encourage people to borrow more than they can afford, it's reasonable to try to avoid using the banking system. After all, banks want you to owe them money. To pay for goods and services with money we don't have is clearly encouraged by banks, and just one of the ways society encourages overconsumption.

Alas, in many cases avoiding the banking system is very difficult. For example, a person might be a forest conservationist, searching for a job with a relevant non-profit or a government agency requiring a job applicant to have a bank account (like some jobs do.) Another such case might be a group of people trying to form an intentional community or an ecovillage, to foster a sustainable communal way of living, but needing a bank loan to be able to afford it.

At the very least, putting money in credit unions co-owned by their members or small community banks has lots of benefits over putting it in major banks, including resiliency in case of economic collapse.

8. Test Case #1: Gardening Gloves

Let's test our new hierarchy with something simple and much needed: Gardening gloves. Of course there are hard core people out there who garden without gloves, but for those who do, let's examine how that need can be fulfilled.

The first thing would be to look for the gloves you already have, probably somewhere in your storage area. Maybe you have some other kind of gloves that are a little worn out but can be repurposed as gardening gloves. They might not be perfect, but maybe good enough. Next, a community that focuses on growing its own food, like an ecovillage, might have a bin full of gloves that are shared among people who use them. The city of Portland, Oregon, as mentioned before, has a few free tool libraries that might have gloves you could use and then return. You could ask your neighbors if they have gloves you could borrow. If you have Internet connection you could go on Rooster, Nextdoor, your local Facebook Buy Nothing group, or even post on your own Facebook feed for more borrowing options. Perhaps someone would want to swap some extra gloves in return for some flowers, fruit or another item. Someone on your local Buy Nothing group, Letgo app or Freecycle might not need their garden gloves anymore and may be offering a pair up for free. It is rare to find gloves in freeboxes, free stores or even thrift stores. However, while biking or walking around town, it's possible to find single gloves that people inevitably drop here and there. By gathering up a few, you could potentially start your own collection for shared community use. Gloves of course can be made by anyone with the skills and time, and not surprisingly, you can find instructions for how to do exactly that, on YouTube. Lastly,

gardening gloves can be purchased locally on Facebook Marketplace or eBay for a decent price.

9. Test Case #2: Toilet Paper

Even though modern, widespread use of toilet paper is a fairly recent thing, toilet paper has become one of the items people seem to think they cannot do without. People begin to feel stressed at the mere mention of going without it. For people in wealthy countries, it's nearly impossible to imagine life without it, even for the most ecologically-minded.

That said, looking at the new hierarchy it's evident that for almost all people, the main option to obtain it would be to buy some. Perhaps a person could buy toilet paper made of recycled materials, but even it might be packaged in plastic.

Like other single use items, however, this is certainly one to consider avoiding. The statistics of toilet papers consumption rate are pretty staggering. The process of making toilet paper, either the regular kind made from trees or the recycled type is heavily reliant on harmful chemicals.

It is worthy to acknowledge that 75 percent of the world's population doesn't even use toilet paper, because it's too expensive for them. To make the toilet paper used in the more affluent parts of the globe, 30,000 trees are chopped down daily. Sure, there are somewhat more sustainable options for toilet paper that you can buy, but these are still products that need to be manufactured, packaged and delivered to a large store where people typically buy them. So, let's just say, radical eco-minded people understand the ecological problems associated with toilet paper and choose to do without it. Gasp! If we don't use toilet paper, then what do we use?

Let's start from the easiest ways to stop using toilet paper, and move to the more difficult. In North America, people use paper towels, basically a thicker form of toilet paper, to clean their kitchen. These can be replaced with towels, torn socks or pieces of any garment you think you won't be able to mend.

Moving on to use of toilet paper for personal hygiene, it's fairly easy to use towels or fabric scraps to wipe your face or nose, instead of using toilet paper or tissues. Years ago, it was not uncommon for people to carry a handkerchief for this purpose, in either a pocket or purse. These pieces of cloth would then be washed with the laundry. It's far better for our environment for us to return to that practice rather than creating more and more paper garbage for our landfills.

The next, and most obvious use of toilet paper, is for personal hygiene following use of a toilet. Here again, it is advisable to avoid the use of toilet paper, instead relying on washing with water or using reusable rags. Keep in mind that toilet paper is actually a fairly recent invention and people survived without it for most of humanity's existence.

Now comes the rough part, commonly known as "the other thing" or "number two," since people typically avoid using more direct terms to discuss the reality of human bodily function and hygiene.

Probably the best known alternative to toilet paper is the French bidet, the use of which began in the 17th century. Still, even in the linked video, it's recommended to use either a towel or regular toilet paper to dry yourself after use. A bidet requires installation, and in reality, demonstrates the same problem of resource use which we discussed in regard to electric cars. A worldwide adoption of bidets in affluent countries would therefore be quite resource intensive.

A bidet-like experience can be had by using a plastic squirt bottle filled with warm water. This soothing experience is what some women use after giving birth to clean their tender parts.

So, if not a bidet, what else can be used? One very effective method is using citrus fruit peels, though other peels might also work. It is wise to make sure that they are dry enough for use. They are probably more sanitary than the toilet paper as they actually sanitize your body in the same way used in the creation of countless of homemade

cleaning products. Once done you can drop them inside your humanure discussed in Chapter 8.

Other things you could use that are more abundant are leaves. You can experiment with different leaves to find out which ones provide the best outcome with the least irritation. For example, fig leaves can be be quite useful for this, though in the summer they might cause some skin irritation upon use.

Smooth small rocks found near rivers and streams are nice enough to be useful if you are hiking or living near a body of water. Finished? Bury them in the ground along with your poop. You could also consider going back to one of the other methods commonly used before the adoption of toilet paper -- just use a cloth to be washed afterwards. Old cloth diapers or washcloths can work well for both adults as well as babies, and are easy to make but do require washing them well in hot water.

In non-affluent countries where people in some areas don't have access to a body of water or running water, the most common method used is referred to as “the hand method”. Basically you use your hand the way you would toilet paper and then wash it thoroughly afterwards.

10. Test Case #3: Menstruation Products

Through the time of patriarchy, in the majority of the world, menstruation is something that has been grossly misunderstood, shamed and made into something dirty and suspect.
There are a growing number of women around the world who are pioneering the way for a much more healthy and empowered attitude to menstruation. The ancient women's mystery teachings of the power of the menses are being made available to many more women and are calling all of us to question why something so natural became a target for so much vitriol and shaming.

Women are learning that by overcoming the taboos and shame stories and instead paying attention to and tracking their cycles and reflecting on the findings, they can connect with a powerful guide to their health and wellbeing, their unique phases of productivity and their connections to spiritual guidance.

Understanding the power of our cycles enables us to reframe them as something wise and valuable rather than something inconvenient and embarrassing. This in turn will help us to become conscious of how what used to be called sanitary products, but are now called menstrual products, are yet another example of an unsustainable way of life that needs to be changed.
Women all over the world use different products to contain the blood from their menses. Here is a breakdown of these products from an ecological point of view.

- **Tampons and pads** are highly unsustainable due to being made of up to 90% plastic, containing chemicals such as dioxin, chlorine and rayon and being very slow to biodegrade. One woman typically uses 11,000 disposable pads in a lifetime, the US alone puts 12 billion pads and 7 million tampons into landfill annually.While the products sit in

landfills, these chemicals get soaked up by the earth and are released as pollution into groundwater and air.

- **Eco pads** ~ Some pads are made without chlorine, perfumes or rayon, they are made from organic cotton, sold in biodegradable packaging with some companies using shipping rather than flying. However, the production of cotton uses extremely high levels of water, and the production of the packaging will also be using fossil fuels.
- **Moon cups** last for much longer (up to 10 years or more) and tend to be made from silicone which is derived from silica, a type of sand, and as it degrades, it will slowly go back to its original state; the second most abundant mineral in the Earth's crust and one that isn't hazardous to the environment. One mooncup can be used for the equivalent time that 2600 disposable pads would be used.
- **Reusable pads / period underwear** ~ these are both commercially made and also made individually on DIY basis. Women use different materials such as felt and cotton to create pads that can be washed and reused each month. There are courses and classes to learn how to make your own pads
- **Rags and newspapers** ~ There are plenty of places in the world that do not have menstrual protection so the women use whatever they can to protect their modesty and also not risk being shamed and attacked for publicly bleeding.
- **Sea sponge** ~ Some women use the naturally forming sea sponge as an alternative to pads and tampons. Like most naturally sourced products, it is unlikely that this is a viable option to be used at scale, however it might be an option for women in certain parts of the world.

In some cultures it is still acceptable to bleed freely without any sanitary protection. This is when women will go about their day and when needed, will squat and pass the blood directly

onto the earth. Teachings from some indigenous peoples say that one of the most powerful things a woman on the earth at this time can do is to offer her blood each month to the earth.

Whilst many women may not feel ready to free bleed yet, it is possible by using cloth pads or moon-cups to then take the first step in free bleeding by giving your blood to the earth as an offering and an acknowledgement of yourself and your cycle as an intrinsic part of the natural world.

As more and more of us do the inner menstrual work of questioning our attitudes and deepening our understanding, we will put ourselves into a much stronger space to collectively be able to support the inevitable return to free bleeding around the planet from a place of power, respect and dignity rather than shame and disgust.

11. The effects of the New Hierarchy on the Global Economy

> "*The Gross National Product [now known as the GDP] does not allow for the health of our children, the quality of their education or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country, it measures everything in short, except that which makes life worthwhile."*
>
> Robert F. Kennedy **(1968)**

On a large scale, if people adopted the way of thinking implied by the new hierarchy of need fulfillment, "the economy" would be hurt. Even though it's an abstract concept, it has real world consequences such as people losing their jobs, the government being unable to function, and companies going bankrupt.

The GDP, that holy grail of capitalist society, would be close to zero. The GDP (originally called the GNP,) doesn't make a distinction between positive transactions in a society and negative ones, nor does it account for income disparity. Even if it was somehow altered or improved, basically it would still measure making new goods in terms of money. Even communist USSR measured growth to compete with the U.S., albeit with a different form of measurement that was arguably even worse as it didn't measure services. There are other measurements that take into account how healthy people are, what quality of education they get, and people's access to basic needs. A society that is not money-based (such as the one mentioned in Chapter 9) would rather rely on using existing material goods, rather than the making of new ones. Having to make new things will be considered a negative rather than a positive as society transitions to a state of avoiding further abuse of nature.

The reason for this change in perception is that at this pivotal time in history, humanity is fast running out of options. Society has to change in a major way for humanity to keep on

going. To think that we have to buy stuff, so the corporations can keep making stuff, so the economy can grow, is simply unsustainable if it means that soon, major cities will be underwater, most wild animals will go extinct and our water reservoirs and soil are becoming polluted in the process. As Kenneth Boulding, a pioneering economist, said in his testimony to congress in 1973, “Anyone who believes exponential growth can go on forever in a finite world is either a madman or an economist.”

Even replacing the old “bad” products by buying new “green” products will not solve the issue of unsustainable growth, possibly even making it worse as it basically gives an incentive for consumers to replace their perfectly good appliances, cars, etc.

The new hierarchy presented here is meant to help you get adjusted to future new social realities and, if accepted by society, to topple current economic structures and bring on new ways of living as discussed in Chapter 9.

This new hierarchy can be a way to save money or even enable people to live primarily free of the use of money. Using the hierarchy is also the way to make more sustainable decisions at the personal level. What happens if a larger swath of the population adopts this paradigm? It might reveal that current capitalistic culture and even other other so-called *socialist* or *communist* societies that are built on the concept of economic growth are really nothing but glorified pyramid schemes doomed to fail. It’s no coincidence that as modern societies increasingly depended on industrialization, the more the terms used by banks, insurance companies and the stock markets (as shown in the book and movie *The Big Short*), the very same organizations that are regulating the economy of most countries, have become increasingly removed from any kind of material reality.

The perfect society, as envisioned by the new hierarchy of needs, is one of frugality, simplicity and conviviality. It is simple to understand, and does not involve secret mechanisms that are intentionally built to be confusing, like the stock market. A society built on the principles shown (and elaborated on later in Chapter 9) closely follows ideas similar to the ones Marx suggested in the first half of his book “The Capital”. However, Marx’s

vision for a just communist society, ultimately seems just as vague and easily infused with obstruction of people's actual needs as much as stock market derivatives and products.

Money itself, especially in its current form, is a complicated lie within itself, a construct that can only exist and control our lives as long and as much that people believe in it. Sever the causality between the need for an item and the paying money for it, and you destroy much of the logic that holds society together on its way to extinction.

When encountering a problem, people with wealth, whether feudal kings or bourgeois western middle-income homeowners, tend to think they can buy it away. Now that scientific data about the impending environmental apocalypse has become known to the general public, people in consumerist societies want and perhaps even need to feel they are acting in a socially or ecologically responsible way, leading them to purchase things like electric cars, solar panels or a renovated "green" home. After all, few people want to feel like they are contributing to bringing about the ecological end of times.

However, what typically happens with most of these solutions is that they require a major investment in mining and manufacturing. This might be good for the GDP, but ultimately, they offload the environmental cost of these innovations to third-world countries, where wages are low and regulations are lax. Marxist theory will make you ask how come it's cheaper to get a part made on the other side of the world rather than from a factory that's closer to the person using that part? Consumers in wealthy countries tend not to ask these questions when offered *green* products, as that would burst their bubble of convenience.

The answer to climate change cannot be created by *techno-optimists* (a term coined by Nicole Foss), definitely not at this point in the history of our Earth's pollution. Sure, new and improved technological solutions seem to be popping up all the time. Unfortunately, these solutions will simply delay the inevitable or switch one calamity with another. Even if these ideas *will* work for the wealthiest of countries, the mining and manufacturing involved in most technology-based solutions will have grave costs to the rest of the world, due to mining, deforestation and water sources contamination. Going through the solutions offered to combat climate change, one can't help but wonder if they try to roll back

trespassing one planetary boundary by adding to the trespassing of another. One way all these green industry entrepreneurs seem to be making money is by profiteering from climate change worries. Techno-optimist solutions seem to be multiplying as our time to affect real change runs out instead of focusing on the change society needs to overcome current challenges.

The answer to challenges brought by climate change can only come from living a different existence both ethically and spiritually. This new way of living needn't be motivated by a belief in a deity or the stars but from decisions people can personally make. Adopting solutions that are actually sustainable for the planet might demolish some people's way of living but it's the only way to pave the path for a regenerative solution for humanity seeking to peacefully coexist with nature.

12. Hierarchy of Need Fulfillment and Deep Adaptation

As the results of climate change will soon be changing the way people live, it might not be necessary to even consider how accepting this hierarchy of need fulfillment might demolish the GDP. It's probable that money will be gone once governments of the world are unable to handle climate catastrophes.

Instead, people will have to accept a new order created out of chaos, one that is currently unknown. What will probably happen is the mass manufacturing, stock markets and buying/selling things with pieces of paper and coins will be gone.

This calls for a new way of living, perhaps merely surviving in a world where droughts, floods, storms, earthquakes and the like are more common. The hierarchy of need will then follow a process of deep adaptation to this new reality in the next stage of humanity's existence.

Use What You Have - will still be the most important thing, as people have made a lot of stuff that can be used to ensure people's survival. Repurposing existing items will be an everyday occurrence as many things will lose their original purpose.

Share - will be something hopefully adapted by a majority of people. As some things vital to maintaining humanity's existence become scarce, people must learn to let go of private property as much as possible.

Borrow - Individuals or communities might borrow important things from other entities when needed.

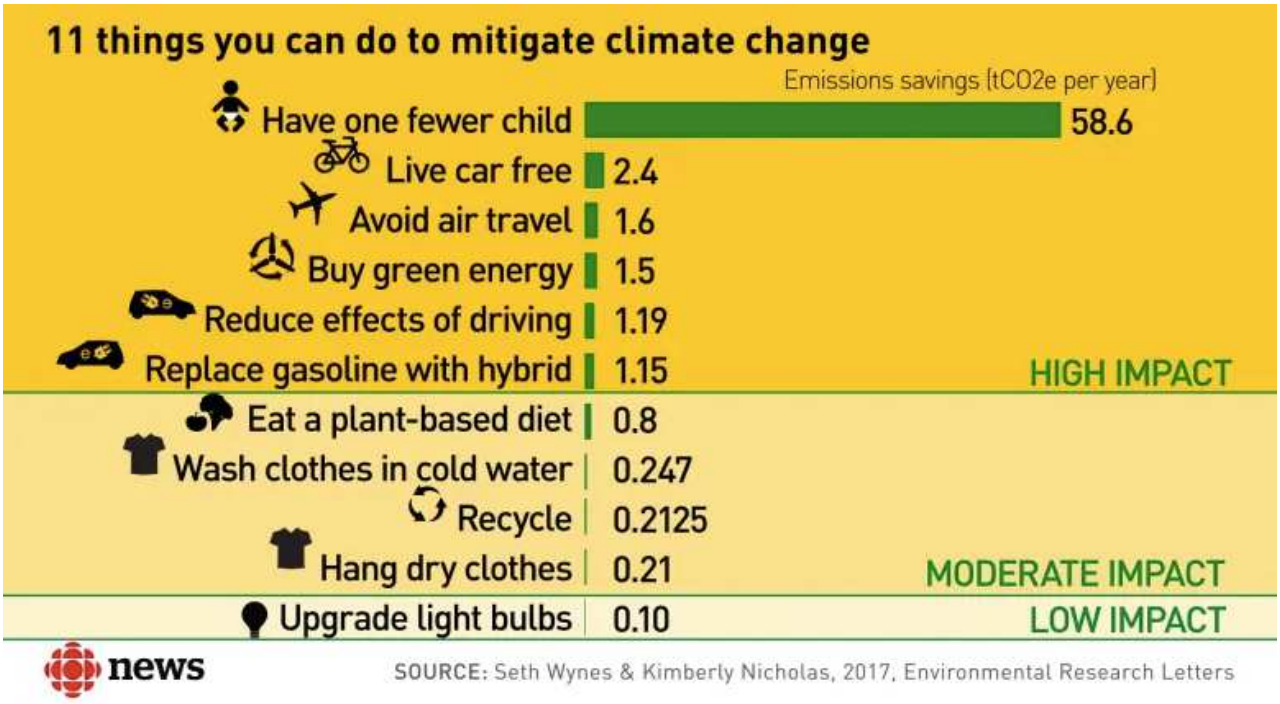
Barter - As the money system crumbles, groups of people or individuals will probably need to exchange goods instead, replacing swapping and buying in the Haslow's Buyerarchy.

Make - As mentioned before, people will have to relearn how to locally make things on a small scale. For a while, humanity's excess means you wouldn't have to make a lot of things, but it's possible that wars of all scales will demolish much of what people have,

necessitating the need to start making things sooner than expected. Of course, growing food might fall into the category of Making. Looking at it that way, the Make category becomes as important as using what you have.

Challenges of Human Overpopulation

1. Human Population's Ecological Impact



In some social media circles a graph comparing different things you can do to limit your ecological footprint has been circulating, based on a scientific study done by a former school teacher disillusioned by how schools taught moderate to low impact climate change mitigation actions like recycling.

So is having less children the best possible thing that you could do?

There is an obvious flaw in this study. Its data (based on this study) is a bit dated, but it's worth noting, the action of not having a child is actually measured by all the activities that are common in the society rather than what is possible if more people move away from their consumerist lifestyle.

In other words, any child born in a country such as the US will have a huge impact when not living a low resource lifestyle. That child will get a lot of wrapped presents, wear a lot of new clothes, eat a lot of processed foods made all over the world, read a lot of new books, grow up and buy a car and a lot of new electronics, fly around the world and make its own babies. So in a way the decision to have fewer children or not have children at all should be considered a different category rather than be included with the other actions on this graph.

A child born to parents with a low resource lifestyle described in previous sections of this book and/or grows up in a self-sustaining ecovillage such as the one described in chapter 9, should not have a higher ecological impact than any pet, hopefully even less. Yet for some reason people will sooner advocate for limiting human population than for eliminating pet culture, a more contentious issue.

Of course, nothing guarantees that kids growing up in a low resource lifestyle family will remain so when they grow up. The only solution is to make that lifestyle a prominent one in society. One can assume that people taking up that lifestyle will also limit the amount of kids that they will have, just because these kinds of people will not want to risk overburdening the planet.

2. The Controversy of Anti-Natalism

There are many issues in this book where the solutions presented are quite clear and should be adopted in one way or another. This is not one of them. In general, the recommendations in this book are to follow the examples of mother nature as much as possible rather than force the artifice of human endeavor on it, and what is more natural than having babies? While few would argue that there are just too many people on the planet, it seems difficult to deny people their natural procreation desire. It's jarring to see people on social media and in personal conversation, perhaps half in jest, suggest that humanity should start to actively reduce the planet's population by terminating lives.

In some cities, street fairs now come with anti-natalist booths, explaining the position of why people shouldn't have kids, and to be on the safe side undergo operations to make sure they don't make them by mistake.

The New-Yorker, in 2017, published an anti-natalist article showcasing the philosophy of David Benatar arguing that no one should have kids ever again. Banatar, the head of the philosophy department at the University of Cape Town, not a fringe character.

In the UK, a group of women, horrified by reading about the effects of climate change and loss of biodiversity on the planet, decided to form BirthStrike, an organization advocating for not having children. The women forming this organization were encouraged that other women on social media were feeling the same way. They were not alone. When reports came out that the US fertility rate was not high enough to

replace current population, there were plenty of people on social media that considered that good news.

Even a popular US politician, Alexandria Ocasio-Cortez (mentioned previously in this book as a proponent of the Green New Deal), typically pushing for mainstream solutions like a transition to renewable energy and building insulation, spoke out in an interview about limiting population growth.

The debate did not pass over the most mainstream of popular culture, Hollywood movie making. The movie Avengers: Infinity War (2018) movie, for example, has a fictional alien by the name of Thanos hatching and executing a plan to kill half of the universe's population due to overuse of resources. Upon release of the movie, videos supporting Thanos surfaced debating whether he was right or wrong. It was kind of an odd discussion as rarely has a discussion of the merits of a mass murderer's actions come up, not even a made-up one.

So what happened to make people consider this, to even start a discussion of this contentious issue? As people get accustomed to their first-world privileges and comfortable but wasteful way of living they could no longer imagine a world without conveniences such as cars and toilet paper, even though that is still the way most of the human population lives. Even those few transitioning to simple living would look around and feel like a strange fringe minority. Some would not even transition to that lifestyle, thinking that others would not follow, marking individual actions almost meaningless.

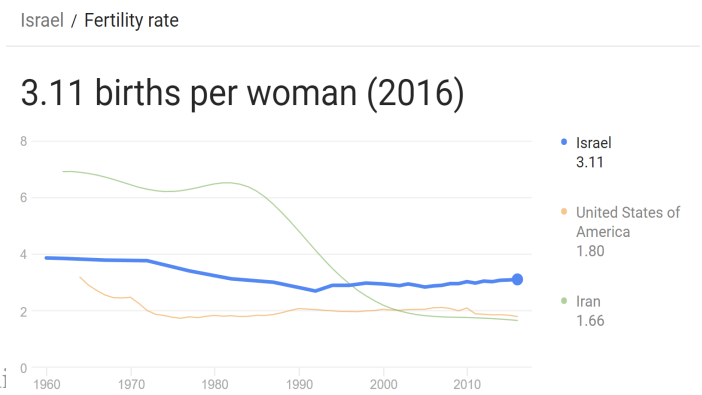
Even when considering broad, sweeping solutions, one must wonder if any of them is truly sustainable not to say regenerative. In other words, the kind of life that isn't mere survival but an enjoyable life worth living.

All of these global human goals are hampered by one simple fact. There are simply too many people on the planet. It all probably started when society began relying on

agriculture for its survival, and then raising animals in captivity for their meat. These old technologies, much like our new modern technologies, wreaked havoc on the soil, slowly converting lush forests to barren deserts in a few hundreds years. They created an easier life for the humans, allowing them to multiply more and more. Luckily humanity had war, weather fluctuations and diseases to keep the population somewhat in check. As science became better at allowing people to sustain people's lives, the world population not only grew too much but each person started occupying more space.

Of course, there are always opposing trends, especially in very large cities. Young people, hard pressed to pay rent, don't consider having kids as much, get around by bike and public transportation, shop at thrift stores and live with roommates. Unfortunately, that's not enough to make a dent at global trends. The good news are that every year there is less growth in terms of population. That said, with the number of people around even today, some of the planet's resources humanity relies on will be gone soon. As more people around the world transition to a lifestyle similar to the one in the US, the problems get harder.

The question then may be asked: why do so many governments and media outlets decry the tragedy of lower populations if humanity remains threatened on such a vast scale? In a word, the answer is POWER. Just as so many religious leaders (especially the Catholic Church) have spoken of the commandment 'to be fruitful and multiply,' so to do the new powerhouses do the same in modern times. From Japan to Germany some populations are upset by immigration while at the same time decrying the low birth-rate by native-born people. When looked at through the right lens, it's clear that, from the perspective of [people in power] that more people equals more power (often ignoring that immigrants tend to work harder and are less likely to rebel against a government).



Another country always trying to

boost its population for similar reasons is Israel. Even though it is one of the more densely populated country in the world, it has kept its fertility rate steady through the decades. In a way it seems like a competition between the Jews and Arabs occupying that piece of land for dominance. It also doesn't help that the ultra-orthodox Jewish minority wielding oversized political power, while employing many simple living principles such as community support and re-using clothes, offsets that by having very large families.

The origins of such wars fought by the power of giving birth likely go very far back, all the way in fact to the period when people stopped being nomadic. As society began relying on agriculture for its survival, and raising animals in captivity for their meat the work to grow enough food required more hands. The development of farms initially created an easier life for the humans, allowing them to multiply more quickly. Yet at the same time this transformation, much like our new modern technologies, wreaked havoc on the soil, slowly converting lush forests to barren deserts in a few hundreds years.

For many centuries, humanity had war, natural disasters, and diseases managed to keep the population somewhat in check. As science became better at allowing people to live longer, the world population not only grew far beyond a healthy number but each person gradually occupying more land area.

Each new U.S. resident not created preserves 20 acres of potential wildlife habitat for up to 80 years.

Voluntary Human Extinction Project

Of course, there are always opposing trends, especially in very large cities. Young people, hard pressed to pay rent, don't consider having kids as much, get around by bike and public transportation, shop at thrift stores and live with roommates. This not only reduces the pressure from overpopulation but also reduces each individual's carbon footprint. The good news are that every year the trend IS moving toward less growth in terms of population. Unfortunately though, it isn't enough to make a dent in the frightening global trends. By now it should be clear that humanity will need major

changes for that to happen. With the number of people around even today, humanity won't be able to sustain the planet's resources for more than 15 years. As more people around the world strive for a lifestyle similar to the one in the US, the challenge of reducing our impact only becomes harder.

3. Solutions

We must tell girls that their voices are important

Malala Yousafzai

Some people simply do not want to have kids, so for them it's easier to make the decision not to have kids, perhaps even tie the ovaries or undergo a vasectomy. For others, procreation is not just an ecological choice, it is for some people an impulse, a calling.

What can people who really like kids and want to have them do? A simple solution would be to go into childcare, a skill that will always be needed, in any type of society. For a short period in the existence of the Israeli social Kibbutz way of living of the 1950s and 1960s, kids were raised by the collective, regardless of who their biological parents were. Taking care of the children was just a chore like working the field or preparing food. Naturally those who were better at caring and/or teaching children, gravitated towards these chores.

Another solution for people who really want kids but worry about overpopulation is to adopt or become a foster parent. Adoption in some countries is a very complicated and expensive process. Some countries on the other hand will pay you to foster parent and allow for eventual adoption of the child at no cost if birth parents relinquish.

Climate chaos might usher an era of massive displacement. As the Earth blows past warming 2 degrees celsius, the human population will eventually decrease by itself, negating the need to limit people from having babies. On the other hand, there will probably be many orphans that would need new homes in a post-apocalyptic existence.

For many people, education is considered the best option for reducing population in poor countries. More educated people, especially women, recognize that there are other things to strive for in life besides simply being a mother and homemaker.

The downside of this is that such education as promoted and funded by the UN and organizations like the Clinton Foundation will often have western/consumerist values embedded in them. This will lead to 'first-world desires' like driving a car and having convenience food. In other words, education and introduction of the "western" lifestyle might convince people to have fewer children, but each one of these children will likely consume more when transitioning from a tribal to a consumerist lifestyle.

Anti-natalists such as the Voluntary Human Extinction Movement look at human existence as an unsolvable puzzle. Since you can't convince people to lower their ecological footprint, to live simply, then the only possible solution is to stop procreating. While some might view this as a valid point, a logical conclusion, this ideology might have some disturbing consequences, like people advocating for accelerating climate change, to make sure that human beings all die, knowing that the Earth will recover in a few million years. It also kind of gives up on the premise that when necessary, humanity should be able to make the tough decisions necessary to survive. Last, but not least, it might create the illusion that as long as you don't have kids, none of your other choices matter as your ecological footprint will be significantly lower than the rest of humanity.

Since nobody really knows when society as we know it will break down and in what way it will survive, the human population might still be an issue even as humanity changes. Without access to mass media and popular entertainment, with little light in night time and no access to modern birth control methods, people might still be reproducing at an unsustainable rate while others are killed in various climate chaos calamities.

Voluntary limits on having no more kids than a local community can sustain will help humanity sustain in future communities.

7 Pet Culture

1. The Pros and Cons of Living with Animals

Even though people view themselves as the smartest species on the planet, basically a whole different existence than that of “lower” animals, there seem to be a lot that people can learn from animals.

A lot of vegetarians, for example, say that they stopped eating animal meat because of their love for their pets. Animal rights activists often equate pet abuse and farm animal abuse for the exact same reason.

You can definitely tell the love that vegans have towards animals, many times fostering animals of all kinds, rescued from death.

However, there are also a few downsides to this relationship between human beings and animals. For a long period of time these kept animals were bred for various purposes. It created breeds that are totally reliant on human beings and would have a hard time surviving in nature. As the human population concentrates around cities, the animals bred for human companionship are deprived of their freedom, sometimes kept indoors for most of their lives and having to be on a leash when going outdoors.

Even people who learn about the benefits of a healthy, fresh whole-food plant based diet, continue feeding their animal dependents with heavily processed food that comes in large bags or canned food that has been deprived of much of its nutritional value. Almost all pet food is of course grown commercially, with even less stringent standards than food for human consumption. As human beings consume more organic non-GMO food, pets will not be enjoying that as much.

This is, of course, detrimental to the health of pets and many times when they get sick, people will just “put them down” due to the high costs of animal healthcare.

Any discussion of the environmental impact of human beings should involve their kept animals. There are hardly any families with children that DO NOT have pets, some of them keeping a few, indoor or in cages. These animals are no longer part of the natural order of the planet.

According to studies, Pet eating habits are responsible for dumping as many as 64 million tons of greenhouse gases into the atmosphere every year — roughly the equivalent of driving over 13 million cars. In the US alone, pets consume about 19 percent as many calories as people do in the US, or about as much as 62 million Americans. Much of that is of course the flesh of other animals grown for their meat with a stark environmental footprint. It might be the parts of animals that people would not want to eat, but they still need to be processed, packaged and taken around in trucks. As people transition to local, plant based whole foods nutrition for their health and for their environment, would they do that as well?

There are definitely a lot of dogs around as most families in first word countries tend to acquire them. As plastic bags were part of people's daily lives, they were also a unique consumption item that was repurposed even by the most mainstream of people. Now that the harmful environmental impact of shopping plastic bags and these are slowly being phased out of use. Studies show that the elimination of single use shopping plastic bags drives up the purchase of plastic bags for people lining up their trash bins as well as people using them to collect their dogs' excrement. Picking up dog poop 3 times a day with plastic bags, the most popular practice, puts over 1000 bags a year into the landfill.

While there are definitely many products trying to tackle this issue, the best way if a person shares their lives with a dog (especially in densely populated areas) is to collect the poo into any container or receptacle that can be washed and then placed it into a poop composter (described in Chapter 8).

As humanity's grasp on the planet tightens it brings us to the cusp of only having human beings, pets and farm animals living on the plant with all other vertebrate beings on their way to extinction. With the proliferation of people on the planet, we also have domestic cats just about everywhere, having a serious impact on the population of birds and other animals.

Dogs and Cats are not the only pets of course, there are also "exotic" pets, some headed towards extinction.

While some people might view themselves as "slaves" to their pets, having to clean up after them, take them out for walks, feed them and take care of their healthcare needs, they are definitely not. People choose when and how to adopt their pets and generally control their lives. If they choose to get rid of them, they can, in the same way that they can get rid of their material possessions, one might even say, their "other" material possessions in a way that would be impossible with people's children, even adopted ones. All this means that in affluent societies pets are big business and hardly a negligible contributor to climate change, complete with myriad pet accessories made of plastic and rubber.

It’s really hard to draw a line between people who just want save the lives of animals and care for them as much as possible and between a form of interspecies slavery and abuse. Kept animals are an alternative to human touch and companionship but for the most part they don’t really have a choice. They will never reach their full wild potential as people push them through breeding and manipulation to become a sort of living warm and fuzzy dolls or vicious guards of human property.

There is also a philosophical aspect to it. Humankind is looking at everything thinking, “how would this benefit me?” A tree, water in the ocean, a dog, even other people are “assets”. In the culture of the takers, nothing exists but to benefit the people, as is reflected in some religious writings. In that sense, having pets is another way that people use animals. Ecologically, the ramifications of this have been disastrous. As people spread out from their countries of origin, especially white people, they bring with them animals (and plants) that aren’t indigineous. Along with the cows, pigs, chicken and other “food” animals, the dominant animals on the planet after people, are their pets, often at a high cost to indigineous animals. For humanity to survive, it needs to understand that animals' lives have value outside their value to people. Animals don’t need to be cute, pretty, loveable, warm or tasty. They shouldn’t be judged by their ability to carry people and their belongings or by their ability to provide food for human beings or their pets.

2. The Road to Animals Liberation, Pet edition

As human and non-human animal life has been intertwined for 3000 years, it might be kind of a messy divorce. There are many species of dogs that cannot survive on their own, and cannot even procreate without human help.

That said, the majority of cats and dogs as well as other pets are able to survive on their own. They have the wits to adapt to changing situations and they definitely retain more of their animal instincts crucial to survival than human beings do.

It is high time the countries got rid of zoos, the way Costa Rica is trying to do. While it is definitely great of people to appreciate nature and other animals, keeping animals in captivity to showcase for profit is a sad example of how unevolved human civilization is, contrary to popular belief. Society should not be measured by its technological achievements like cellphones, The Internet and nuclear weapons. It should be measured by its ability to foster compassion, to know right from wrong.

Some animals, living in captivity will have to spend their lives there because there is no path for them to live once more in the wild. Some can be re-introduced to nature with the help of people. Once people make the crucial understanding that they are not the masters of the planet and its inhabitants, that it is not there to serve them, change can be made. As people stop their constant expansion into nature, there will be more room for kept animals to be released.

The sooner people realize that animals are not there to entertain them, to be a substitute for human companionship, to perform in zoos, racetracks as well as videos on social media, the more we'll be ready for the next step in humanity's spiritual evolution.
As pets typically depend on people, their population goes beyond what it would probably be without human interference, transitioning to solutions offered here would not be easy

nor straightforward. The hope is that people learn to love animals without having to control their lives.

Of course that does not mean that humanity should just wash itself from the responsibility for the animals that live amongst us. The cycle of pet ownership should be broken causing the least possible harm to the animals. When humanity releases its grip on nature, when motorised vehicles are no longer the dominant creatures on Earth, there will be room to release animals from their cages and other artificial indoor existence. They will no longer depend on their human owners and will be truly free in nature. Once food becomes scarce after human societal collapse, it's definitely encouraged to share food with animals of all kinds in order to foster bio-diversity and kindness on the planet.

A main facet of saving humanity, and a practical one at that is to truly be a part of nature once more. In nature, while there are instances of cooperation between species, even forms of interdependency, sentient beings do not belong to other sentient beings, their lives not controlled and limited by others. Relearning this lesson will help humanity achieve the resilience it once had and that helped people survive for so long before using animals to fulfil their various needs.

Resilient Technology

1. Permaculture

Permaculture is one of these things you might have heard about if you travel in certain circles or live in places where it's practiced but might not really be sure what it is if asked point-blank. The most general definition is that permaculture is permanent (or sustainable) agriculture. But this would give most people the impression that it only applies to rural farmland. In actuality though, permaculture can apply to any scale of interaction with the land. For the sake of this book, permaculture can be thought of as a philosophy of being efficient with the place where people live in the same way that plant-based foods are efficient with farmland and public transit is efficient with fuel. More specifically, there is a strong focus on reducing, as much as possible, the energy and materials brought onto or off of a piece of land. Composting food waste instead of having a rubbish service haul the waste to some other location adheres to Permaculture design rules.

Permaculture can also be thought of as a way to learn from nature instead of trying to impose on it the artificial rules imposed by humanity. The book Ishmael described the

ways humanity tries to control nature, instead of trying to understand and be a part of it as the the culture of the Takers. Instead permaculturists look at the wisdom of nature to implement something closer to the culture of the Leavers while maintaining what defines us as people, our ability to design systems, to build, to innovate, to improvise and learn from our mistakes. Permaculture is a new paradigm, a way of looking at things based on old and new wisdom, not just technical design principles.

The first time people planted mono-crops was already a deviation from nature as nature prefers diverse ecosystems. When people decided to use animals to plow their fields, and put chickens in cages in order to eat their eggs, they were not mimicking nature, they were trying to improve on it with technology, with a different order imposed by humanity. Eventually complicated tools, complicated machines and computers came along as well. Permaculture, in way, tries to change this way of thinking and restore a way of worshiping nature, not by making a deity out of it but by letting it inspire the way people live and create their own infrastructure.

That requires rethinking Permaculture as a way to relinquish humanity's hold over nature instead of trying to control it. To do that people can start thinking locally, using whatever is available and stop using animals for their ends as is a common practice in eco-communities. People are not the masters of creation, not even when using *natural* building techniques if those require bringing material from far away with trucks. Humanity should start to restore itself to the natural order of things, working without complicated machinery, without exploiting animals, without money, not even local currency. We can relinquish what we now think of as humanity and start using permaculture as a tool for manifesting a low-resource harmonious way of living on planet Earth.

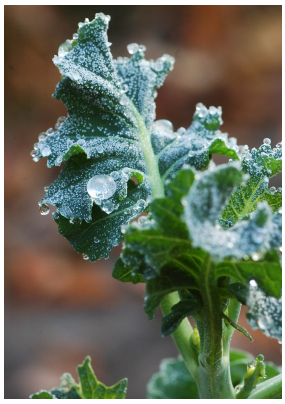
As Permaculture learns from nature, it is a good starting point for implementing resilient technological methods that can sustain humanity through the upcoming climate-chaos. When people think of technology, they think of advanced computerised networked infrastructure and heavy fuel based machines. Permaculture, on the other hand, can present technologies based on the power of the muscle, water, wind or sun,

without relying on something that needs to be manufactured in a large complicated plant. As society reaches peak oil and breaks down due to the effects of climate change, using naturally available local resources and techniques that have been abandoned in favor of electrical and motor based designs would become more resilient in the future. Even modern technologies such solar panels might not be resilient as when they break, get stolen or age, it will be next to impossible to repair or manufacture new ones when mass mining, manufacturing and transportation will be gone.

The point of permaculture is not just using pre-industrial techniques to grow food or build a structure. There has been plenty of harm done to the planet and its inhabitants before humanity started building its oil-based infrastructure. True, the damage caused by humanity's endless expansion was slower in its pre-industrial era but still managed to desertify large areas of land and cause animals to go extinct. Permaculture, when done right, can combine old-timey technology with current scientific knowledge. It is an acknowledgment that even though it seems like humanity has accomplished a lot during its existence, a lot of its technology is neither sustainable nor resilient. Humanity, historically, has put emphasis on the comfort of a minority of people, at the expense of enslaved animals and other peoples. Eventually, it managed to enslave the entire planet to serve its needs, leading the planet to its current peril. It's time to change the view of history as a technological progression from the primitive to the modern. This chapter will show how many techniques developed throughout the existence of humanity can be adapted using permaculture design principles to help sustain humanity as it adapts to the new era knocking at our doors. It is actually a great advantage that humanity can use at this point in time, to leverage its unsustainable ruinous technology to look across time and geography to pick-and-choose the right resilient technologies for our future.

A house made of straw, clay and soil using Permaculture design principles.

2. Growing Your Own Food



There are many ecologically aware people who discuss the term ‘food miles’ which loosely means the environmental impact of transporting food by ship, truck or rail across long distances to reach the store. The alternative to this is to grow food locally. Imagine a neighborhood where lawns and the lawnmowers used to crop them are all removed and replaced with lettuce, squash, tomatoes, and raspberries.

It is incredible that the US is devoting 40 million acres, nearly half as much land set aside for our its biggest crops, to lawns, an inedible carpet.

By growing our food, you can be certain that there are no pesticides, the food miles become zero, and our freshly plucked fruits and vegetables taste a hundred times better.

Food can be grown using various methods in the most urban of environments, inside apartments or on rooftops. The city of Tel-Aviv for example has an urban ecological community center, CityTree, based out of an apartment showcasing various ways of growing your own food and making yummy raw vegans meals out of it.

A few cities now have patches of land where local residents can grow their own food in community gardens and even community food forests.

A whole international movement of people wanting to grow edible neighborhoods, build

community food security supports these endeavors as well as supporting people ditching their lawns in favor of growing their own food. Don't have a lawn or a yard? As mentioned there are a lot of fun ways of cultivating food yielding plants to any house or apartment.

Photo courtesy of Bustanika - a business helping people grow food in their own home.

Ecovillages of all kinds focus first and foremost on growing their foods. The Kailash Ecovillage for example, depaved parts of its parking lot to make room for growing food on its lot, tenants balancing their day jobs with composting and gardening chores.
Most Ecovillage are far from being self-sufficient but grow enough to enjoy fresh seasonal produce.

The modern English language doesn't really have specific terms for self growing of food. Modern societies have a lot of words for technology but since people don't grow their own food as much as they probably should we just have the word "gardening" which sounds like we're growing a few flowers in our backyard and "farming" which implies that we have a huge piece of land, chicken and some cows.

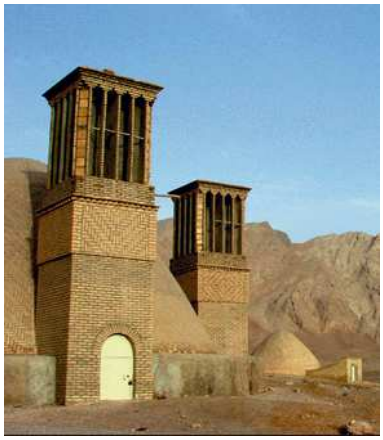
The bible uses the term "soil workers", but it's kinda fallen out of style. In formal use, the term "subsistence farming" but it's hardly something people would use in day-to-day speech, probably more suitable for academic writing.

Perhaps humanity can revive that term or find something better to help transition society to self-grow its own food. Society where people and communities grow their own food is expected to come up with a variety of terms in the way that people living in the northern parts of the planet have more terms for rain and snow.

In Chapter 9 we'll discuss how growing food locally we'll be the key to transitioning to a sustainable human existence on this planet.

3. Using Traditional Building Techniques

Many people in wealthier countries have come to rely on machine power to provide comforts that human beings used to enjoy for free. Not only services like warm or cold air, but also filtered water, bright sunlight in the winter, shade in the summer, and even more obscure experiences like a feeling of coziness.



Vernacular buildings are built using traditional techniques showcasing a huge wealth of knowledge. One fantastic example is the Wind catchers of Persia. Unfortunately humanity is now facing the risk of that knowledge being lost as society relies more and more on mechanical energy. In many regions of what is now Iran, there were strong winds that blew off the mountains and across the hot desert communities before reaching the ocean. When the people of the region would create houses or gathering spaces, they would include a tall chimney which was open at the top to face the prevailing winds and opened also to the indoors at the bottom. The temperature difference both from the enclosed space and the change in height would naturally draw cooler air into the room. So with no electricity and no machines, these people had air conditioning all year.

This is in contrast to the current so-called “renewable energy” high tech wind technology. It is probably better than fossil fuel technologies but unfortunately has embodied energy in its construction as well as leaving blades in landfills once turbines reach their end of life.

In North America and Europe, a common traditional building option is to use what’s called a *passive solar* design that’s ideal for cool climates.

This means locating the largest windows on the south wall and having few windows on the north (in the southern hemisphere this layout would be reversed). This allows the building to be heated by the sun (like a greenhouse) during the cold months. It works best in climates with dry winters and little cloud cover.

Every region has its own unique climate and a long native culture which has found the most energy efficient way to be comfortable in the specific weather there. The northern Kotukon and Inuit of the arctic would use igloos in the winter using local ice in a shelter designed to keep them protected from the elements. The Sioux of the great plains were nomadic and used teepees which were lightweight and designed to draw smoke from cooking fires out of the top. The northern European cultures would build stone or wood shelters dug into the ground to take advantage of the insulating properties that earth can provide. Cultures in humid climates like Indonesia would build houses on raised platforms to take advantage of air circulation under the floor which kept the shelters cool.

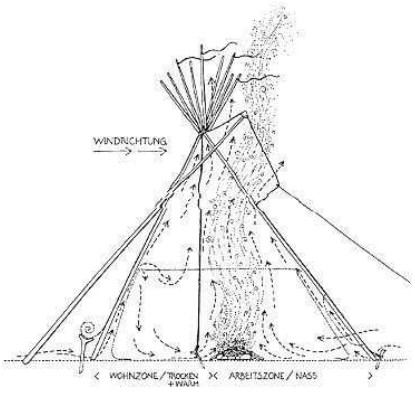


Fig. 490.—A Navajo hut.

By studying and learning traditional building styles in your own part of the world, you can find ways to use nature to keep a house comfortable even when the outside environment is not.

This of course, also brings up the issue of what is comfortable. In wealthy countries, most people assume that a building is only comfortable when the temperature is between 65°-80°F (18°-27°C). Having such a narrow comfort range means using more artificial heat, air conditioning, or fans to bring a living space into this range. Before people had machines to heat or cool our homes, people simply wore extra layers in the cold months and sat in the shade during the hot months. Adding a couple of sweaters, especially materials not derived from cotton, can keep a person comfortable in

temperatures as low as 45°F (7°C). Or another way to stay warm would be to use a hot water bottle. Being more conscious of the energy that goes into heating an entire building will encourage us to look for ways to stay safe and comfortable with more natural solutions.

4. Composting

Food waste causes a number of problems in wealthier countries. It makes the garbage can smell bad, it can make spilled trash into a smelly mess, and it adds volume to the amount of waste hauled off to landfills or incineration plants.

The solution to all of this is to have a compost or worm bin. By keeping all organic waste in a separate place covered in wood chips, the organic matter, instead of being a problem, becomes an opportunity. The worms and bacteria break down the leftovers and after three to six months all that's left is healthy organic fertilizer. The key to this system is to have one bin that's actively filled and one that has a few months to break down. Mixing wood chips or other high carbon matter in will balance the nutrients and keep the pile from smelling bad.

Even people who live in apartments or don't own the land can take advantage of this technique by having a bucket with worms under the sink. The worms break down the food waste and leave only healthy soil when they finish. With

enough room you can also compost pretty well in a suitable container and some cardboard boxes.

Some cities have compost pick-up services for organic scraps in bins. While this centralized composting has its benefits it also has the downside of polluting and noisy trucks going around town as well as the mechanical energy needed for that kind of large-scale composting.

5. Human Derived Fertilizer

A zero-waste lifestyle can also apply to other important aspects of living. Re-use, recycle and compost, as opposed to carelessly throwing stuff away, has been in vogue, in part by an education system in wealthy countries that teaches that to children. Cities all over the country have focused a lot of effort on promoting these ideas to the public.

Much less common is an understanding of the damage caused by sending our bodies' excrement and pee into wasteful and polluting sewer systems through the flush toilet. Our bodies' so-called waste is a part of what can make soil fertile so that plants can flourish. Unfortunately there's a worrying lack of critical conversation on what comes out of our bodies and where it goes after flushing a toilet. You would also probably never see teachers showcasing how humanure (discussed later on) works.

In most Western cultures, water-based sanitation using flush toilets is used to dispose of excreta. However, the infrastructure needed to perform this task is complex, expensive and inefficient. Significant amounts of potable water and electricity are needed to run the systems. In less-wealthy countries where industrialization is on the rise, people resort to open defecation, malodorous pit privies, or other unhygienic options. That said, if all the people on the planet were using flush toilets, humanity would run out of fresh water pretty quickly.

Systems using water-based sanitation currently in use in all industrialized countries have many important shortcomings. They waste the valuable nutrient flow, are energy, capital, and potable water intensive, require functional electric power or water supply, are subject to failure when overloaded, as during rain events when combined with storm sewers and also might suffer catastrophic failures during natural disasters. These sanitation system also have an ecological footprint, as they require land areas to infiltrate the treated water into the environment and often discharge pollutants, such as

pathogens, nitrogen, minerals, pharmaceuticals, and heavy metals, into the environment

For these reasons, most modern sanitation installations fail to meet minimum disposal standards, such as adequate percolation and pollutant removal, and discharge polluted water into the environment. They improperly treat excreta as a waste product to be disposed of, rather than a resource to exploit in a permaculture system.

The fundamental mistake made by this now nearly ubiquitous design is to add huge quantities of potable water to malodorous and potentially infectious materials and expect the Earth to tolerate this. Not only is the resource wasted, but it poisons the environment.

Composting toilet and urine diversion systems are a waterless form of ecological sanitation that addresses all those concerns. They work by turning ETPA (excreta, toilet paper, and high carbon additives) into humus, and urine into a treated fertilizer. They also can process normal household and garden compostables.

When well designed, these systems exploit the nitrogen and mineral nutrient flow, use no electrical power, drinking water or fossil fuels. They discharge no pollutants into the environment, and need comparatively little in maintenance. They destroy pathogens, and are more robust in natural disasters, such as earthquakes, than those having extensive sewer pipe networks. They are carbon rich humus and nutrient factories!

Small or medium sized communities can easily implement these solution by themselves which makes this solution ideal for ecovillages. This fits well with the solution presented in Chapter 9 for transitioning humanity's existence to mostly self-sustaining ecovillages.

The materials used for creating most products used in consumerist societies are far more difficult to recycle than for us to actually recycle our pee and poop directly into the soil. The work of processing rubbish and recycling is passed onto others that are often in far away places with poor working conditions. In the current system the only major form of recycling is downcycling, that is except for metals, which means glass and

plastics get a brief detour before joining the heaps of materials discarded out of sight and out of mind into landfills. Using a car, plane, train, or even a computer creates waste most people do not deal with or even see, just like a toilet.

Humanure, composting for our poop, does require a suitable size garden and the creation of a non-flush toilet system. Unlike feces, which can carry bacteria like salmonella and e-coli (which if present are effectively removed with the humanure composting), urine is pretty safe and easy to use as fertilizer. Unless someone has a bladder or kidney infection, urine is sterile when it leaves the body. The most amazing thing is that urine contains about 80% of our usable NPK nutrients, and minimal processing to use it.

In order to get started with collecting your pee, find a suitable receptacle, maybe a jar or bottle with a lid. All you need to do is pee into a jar or bottle and empty it in a suitable place.

You could use your urine as fertilizer in your own garden. Although this idea may be new to many, it's actually a pretty old one, farmers for millennia have employed the use of urine. Urine contains very significant levels of nitrogen, phosphorus, and potassium (typically an N-P-K ratio around 11 – 1 – 2.5, quite similar to commercial fertilizers!) These are essential plant nutrients that are would otherwise be mined from the earth or air for conventional agricultural use. Even organic fruits and vegetables, enjoyed by people on a plant-based diet are grown in field often fertilized with animal manure, blood and bone meal, fish emulsion and fish meal (from the fishing industry).

Studies conducted in Sweden show that an adult's urine contains enough nutrients to fertilize 50-100% of the crops needed to feed one adult. Rather than importing nutrients for gardening, and exporting nutrients via the toilet, urine can be kept in the local food cycle. It can be especially beneficial for fertilizing in urban and suburban environments where other local forms of fertility may be scarce due to lack of green spaces.

In Finland, researchers found that greenhouse tomatoes fertilized with a mixture of human urine and ash yielded nearly four times more tomatoes than non-fertilized plants. The tomatoes fertilized with urine alone, actually yielded a bit more but the plants did not grow as tall or strong and the tomatoes contained less magnesium than those fertilized with both ash and urine.They concluded that one person could provide enough pee to fertilize roughly 6300 tomato plants a year, yielding 2.4 tons of tomatoes. This clearly shows what a waste flushing pee into a sewage system is.

Pee can be used in composting as an activator/accelerator. gardeners who have practiced peeing in the compost know it is the thing to do by judging the results of their actions. The uric acid present in urine speeds up the compost process and gets you to the end product faster. Even the National Trust in England provides “pee bales” in strategic places in public gardens and parks that the horticulture staff can use. Pee, poured or directly deposited on a compost pile or in a compost bin starts to speed things up and adds moisture.

Pee could also be used to nourish local plants and trees as some people in cities do not have easy access to a nearby garden or compost bin. There are usually nearby green areas or trees where a person can deposit our pee, much like dogs urinate outdoors. Any slight odor dissipates almost immediately once urine is applied to the soil. Fresh human urine is almost odorless, often sterile and vary rarely contains pathogens. Collecting and distributing pee onto a growing landscape is a simple action to move away from being part of a system that is so wasteful and polluting.

When out and about, carrying your own safe pee in a bottle for a short time to a suitable location is recommended for those really trying to avoid a standard urinal wasting your pee into the sewage system. Carrying pee may not be fashionable or required by law (like carrying dog poop is) but certainly is a part of a change to a more healthful world.

The high nitrogen levels in urine are favorable for plant growth. This is unlike the environmental hazard posed when urine is flushed down the toilet into the public water systems. Once flushed into the sewage system, part of the nitrogen is removed during an energy-intensive denitrification process. Any remaining nitrogen often makes its way to natural waterways, where it can wreak havoc on the ecosystems through a process called eutrophication: the excess nitrogen causes increased algae and aquatic plant growth, and as these plants decompose the oxygen supply that is needed by aquatic animals is depleted, often causing death. So it's preferable to cycle the nutrients in our urine through terrestrial environments rather than aquatic environments, by fertilizing trees, bushes, wildflowers, lawns.

Urine accounts for only 1 percent of the wastewater going into treatment facilities , yet it contains most of the nutrients: 88 percent of the nitrogen, 71 percent of the potassium, and 61 percent of the phosphorous. Algae thrive on these; that's why such nutrients, especially the nitrogen, are purposely removed from the so called wastewater with Biological Nutrient Removal (BNR) procedures that use a large amount of energy as well as the usage of chemicals. Other nutrients are also removed in various processes using chemicals such as ferric chloride, alum and lime. The resulting phosphate rich sewage sludge is dumped in landfills or used as fertilizer/soil amendment but not for growing food for humans. The final disinfection of water can include ozone, chlorine, ultraviolet light, or sodium hypochlorite. Want to avoid causing all of this energy consuming polluting infrastructure? Then take care of your pee yourself!

Our poop and pee is the most obvious waste we create and the easiest for us to deal with ourselves without additional help. So why is it that people concerned about environmental issues pee in toilets? The biggest reason is that people do not understand how valuable pee is and also are ignorant of the detrimental effects of using a flush water toilet. Then there is getting over what might appear to others as our peculiar behaviour, but what is more peculiar and wasteful than peeing into loads of drinking water?!

A big step to being independant of using such a system, which can start today for virtually any person, is to use a receptacle to daily collect urine in, your peeceptical! When you pee you can have the added pleasure of knowing you are part of a process of food production and consumption that ends up nourishing the earth and not polluting it.

If you are not collecting your urine as shown later in this section, It is recommended to your dilute fresh urine 5:1 to 10:1 ratio depending on the strength of your pee and apply to the root-zone of fruiting plants like tomatoes, melons, squash, zucchinis, peppers,and eggplant, or to leafy crops like cabbage, broccoli, spinach and lettuce every two weeks or as needed, corn plants love pee too. It's important to dilute fresh urine at a weaker level for seedlings and new transplants.

Your excrement can be useful too! While many people experience 'fecal-phobia' from the idea of being near poo, the rich return from composting waste actually closes a loop which has resulted in huge expense throughout many cities rich and poor alike. The key to turning fecal "waste" into a resource -- and not a hazard -- is simple: composting is the solution to fecal pollution. To compost human waste there are two critical elements. One is to mix with high carbon matter like wood chips. This balances the high nitrogen content with enough carbon to foster heat creating organisms that break down compostables into sweet smelling humus. The other element is the time. Leaving the compost at least 4-6 months to break down provides plenty of time for the heat of the compost to kill any dangerous bacteria. This can be done by getting it to only 122°F (50°C) which is easily attained. Some people have even managed to heat their homes by piping the heat from compost bins through a heat exchanger.

Since nutrients are lost in water-based systems, our agricultural systems have become more dependent on fossil-fuel-based fertilizers to grow our crops. Because of their improved carbon performance, composting toilet systems can help to promote climate stability. Carbon sequestered in soil makes up the bulk of the Earth's non-oceanic carbon stores. So, the creation of humus and replenishment of the Earth's topsoil can be an important way to sequester carbon.

This section provides practical instructions on how to develop household or community systems to harness the important nutrients in excreta enabling gardens to flourish without fossil fuels, complex sewage systems, and perpetual flows of power and water needed to run them. The system described here has been in use for more than 4 years at the Kailash Ecovillage and is proven to work well in performing this task. Since developing this system, the community has become self sufficient in important nutrients such as nitrogen, potassium, and phosphorus that are essential for growing edible landscapes. In addition, the compost produced in the process enhances soil fertility and tilth of the community's gardens.

Kailash Ecovillage, a sustainably focused intentional community containing 34 residences and about 50 residents, located on a 0.7 hectares urban site in Portland, Oregon, USA, developed in March 2014 an experimental composting toilet and urine diversion system based on new building codes designed to reduce water use.

Although this system was developed for community use and designed to meet local building code regulations, it can easily be adapted for individuals and households, and simplified for situations where building permits are not needed. Construction materials can also be adapted to use whatever is available locally. For example, compost bins can be constructed using discarded pallets or other material harvested from the waste stream, or inexpensive materials like woven wire fencing. In smaller communities or households, it may not be necessary to sequester urine for the recommended 6 months storage, reducing the need for large tanks to contain the urine as it can be used directly on the garden landscape with minimal risk.

Residents choosing to participate in this project contact the Humanure Composting Team to start collecting their excreta or urine for recycling. If they only want to collect urine, they are instructed in how to collect and deposit their urine into the community storage tanks. If they also want to host a commode to collect both solid and liquid excreta, they will be issued one of the community's compost commodes and receive instruction on how to properly manage it, e.g., for strict odor control. They are responsible for transporting their containers of ETPA (excreta, toilet paper, and high

carbon additive) to the compost processor. The team is charged with periodically emptying batches of containers into the compost processor, recycling accumulating leachate, cleaning and sanitizing the containers for reuse, and record keeping. The team also prepares clean containers filled with bulking material. These readied containers, and a small number of empty containers, are kept in a designated location. In this system one expert resident oversees testing all the compost and urine before use required by the building codes.

Kailash's composting toilet and urine diversion system consists of the following components: ten portable commodes, multiple bucket containers, a wood chip depot, an outdoor compost processor, and an outdoor urine collection depot, called the Urination Station. These components are described in detail below.

The commode is a simple wooden cube-shaped cabinet designed to hold a container, such as a 19 litre (5 gallon) bucket, which is the ETPA collecting device. The commode cabinet and adjacent additive container require only a very small footprint on a floor and can be installed without electricity, water, or a plumbing connection. Several commodes, located in residences, can be accommodated by a single compost processor system.

A 5 cm (2 inch) layer of additive is placed in an empty collecting container prior to adding excreta. Each deposit is then carefully covered with additives and pressed flat. Once the container is full, and a lid is fastened, it is transported to the compost processor.

The additive, finely ground wood and leaves, recycled from

local tree service companies, covers ETPA deposits both in the collection container and in the compost bins. Sawdust, shredded paper or leaves, and other agricultural waste products like cereal hulls or chopped straw or garden compostables, can also be used.

The compost processor consists of several large roofed bins. The walls are constructed of durable concrete blocks and the bottom is constructed of a lipped concrete pad sloped toward a drain in the center to collect any liquid resulting from composting, called leachate. Ventilation openings are screened with wire mesh to prevent insects, birds, and rodents from entering the compost processor. Bins can be arranged in a gated courtyard. The roof prevents rain ingress and keeps out vermin. Leachate from each bin collects in a sump area and is recycled back into the compost processor, by simply pouring it over the top with each new batch of added ETPA. This helps maintain the proper moisture level for healthy composting, as well as preventing potential pathogens from entering local soil and groundwater.

If a building permit is not required, some skip lining the bottom of each bin to catch leachate. However, in areas with significant rainfall it is important to keep the compost covered to minimize leachate production.

Every two to four weeks, containers of ETPA are added to the compost bins in batches, along with accumulated leachate, and the water used to rinse the containers, and then covered with a 10 cm layer of additive. A similar layer of additive is used around the perimeter and on the bottom of the bins to insulate the ETPA while composting. ETPA is approximately 25% excreta by volume. Once a bin is full, its completion date is marked on the front of the bin. After one year has passed, the compost can be tested for pathogens and is ready to distribute to the gardens.

Urine is collected as part of ETPA in the usual fashion in commodes, by residents in bottles in their living spaces, or using a waterless, wall mounted, urinal in a small outdoor structure adjacent to the urine storage depot.

Compost pathogen testing for fecal coliforms has demonstrated a high-quality product, exceeding the US Environmental Protection Agency (USEPA) standards for Class A biosolids (<1000 fecal coliform cfu/g) for compost safety, permitting application on any crops. According to the Environmental Protection Agency, "In general, exceptional quality (Class A) biosolids used in small quantities by the general public have no buffer requirements, crop type, crop harvesting or site access restrictions." Urine testing also showed no fecal coliforms and a pH between 9.5 and 10.

The community's experience with this system has been very positive. The compost produced by the system has significantly enhanced soil fertility and tilth. The community is now self-sufficient in nitrogen and other important nutrients and enjoys enhanced emergency preparedness considering the Pacific Northwest's anticipated severe earthquakes. No domesticated animals were harmed in the gardening process.

There have been no problems with objectionable odors, and the system takes up only a small space inside residences and in the garden area. Data from this project demonstrated large water savings. Per person, assuming 6 urinations and one defecation per day, with liquid flush requiring 1 gallon (4 litres), and solid flush requiring 2 gallons (8 litres), one can conservatively expect water savings of about 56 gallons per person per week (224 litres).

Composting results in a large amount of carbon sequestered in the beneficial compost product. Kailash's system produced 19 cubic metres of humus in its first four years, eight months, for about 4.3 cubic metres per year.

In order to gain these benefits, one must be willing to alter one's lifestyle, requiring additional effort compared to using standard flush toilets. Approximately one hour per month of additional labor per person is required for a compost toilet and urine diversion system. Of course, additional infrastructure in the form of a compost processor is also required. However, such systems are usually available in any organic gardening system, and need very little additional adaptation to make them suitable for composting excreta. One person hour per week was also required for Kailash's team efforts.

6. Rain Catchment

Capturing rainwater is a technology as old as civilization itself. Long before the Romans built their famous aqueducts, communities all over the world were building storage places to keep rainwater for use during the dry periods.

We now have many devices that can either be purchased new or (preferably) repurposed for storing rainwater. The most common is the 50 gallon barrel. These are often discarded by businesses who use them to store food products, the barrels can easily be repurposed for capturing rainwater from a building's roof.

Making this water safe for drinking is quite difficult. But using it to water plants, wash pots, or clean yard tools works just fine. By constructing a stand and getting the barrels a short distance above the ground, you can have enough water pressure just from gravity alone.

7. Food Forests

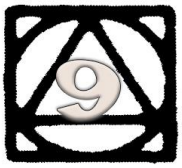
Growing a food forest can be as simple as planting a few fruit trees or as complex as raising an orchard. The level depends only on how much time and land is available. The best way to orient a food forest is on the north side of a property where the trees don't block smaller gardens and in some locations they can reduce the speed of cold winter winds.

Because traditional mono-crop based agriculture causes a lot of harm to the soil, eventually making it a barren desert, the hope is that inspiring food forest projects will help humanity to reach a point where growing food will cause the least disturbance to the other animals on the planet. Food forests offers a regenerative rather than just a sustainable model, one that needs very little attention once planted.

As mentioned in chapter 2, a plant-based diet should be the cornerstone of the way people survive in a resource scarce future. In the industrial era, both large scale and small scale growing of food is enabled by the use of trucks and mechanization. Even people growing a small amount of food in their backyard might get seeds that prepared far away, buy specialized compost as well as relying on the seemingly never ending supply of water. These systems allow for all growers to re-plant their crops every year.

Moving to a self-sustaining regenerative model would require farmers to rethink their methods for growing food. A well thought out food forest should contain perennial plants that do not need replanting every year. These plants work best when planted in their native habitat and the climate best suited for them. Otherwise they act more like shorter-lived annuals and biennials. This would provide the best yield with the least amount of work and resources.

It is quite possible that some climates humanity has expanded into are just not right for human existence, forcing mass migration of people to climates where climate is conducive to growing food.



Community Based Living

1. Community-based Living vs Consumerist Society

> *It's never seemed relevant to study people whose only accomplishment was to live on a planet for three million years without devouring it. But as you approach a point of no return in your plunge toward extinction, this study will soon seem very relevant indeed.*
>
> **Daniel Quinn, "My Ishmael"**

In consumerist, wealthy societies, people live a very comfortable way of life. All material needs would be at their fingertips or right around the corner as the real costs are offset to less fortunate regions of the world.

The solutions offered to climate change are mostly consumption based solutions working within this capitalistic framework. They offer new and improved products to those who can afford it, using buzzwords such as "*green" and "environmental".* The fact that these fine products require a lot of energy, mining and manufacturing to become a reality is rarely mentioned, if at all. These so-called solutions to climate change more often than not contributes to the problem that they are trying to solve or make other problems worse. Pretty soon a convincing manufacturing of consent mechanism will move humanity away from fossil fuel into mass production of electric cars, solar panels, etc. in a futile effort to maintain the unsustainable way of life people have gotten used to.

If you look at the way people live in wealthy societies you'll find that television and movies push people into a culture of mass consumption. Prime time TV shows will

typically offer some sort of alternative community to the more traditional family structure based on living arrangement (“Friends”), workplace (“The Big Bang”), school (“Community”) or even a hangout place (“Cheers”). They feature a LOT of ordering of pizzas and all sorts of fast foods and very little of people making their own food, probably because that doesn’t really sell commercials. There will be commercials shown but also product placements and other ways of pushing products ranging from lines like “hey let’s meet for coffee” to whole episodes dedicated to trips to the Las Vegas strip or Disneyland. Fiction media seem to exist mostly to sell products or lifestyles, with the grand prize being making some products so transparent and essential to people’s way of life that they don’t even see them as products anymore and will gladly promote them for free on their shirts and social media posts.

Even science fiction media, like the “Star Trek” franchise does not only sell merchandise but also “sells” the concept of techno-optimism to the masses. The narrative of both dark movies like “Blade Runner” and more optimistic futuristic views of the future is that people mastered technology to the point of being god-like. Even stark post-apocalyptic movies like the ones in the “Mad Max” franchise seem to revolve around driving vehicles that run on a somehow unlimited supply of fuel and are easily fixed when they invariably break down with all the stress put on them by endless desert runs.

Another “replacement” community, successful in most countries that employ any kind of modern technology is based around broadcast sport events, rallying crowds and distracting them from all kinds of oppression. This creates a false sense of community replacing the simple tribal sense of community people once had. The scheme works well in both poor and rich countries, but probably has a much larger ecological footprint in the wealthiest of countries.

Capitalism is essentially opposed to any community-based living unless it’s meant for senior citizens who don’t really buy as many products as younger people do such as electronic gadgets and clothes (senior citizens do consume healthcare and fly around more.) Capitalism thrives when a family lives in a house with two-three kids and

a few kept animals. More than three kids and you're effectively having a mini-community with clothes exchanges and perhaps one of the grownups having to stay at home. The capitalistic family buys a LOT of stuff and throws away a lot of trash. It is isolated from the world in many ways, relying on purchased services for most of its needs. This structure is aimed to maximize waste and contributions to the GDP. For capitalism, single use items are the best because you need to re-purchase them all the time. Corporations do not like products that maintain their value or that can last a long time for obvious reasons, going as far as to design products to have planned obsolescence.

When you live in the community, you might be able to minimize waste and not buy as much. You can more easily use the Hierarchy of Need Fulfillment as shown in Chapter 5 when living in a community.

How does the concept of living a low-resource existence scale when you are talking about large scale adoption? How would that affect the economy? Would it work in both cities and more remote communities? Would it be sustainable in all types of weather?

Unfortunately, even amongst radical thinkers considering these issues there has been a dearth of actual discussion of how such a solution would work, compared to the copious mountains of literature pointing to the shortcomings of capitalism. Similarly, there have been lots of studies, books, TED talks, documentaries, tweets, speeches and major peer-reviewed research regarding climate change but very few practical solutions that are not based on the wonders of modern technology. That might lead one to think that capitalism and current human-made climate change are two sides of the same problem, probably not a huge leap of imagination.

The reason for not even daring to offer solutions that rely on less consumption (like simple living) or less waste (like veganism) is this feeling that it might anger people who are used to their conveniences and addicted to their consumerist lifestyle.

As the clock ticks down on humanity's existence, more dramatic solutions will be necessary. Society's entire structure might need upending to ensure some people along with other life on earth survive. Inspired by anarchist thought as well as

permaculture, a solution can be offered. That solution will be difficult but not impossible to implement. It absolutely does not require any major energy consumption, manufacturing or mining. It relies on the use of existing materials and structures, while producing food locally. It can definitely be done exclusively with human-powered vehicles or very limited use of motors if such items will still be possible. It would require all of humanity to live in mostly self-sustaining eco-villages or similar small communities combining traditional wisdom while not completely abandoning our society's cultural achievements.

When choosing the solution of small, mainly agricultural/permacultural communities, one must wonder why choose this over the last sustainable model humanity had, that of the hunter-gatherers? After all, it is now quite the anthropological consensus that hunter-gatherers didn't work as much as later humans relying on agriculture, and even less than most current modern humans in affluent societies. Researchers assume now that hunter-gatherers enjoyed a variety of food and a simple but satisfying life.

Putting aside cultural differences and changes in humanity's social structures in the last thousands of years, there is one huge difference that should dissuade us from pursuing that path. It is the story of structures and of stuff. Unlike these previous humans, people now have to come to terms with what they have created. While society should avoid the creation of more stuff as much as possible, it must encourage the use of the stuff we've already made until it all degrades beyond repair, beyond upcycling or

repurposing. A balance could be struck between the legacy of our creations and allowing nature to once again regenerate.

The hunting part of hunter-gatherer society is also an issue not just from a moralistic point of view but also from a practical one, if you consider humanity's current impact on the planet. At least at the beginning of hunter-gatherers' existence on the planet, human beings were just another species. It took them hundreds of thousands of years to affect the planet. Now that human beings have all this destructive technology, they are still killing off the biodiversity of wildlife on the planet. That's why going back to hunting at this point would be criminal considering the world's population. It would not be sustainable and definitely not regenerative.

Not that there is enough food to forage in order to sustain the current population of the planet. Only small scale permaculture based agriculture that mimics nature's ability to regenerate could be sustainable, and even that, only assuming human population is kept in check while the planet's resources are being regenerated. This might take a few centuries but will eventually make for a resilient existence of people on the planet assuming we learn our lessons from the current climate chaos.

The human organization required to make such a large scale transition to permaculture will have to go through many iterations and some of it will inevitably be trial and error.

The first iteration: extreme and unpredictable climate change (the next five years). Things that can affect people's ability to cope are extreme heat, cold, lack of water and food and shelter and break down of trust in the assurance that you and others are cared for and safe. Leaving it up to authorities (who have gotten us into this mess) is probably high risk. In contrast, people making decisions for their immediate community and fostering resilience will probably feel more reassured and have stronger morale. Although if national and local governments actually do pull through, then together with local resilient communities we can achieve even more.

Let's consider the impact of the immediate climate changes, and the organizational response to it. The Earth will experience radically changeable weather in a 24-hour

cycle, torrents, fog, high heat peaks in the day, cold nights, high winds, and dry spells. Therefore, sturdy greenhouses, cellars, water tanks, water filtrations and radio signals will feature prominently everywhere on the planet. Once the 9-5 schedule erodes, work will be more communal and less specialized and we will need to instill a culture of sharing tasks and avoiding redundancy. time banks, egalitarian distribution of food and shelter and healthcare and a barter system can help regulate this activity.

If the climate changes become more predictable, there may be a need to create summering and wintering zones for energy efficiency. All this will require bodies of organized people who can help gather information and make decisions. The best model practices for this kind of organizing and decision making is living in small communities of groups of multi generational people of 50 to medium range of 150 to larger of up to 500. This will be much easier in suburban and urban and rural places where there is land to plant and not a lot of fear of buildings falling without seismic retrofit.

If this seems really familiar, it's because that's how people lived before humanity started expanding across the globe, for millions of years, in villages. The more humanity expands, the less resilient its practices have become. In that way, consumerist society, capitalism, mass production and all the rest that we now take for granted can be seen as a culmination of a process leading us to the brink of extinction. In that sense, capitalism and communism are not that different in the sense that they take us further away from living in small, mostly, self-sufficient communities and into the realm of isolated people whose needs are being answered by centralized entities.

2. Bolo'Bolo

In 1983, one book had a unique breakthrough vision; it can be argued that no book has come close since. Bolo'bolo was written by Hans Widmer (under the pen name p.m.), a Swiss author. The Degrowth movement already went through its early stages in the 1970's, and the world seemed to be divided by two forces -- the US and the USSR. Fighting each other globally at the expense of the planet's inhabitants, it was evident to Widmer that both Capitalism and Communism were failed systems, a part of what he called The Planetary Work Machine, causing harm to our planet.

When Bolo'bolo was written, climate change was not yet as evident , and definitely not as scary as a planet wide nuclear war. Climate change data was already there, but the governments assumed technology would be able to solve this issue and that humanity had over 100 years to do so. Thirty years later, it seems like Widmer's vision was prophetic. Science seems to not only not solve climate change (except for tackling the ozone layer issue) but made it much worse, causing cascading unstoppable planetary calamities.

The idea of remaking humanity as shown in *Bolo'bolo* is particularly complementary to Professor Jem Bendell's ideas of positive deep adaptation presented over thirty years after the book was written. *Bolo'bolo* provides a framework of thought that will be needed as climate change starts manifesting itself in increasingly harsher calamities. As droughts, floods and earthquakes lead to the inevitable collapse of society's current structures, humanity will need a way to reform itself into a more regenerative mode of existence.

So what was so unique about the vision of Widmer's book? Books about climate change reversal generally discuss the cost of things. Such a solution would cost this much money and other solutions would cost less or too much.

Widmer, on the other hand, understands that money is a construct, an agreed upon illusion, so he puts it aside, harking back to tribal existence. It's a brave assumption not

because it is new, after all people have lived like that for a long time and some still do. It is brave because for a white person from a wealthy European country to admit that society has made mistakes and that so called *primitive* society could actually be a source of guidance and inspiration is indeed revolutionary. Modern society focuses on *innovation,* not realizing that the-so-called progress while providing some conveniences also has a lot of unintended terrible consequences.

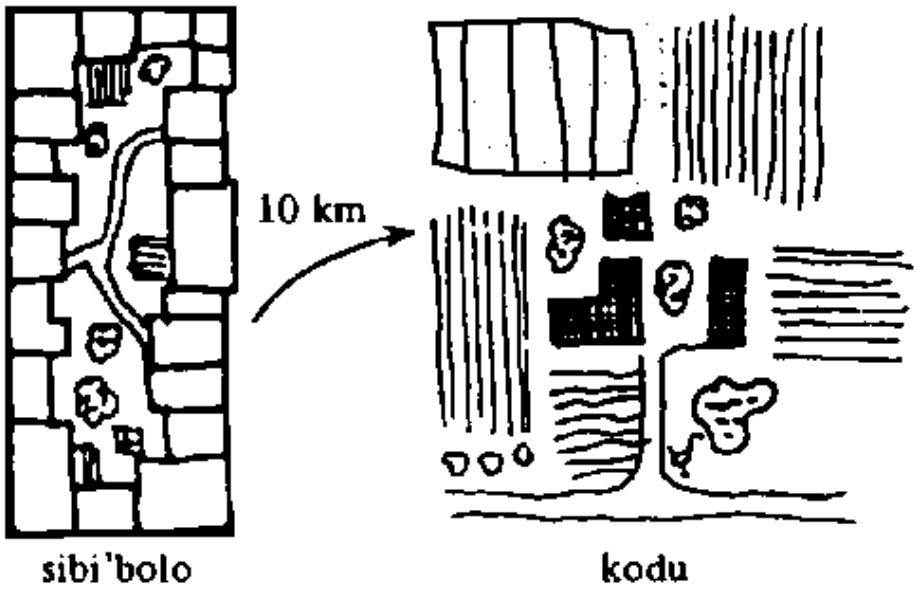
Widmer looks at communities around the world that live simply and base their existence on communal living. He uses that model to suggest a way to transform the entire unsustainable, exploitative Western civilization.

His approach aims at integrating spiritual and social justice lessons with tribal lessons humanity learned and then forgot. To be honest, tribal and even community-based living have their downsides. Tribes tend to limit the freedom of their members and provide preconceived roles for its members. They have prescribed notions decided by traditions or their elders about gender roles, sexual freedom and other social mores.

A bolo, basically, a living arrangement for 300-500 people, guarantees “daily 2000 calories, a living space, medical care, the basics of survival” and other needs. It’s a name for what was called a tribe, and now might be called an ecovillage. A bolo would try to be as self sustaining as possible, focusing its main efforts on growing and collecting food. It is different from most ecovillages in existence today as there is no outside consumerist society to sustain it or influence it. Widmer’s book assumes that all of society will participate in this new way of living. This means that unlike current ecovillages there will be no ordering or purchasing of food or equipment from the “outside world.” On the other hand, current ecovillages typically contain people moving in from consumerist society, with some only staying in the ecovillage for a few years before moving back to the cities from which they came.

The ibus (people) living in a bolo do not have savings or jobs. They have to really sustain themselves by having self-sufficiency in energy supply, agriculture and fabriculture. For a while, this new society will scavenge the old one it’s replacing, as it learns how to make the stuff it needs to survive re-learns older and more resilient

technologies. Due to the self sustaining nature of bolos, the community has no need for constant transportation of goods in huge trucks. The ibus do not need cars because they can walk, bike or skate to their mostly small agricultural/permacultural “work” in the kodu and back.



Of course they can also trade with other Bolos for the stuff they cannot produce, but the system itself is obviously much different.

The Bolos are no longer an exercise in permaculture sustained by capitalistic society willing to experiment, in the way that ecovillages are. They are also different from the Israeli socialist Kibbutzim experiment. While coming quite close, kibbutzim still relied on sales of products and funding from rich donors or the government. Bolos are a mostly self sustaining form of existence. In fact, there will be nothing BUT Bolos in the new societal structure described in the book. Of course, bolos can trade with each other if needed and form alliances, but their reliance on agriculture makes going by car or truck to far away locations unnecessary. In the bolo people can walk or bike from their living arrangements to the place where they grow their food (kodu).

The bolo is a very flexible unit that would match the status of a world transitioning from materialistic society to a permacultural one. Its subdivisions - the kana living habitations can be almost about anything. They can be made out of any converted

structures, and they can grow their food using any existing structure or piece of land to accommodate any living conditions. In a world that already has a lot of stuff in it that can sustain all of its human inhabitants, the vision of bolo'bolo would work well as each community will share all of the resources in that community. Individuals will have very few private belongings, fitting everything into a small box (taku).

The idea of taku, like other notions in Bolo'bolo might be too strict for a real life implementation. However, the main principles outlined in the book can suit a society well based on principles of sharing. In any implementation of a solid-state economy not based on growth that would seem to be the most feasible solution. Instead of making new products, sharing resources will allow for comfortable living without needing to further use up the planet's resources.

Examining most human structures in current city centers, looking at them with fresh bolo'bolo eyes, you find mostly waste. If there isn't any money, why have all these big buildings? The biggest ones seem to be devoted to insurance, possibly the fastest growing human endeavor. That said, the rest of the biggest buildings seem to be full of people doing nothing. Sure they hold a 9 to 5 job, but what do they really DO that benefits society? If they aren't helping to grow food and make meals, make or mend clothes, build or maintain buildings, teach skills to children or provide healthcare (not just push around papers in the healthcare "industry") or entertainment then they should be free to enjoy their life without pretending to be contributing something to society.

Bolo'bolo is a great starting point for a very radical but inevitable solution that would involve turning society around. With self-sustaining small communities in place, society can stop all large-scale manufacturing, no longer requiring airplanes, ships and trucks to crisscross our planet to transport goods. Mining operations around the world would cease, forests will no longer be cut down and massive fishing operations will cease. The technology used by humanity will be simple in nature, no longer relying on mass scale operation and abuse of planetary resources. It is amazing how achievable the solutions described in bolo'bolo are, dependent only on humanity's willingness to

change, to let go of the story it has been telling itself for all these years, of what “progress” is.

Bolo’bolo, much like this book, cannot be considered to be a holy script or an exact manual. It has many obvious flaws and parts that require a lot more information on which to base actual decisions. Some of that information will only be available once there are actual bolos in existence.

For example, the magic number of 300-500 ibus in a bolo is debatable. Can this many people live together and form the necessary bonds and cohesion to make a society work? Would it be even possible to manage the task of sustaining so many people without the current perks of modern technology?

There are definitely examples of people living off-grid in an almost self-sustaining way by themselves, as a family or as part of a small community. All of these are reliant in some way or another on the outside world, on a world that still runs cars and manufactures whatever is needed to sustain off-grid living.

So technically speaking -- as will be seen later on in the discussion of decision making -- the 500 number is the top limit for sustaining a bolo. Otherwise, as there are still many things to figure out about the way people will be living in the future, a bolo could be as small as a single Kana and some people might even try to survive by themselves in smaller numbers.

Smaller bolos will be more cohesive and easier to manage. However, they might also be less resilient, lacking long term means of surviving, needing to depend more on other bolos. People are used to living in a world packed with people, filled with a variety of voices. Living in a smaller community might limit that. For example, a person will have many fewer options for finding a life partner (if that is still a thing in the future) without looking beyond their own bolos. Even larger bolos might need to have some sort of social events with other bolos to make sure people have fulfilling options for meeting and partnering.

It is probable that people will try to form communities of all sizes and learn what works best along the way. As Wiedmer predicts, each bolo will be different depending

on local culture, available infrastructure and other factors. It's hard to tell how people used to owning things will adapt to share almost all that they have with their community. Some of the aspects of his vision if ever adopted will be constantly challenged and changed to suit the ever evolving needs of future societies.

3. Decision Making

One thing that the Bolo'bolo book lacks is a blueprint for decision making processes in each bolo. Wiedmer, the author of that book, assumes that each culture will forge its own ways of managing their lives according to their respective traditions.

However, as our planet is slowly decimated by consumerist culture, it seems that even countries with distinct traditions and cultures are becoming a subset of capitalism, regardless of how decisions are actually made.

As a counterpoint to that, existing ecovillages (for the most part) look, feel and behave differently than the societies around them. They are typically filled with people looking for a kind of hippie-inspired culture, while Bolos will need to host most of the survivors of the expected eco-chaos on the planet.

Some people expect a kind of a wild and violent post-apocalyptic society where the rule of the gun will replace the rule of governments. These kinds of predictions are outside the scope of this book and are best left to experts in the fields of history, sociology and game theory.

Let's assume that people will eventually want to join hands for the difficult task of surviving climate chaos and build a different, resilient society. Rather than trying to guess what that would be like, as in the chapters relating to current society, this book can present *best practices* with the hope that these practices can be adopted by future peoples. This approach will be based on solutions currently carried out in existing ecovillages, factoring into that the reality of their reliance on the external consumerist society that often subsits them.

Ecovillages tend to make decisions by employing consensus decision making process. Using consensus for making decisions is not the same as having unanimous approval for any decision. It provides a mechanism to allow groups to work together to make decisions in all kinds of organization.

Making decisions by consensus is flexible enough to allow for different ways of finalizing decisions and offer a variety of voting options, at least in theory. Most ecovillages make decisions by trying to reach as much agreement as possible and then make final decisions together. Any member can veto a decision, but ecovillages tend to limit that veto power in order to still be able to function. That veto is reserved not just to members opposing a decision, but for those who are strongly opposed. Even the strongly opposed might need to justify their position by referring to the mission statement of the ecovillage.

To make sure decisions accurately capture the way members feel about the ideas brought in front of them, the participatory consensus-based decision making process allows for a gradient decision making type of voting, instead of the more common yes/no voting.

In face-to face meetings, people can signal with their fingers from 1 (veto) to 5 (endorse). This allows meeting facilitators to better gauge what the decision making group more accurately feels about an issue. They can then respond to the concerns of people who disagree with a decision.

The life of a bolo, much like life in an off-grid ecovillage, makes the often lengthy processes of consensus-oriented decision making easier in some ways and harder in other ways. As people do not perform jobs outside their community, nor have distractions such as television or the Internet, they have considerably more time for community meetings. With Limited energy options for artificial lighting, people will sleep more and will be well rested and focused for meetings. The communal way of living will allow for people to discuss the decision making process during their shared meals and when meeting around the bolo, as consumerist society will no longer drive people apart.

Some technology would invariably be missed by those who are used to relying on it. For example, there might not be laptops to write down meeting minutes and distribute them via email. Even writing implements such as pens, pencils and boards might not be as common as they are today. We can only assume that society will find a way to wisely use whatever resources are left and find ways of self-manufacturing whatever is necessary to keep decision making processes going while not just relying on people's fickle memory to maintain their community.

The simpler older technologies in use will also probably limit the effectiveness of making decisions for a bolo of a few hundred people. A bolo will probably need 200-500 people to be self sufficient and allow for a variety of human interaction and skills. Decision making without laptops, projectors. email, social media, cellphones, apps, etc. will be more unwieldy in such a large group. Inclusive direct democracy would be difficult to implement. Instead, it is possible that Wiedemer's vision of 500 people in a bolo as specified in the introduction to his book would have to be somewhat downsized. In the same way that he envisioned bolos sending delegates upstream to bolo associations of different sizes (*tega*, *vudo* and *sumi*), it is possible that many decisions will be made at the kana (commune or chosen family) level. A 10-20 *kana* would still allow for effective meetings where all voices could be heard, allowing enough time to go through the entire room while still maintaining effective discussions, note taking and nurturing of ideas into action items. Each *kana* would need to send representatives to the larger *bolo* council where up to 25 members would still be able function well. Major decisions such as approving cooperation with other *bolos* or deciding on changes in the mission statement of the bolo community could still be brought to the *ibus* in *kana* meetings for discussion and voting.

Of course, in the case of a larger *kana* or a *bolo* needing to make a sudden time-sensitive decision, other techniques will be needed. You can have different groups in a meeting work on developing different ideas. and making larger scale voting possible by having people supporting a particular idea move around the room. For example, if four possible solutions are presented to an issue, you can allow people

supporting a solution to move to different parts of a field and thus more easily count support for a solution while keeping people engaged and active.

Future societies, while being quite different, will probably still maintain some aspects of modernity that are quite different than how society conducted itself before the 19th century. It's not impossible though highly improbable that society will revert to the way it operated before most people were illiterate and able to talk about complicated matters. Certainly, the ability to memorize information will be a useful skill when people will lose access to computer networks and other such resources. It is conceivable that along with water, seeds, shelter and some sort of available energy source, whole communities will rely on access to paper and pens or pencils to function well.

4. Physical Health Aspects

Focusing society's efforts on small-scale agriculture based on permaculture ideas will of course be very different from the current "permaculture islands" that exist in capitalist society.

There is a lot of discussion on how much energy people can save in their own homes, but relatively little discussion on how much energy will be saved by stopping ALL large scale manufacturing plants. All the materials used in large scale manufacturing could be repurposed for use with small scale building if necessary.

The areas along plants would no longer need to be contaminated with whatever plants inevitably produce. You wouldn't need to deal with nuclear waste because energy needs would be so much lower. You wouldn't need to dig in the ground for oil, transporting it around the world. There will be no need for overbearing huge wind and solar farms. Water could flow to wherever it needs to go without human interference, allowing both animals to thrive in their natural habitats.

People will definitely be more healthy since they will be mostly walking or using human powered transportation to get around. They will get more exercise and vitamin D from time spent in the sun from their outdoor agricultural activities. They will no longer need to be locked mostly inside offices, staring into a computer screen. While air conditioning seems very convenient research shows that it can be harmful to people's health in many ways as well as contributing to greenhouse gases.

The human body is designed to deal with shifting forces of nature and has functioned well for millions of years without the need to constantly control its dealings with nature. For sure, there will be a period of adjustment to what surely will be a new way of living to most people. Children born into this brave new world would probably really appreciate the physical freedom and the better bond with nature. Their bodies will be stronger and less prone to disease as they enjoy more exercise than the current

generation of modern kids. Their foods will all be organic, natural and locally grown, strengthening their immune system. As sugar becomes scarce they will have less cavities.

It's true that the complicated health system enjoyed today in most countries might not exist anymore as the means to sustain its energy and resource use dwindle. Bolo style ecovillages might have needed to rely on more traditional forms of plant-based healthcare.

Preventive medicine will offset most of the downsides of not having what is now known as modern medicine. When you look at the leading causes of death in the world, you can immediately tell that most of them will disappear over time. Naturally, road accidents will be a thing of the past with no cars around. With the much improved healthy living and mostly plant-based nutrition, coronary artery diseases caused by eating too much fatty foods and strokes (same), the leaders of the list, will also be a thing of the past. With a major reduction in pollution, all lung diseases might disappear too.

If people don't die off all these diseases does that mean that there will be too many people for the planet to survive? Not necessarily. As discussed previously, the low-resource way of living will not be much more resource intensive than that of the cows, pigs, chicken and all other farmed animals.

One can even surmise that the complicated technology people now have is only needed to support the current consumerist lifestyle. Naturally, with less control over nature, there will be other causes of death. That said, with even less technology than self sustaining eco-villages might have, human beings and their predecessors somehow managed to survive for millions of years without dying off, even exposed to all kinds of bacteria, direct sunlight and more.

It is without doubt ironic that ancient human civilizations - with no soap, alcohol, surgical tools, antibiotics, sunscreen, surgical gloves, medical diagnostic machinery and more, managed to survive for so long while current mass-production civilization will

be lucky to survive two centuries in its current form.

5. Psychological and Social Aspects

Along with improvement in physical health should come improvements in mental health. Many doctors of all kinds still advise people to spend some time in healthy environments with cleaner air, surrounded by nature and rightfully so.

That doesn't mean that people wouldn't feel personal pain, wouldn't argue, hate, love and make mistakes, but hopefully a less depressing environment, one that only affords some kind of happiness and freedom only to wealthy people (who suffer from their own special brand of malaise).

With less distractions by phones, computers and TVs, people will have more time to talk to each other and provide support.

It is true that a lot of people will need to develop certain social skills to survive in a system where a person, a couple or a family don't live cut off from the rest of the people, insulated by mass media and tedious work. Introverts will probably be hit hardest when living in a community, because ultimately not all communications between people will be loving. Some of it will be petty, judgmental, demanding.

People living in current apartment buildings might have limited communications, mostly negative ones involving issues like noise. People living in modern era houses might have even less communications with their neighbors, or only superficial ones. As technology immerses our lives people might know things about their instagram or Facebook friends more that they will know about people living close to them. Of course technology allows you to create virtual communities of all sort and even allows you for a way to communicate with neighbors in some form or another, but for the most part, people in communities get more estranged when more distracting technology that they can spend their entire non-work existence with.

Community based living allows people to really know their neighbors, but also invariably also creates friction. It creates social structures that might be difficult to

navigate. Talking to people as well as other activities such as dancing, playing instruments and singing in a community can be challenging for a lot of people. Any social structure will produce leaders as well as people who are hated. Such social interactions might brew a feeling of grudge intensifying over time and a multitude of small community politics.

In mainstream modern society, there is less need to get along with people when all a person needs is to do is spend time in traffic, be *presentable* at work and spend time in front of a screen at home.

Before the advent of professional psychology, people confided in each other, there is an amalgamation of that and the best of what modern psychology can offer in the social phenomena of co counseling, co counseling is a therapy movement that unlike general individual therapy premise does not frame human behavior and human problems as an individual problem to be overcome individually, it also acknowledges the existence of social pressures and intergenerational trauma and has the potential to be learnt quickly and have immediate effect and be more egalitarian. In co counselling everyone can be a listening ear (active listening) and everyone can get to air their heart aches. Also everyone learns from a therapeutic point of view to deal with common everyday issues that affect our wellbeing, how to deal with different stages of human development, how to observe behavior keenly and objectively and to behave in a therapeutic community separate from how you behave when you are not in a therapeutic space. See link below for more information. (to be added later).

Community restorative circles can also act as a healing space for both mental anguish of social and interpersonal trauma. See link below for more information (to be added later).

One can only hope that social permaculture will provide nurturing environments where people can thrive. Hopefully introverts could spend their time exploring a once again blooming nature or working by themselves helping plants to grow in the fields, on rooftops, everywhere.