Environmental Sustainability

Environmentally sustainable products are created with a focus on minimizing negative impact on the earth's ecosystems and enhancing natural systems. Everything human beings need to survive depends on our planet's natural environment. So in order to carry on, humanity needs to use those resources responsibly. Our consumption must stay within the limits of earth's ability to replenish its resources. But that is certainly not how we've been living.

THE STATE OF THE ENVIRONMENT IN TODAY'S FAST CONSUMPTION ECONOMY

If you ask any environmental professional, they'll tell you that our planet is in need of repair. Poisoned, plundered for its resources, and heating up fast, the earth is in big trouble. As a result, there are many significant and seemingly insurmountable environmental problems that threaten humanity and the survival of non-human creatures, too.

Human activity around the globe is largely to blame for the current state of affairs with our environment. Perhaps most damning is our current fast consumption economic model that pushes industry to produce goods cheaper and faster than ever before.

WHAT IS ENVIRONMENTAL SUSTAINABILITY?

According to the US Environmental Protection Agency (EPA), sustainability is based on the principle that everything humans need to survive and thrive depends in some way on the natural environment. In order to survive and thrive, humanity needs to stay within the limits of the planet to ensure the endurance of natural resources and systems. Sustainability, therefore, requires human activities that protect and restore environmental quality. Ideally, they do this in many ways:

- Staying within natural extraction limits to ensure natural systems replenish themselves faster than resources are removed.
- Eliminating toxins and cleaning pollution from air, water, and soil.
- Being energy neutral or producing more energy than they consume.
- Eliminating waste by repurposing materials in an infinite cycle.

Unfortunately, today's consumer culture is far from sustainable, which has serious repercussions for our environment. This is largely due to the nature of the consumption cycle that is the cornerstone of life for most people living in wealthy nations (and increasingly in developing nations, too).

THE CHEAP CONSUMPTION CYCLE AND ITS IMPACT ON THE PLANET

We live in a culture with an economy that is based on profit-seeking rather than the greater good of humanity and the planet. It's what we refer to as the fast consumption economy that values the

production of more goods quickly and at cheap prices. These products are poorly constructed and fall apart quickly, but that doesn't matter as long as consumers continue to purchase new things to replace these cheap goods.

This is a very short-sighted system. It sacrifices environmental health for a quick buck, and consumers play a big role in the fast consumption economy. In fact, they provide the fuel that keeps the system churning out inexpensive goods. As a result, individuals are increasingly valued for their ability to contribute to the consumer culture by buying more and more things. Consumers keep the consumption cycle moving by stimulating the movement of natural capital in a linear fashion (in one end and out the other) through several stages:

- **Extraction**: The pulling of natural resources from the planet.
- **Production**: Adding chemicals and mechanical processes to natural resources to turn them into products.
- **Distribution**: Shipping products from the production line to the retail outlets.
- **Consumption**: Purchasing goods for personal use.
- **Disposal**: Sending goods "away" when they no longer function or are no longer wanted.

This linear view of natural capital starts with resources entering the system at one end (extraction), moving through the system in a straight line, and exiting the system at the other end. From this perspective, natural resources are used only once and then are completely devoid of value when they leave the system at the disposal stage.

Industry has a vested interest in keeping natural resources moving through this system as quickly as possible in order to generate greater and greater profits. The more consumers buy, the more money companies make. But not only is this an incredibly inefficient way to use natural resources (only once), it results in environmental degradation throughout the entire value chain.

Let's look at each of the stages of this linear consumption economy to see how it impacts the environment. Instead of starting at the extraction stage, let's first look at consumption – where the energy that drives this fast-moving materials economy originates.

CONSUMPTION – THE POWER THAT DRIVES THE CONSUMER SYSTEM

The energy that feeds each stage of the consumer system – from extraction to production to distribution to disposal – comes from the consumption phase. Power, in the form of money, is exerted by consumers within the system with every purchase they make.

But how did this happen? Why do consumers buy stuff in ever greater quantities? Back in the 1940s and 1950s, product designers began to play with two ideas that have transformed our way of life:

- **Planned obsolescence**: Designers of all kinds of goods – light bulbs to blenders to clothing – determined that if products could be designed to fail (break down, fall apart, etc.) within a

certain period of time, consumers would be forced to replace them sooner than they otherwise would compared to quality-made, durable products. These designers actually calculated the shortest amount of time a product would need to last before consumers lost confidence in the product. In other words, they planned for earlier obsolescence to get people to replace their goods more quickly than they needed to.

- **Perceived obsolescence**: By playing into people's desire to be perceived as wealthy and likable, advertisers encourage consumers to buy the latest and greatest products at an ever faster rate. Everything from TV ads to billboard signs are used to tell people they aren't loved or valued unless they have the most trendy products. "Got last year's model? You're behind the times – upgrade now!" So well before most products have worn out, consumers are replacing them with something newer and better.

Using these two concepts, corporations keep the wheel of consumption moving at ever faster speeds to ensure consumers buy more and more and more.

You can see this very clearly in the fashion industry. Consumers are buying more clothes than ever before. Consider this: Whereas world fiber consumption was 3.7 kg in 1950, in 2008 humans more than tripled to 10.4 kg per capita, and you can bet the consumption of fashion accessories and jewelry was not far behind. Between 2000 and 2007, the per capita world textile consumption rose 35% from 8.3 kg to 11.1 kg. And man-made fibers are leading the way, with synthetics increasing by 28% between 2004 and 2007 compared to only 20% over the entire market.[i]

By encouraging consumers to be in a constant chase to buy more goods, industry and individuals together drive the rest of the consumption cycle. The environmental consequences, as you'll soon see, are obvious.

CHEAP GOODS ECONOMY: EXTRACTION AND THE ENVIRONMENT

We know that the consumer culture is what powers the entire materials consumption system. In the extraction phase, that means that the more goods we consume as individuals, the more resources we extract from the environment. Americans today are buying and consuming more than any other generation.

Our homes have grown in size by 38% between 1975 and 2002 – we need bigger houses to store all of the consumer goods we've been buying. We see similar growth seen in all sectors.

Even though America has only 5% of the global population, Americans consume 25% of all fossil fuel resources (in the form of fuel as well as petroleum-based products like plastics).[ii] Similar trends are seen across all resource types.

But Americans aren't the only ones consuming more. The human population is growing rapidly – in 2011, we hit 7 billion people[iii] with more and more of the poor entering the "consumer class" every day. Currently there are only 1.7 billion people in this class, with Chinese and Indians accounting for only 20% of the total. But the populations of these two countries vastly outnumber those in North America and Europe where most of the consumption currently takes place. The poor in

countries like India and China are strongly attracted to the consumer society (not surprisingly), and as they gain wealth, they're joining the ranks of the consumer class.

Take the purchase of cars as an example of the increase in consumption in these developing countries:

- 11,000 new vehicles that enter the roadways in China every single day, with auto sales increasing 60% in 2002 alone.
- By 2015, China could have 150 million cars on their roads, which is 18 million more than were driven in the US in 1999,[iv] and the numbers will likely continue to rise.

Combine the world's rapidly growing population with the fast pace at which the poor are climbing the economic ladder, and you've got a big resource consumption problem. And remember, our planet does not have unlimited resources.

In fact, if every human on the planet were to adopt a consumption lifestyle like that in North America, we would need five planets in order to have enough resources.[v]

- There is currently about 1.9 hectares of biologically productive land available per person on our planet.
- Americans consume the equivalent of 9.7 hectares.
- The average Mozambican consumes the equivalent of 0.47 hectares.
- If the consumption of all humans is averaged out, we already consume 2.3 hectares worth of resources per person.[vi]

In other words, we're already living beyond the carrying capacity of the planet!

It is only because of an unequal distribution of wealth that we haven't yet run out of resources. Because of our wealth, we who live in developed countries take more than our fair share, while those who live in poverty cannot afford to do so. And because of the wonders of a global economy, when the rich run out of their own resources, they unfortunately solve that problem by taking the resources from the poor. Yet many developing countries are slowly increasing their rates of consumption to match ours. This further impoverishes the disenfranchised humans with whom we share the planet.
So what has all of this consumption done to the environment? You need only to consider how much smaller our resource base is today compared to even 40 years ago to know that the situation is not good:

- **Fish populations:** The Food and Agriculture Organization (FAO) estimates that over 70% of the world's fish species are either completely depleted or fully exploited.[vii]
- **Deforestation:** Every year, the planet experiences a net forest loss of 7.3 million hectares (equivalent to the size of Panama), which is approximately 0.18%.[viii]

- **Biodiversity loss:** As humans extract more natural resources, they directly kill and indirectly cripple wildlife. Scientists estimate that there could be as many as 100 million types of species on the planet. Every day, 150 to 200 of these become extinct. The earth has not experienced a mass extinction like this for over 65 million years.[ix] Some estimate that between 30% and 50% of all species could be extinct by 2050.[x]
- **Total ecosystem health:** The World Wildlife Fund (WWF) maintains a Planet Index that measures the health of forests, oceans, fresh water and ecosystems. They estimate that earth's systems have declined by 35% since 1970.[xi]
- **Loss of arable land:** Because of overgrazing, removal of vegetation (such as clear-cutting forests), erosion by wind and water (flooding, for instance), and unsustainable agriculture practices, we're rapidly losing topsoil (the lifeblood of our food system). In the US, topsoil is washed away 10 times faster than it is replenished. In India and China, the rate is 40 times faster. Worldwide, arable land is 30% less today than it was 40 years ago.[xii]

The problems are not only limited to taking resources from the planet. In addition to the depletion of resources and the loss of biodiversity, the extraction phase of the consumer cycle also negatively impacts the planet through pollution, leaving soil, water, and air poisoned and deadly to wildlife and humanity. Remember the drive for profit in this economic system? In order to keep costs low, farmers and industrial manufacturers will forgo sound environmental principles because they cost too much and take too much time. Instead, they use the cheapest, fastest methods for getting what they need from the planet regardless of the environmental consequences.

Agriculture, for instance, is a type of extraction that results in significant pollution. Many crops that are cultivated by farmers use intense quantities of agrochemicals.

You can also see the toxicity of extraction in the mining sector where industry digs into the earth to pull out metals and gems for making things like electronics, machinery, and jewelry. Traditional mining practices require huge quantities of toxins during the extraction process, including things like cyanide. The wastewater and overburden (all laced with cyanide and other chemicals) is usually dumped into the environment where it poses hazards to wildlife, soil, and water.

Mining and agriculture are just two industry examples of how extraction poisons the planet. Though there are many more, they give you an idea of the environmental cost we pay when we choose unsustainable means by which to take natural resources from the earth.

Cheap Goods Economy: Production to Distribution and the Environment

It should be clear by now how environmentally destructive the extraction phase of the consumer cycle is. Once those natural resources are transported to the production factories, the environmental problems continue. At this stage, chemicals are mixed with natural resources and put through mechanical processes to turn raw materials into a finished product.
Why are chemicals a problem? Let's start with the fact that there are so many of them.

- **Use of untested chemicals:** Currently millions of chemicals are manufactured and used in agriculture and industry, and at least 62,000 of them were grandfathered by the Toxic Substances Control Act of 1976, untested.[xiii] There are currently more than 84,000 untested chemicals registered with the US EPA, and the EPA is only allowed to call them in for testing if someone can demonstrate that the chemical might be dangerous.[xiv] In other words, we have no idea what environmental impact these chemicals have, and yet they can be used without limit.
- **Dumping of untested chemicals:** A huge quantity of these chemicals is just flushed straight into the environment, and 400 of these chemicals do not break down.[xv] As they are consumed by fish, the chemicals build up in their bodies, causing health problems for the fish and for the humans who consume the fish (mercury is one of these substances).
- **Synergistic interaction of chemicals in the environment:** An even bigger concern for many scientists is that we do not yet understand how all of these thousands of chemicals interact synergistically with one another when they're mixed like a cocktail in the environment.[xvi]

At the very least, many of these chemicals are dangerous for the humans using them. But at worst, many of these chemicals are hazardous and pose serious risks for humans and the environment if improperly handled. Many other impacts of chemicals are felt by the environment. Consider these various consumer products that come with toxic byproducts:

- **Agriculture toxins:** 67 million birds are killed by pesticide exposure every year.[xvii]
- **Stain repellent toxins:** Chemicals used as stain repellents for products like carpet and food packaging (perfluorinated compounds) cause liver damage and immune system compromise in turtles.[xviii]
- **Oil and gas toxins:** Polycyclic aromatic hydrocarbons (a byproduct of crude oil left behind by spills) cause heart problems for fish.
- **Flame retardant toxins:** Polybrominated diphenyl ethers (PBDEs) used as flame retardants for things like mattresses, carpets, and automobile parts, are hormone disruptors and harm the reproductive cycles of many types of wildlife.[xix]

- **Leather tanning toxins:** The leather industry flushes many toxins into water, including oils, dyes, cyanide- and chromium-based ingredients, coal-tar derivatives, and formaldehyde, all of which harm wildlife and the humans working with the materials.

- **Textile dyeing toxins:** Textile dyes are laced with carcinogenic and toxic components, which are harmful to the humans working with them, as well as to the environment. And much of those dyes are wasted – 20% of the dye used to color a T-shirt is flushed out. The fashion industry wastes 40,000 to 50,000 tons of dye (which is washed into rivers and lakes) every year, along with 200,000 tons of salt (which is highly toxic to aquatic systems).[xx]

This is just a small sample of some of the impacts that industrial chemicals have on the natural world. This kind of pollution is easy to see in the fashion industry. Creating disposable, cheap, trendy products leaves a big ugly pollution footprint on our planet. Everything from conventional

agriculture to leather production to textile dyeing processes all contribute toxins to air, soil, and water.

Unfortunately, because many rich countries have learned about the potential environmental impacts of these chemicals, they've adopted a "not in my backyard" (NIMBY) attitude toward these industries. As a result, many factories have been transported overseas to countries where environmental laws are more relaxed. Once again, wealthy nations have found a way to ensure their own personal environment is protected while poisoning someone else's.

Clearly the production phase of the consumer cycle is just as dirty as the extraction phase. But what happens after the product is "consumed?"

Cheap Goods Economy: Disposal and the Environment

From the perspective of the consumer cycle, the journey of natural resources ends at disposal:

- 80% of the resources that become finished products are used one single time and then thrown away.[xxi]

- 99% of all products that are purchased become waste within 6 weeks of sale.[xxii]

Nothing more clearly demonstrates the blatant disregard for natural resources that this rapid pace of consumption. Given that landfill space is in short supply, and that maintaining landfills is expensive, this flippant consumption of natural resources costs society and the environment in several ways:

- **Landfills and incinerators are not cost-effective**. In fact, most do not pay for themselves, and instead cost society a lot of money.[xxiii] The US Environmental Protection Agency estimates that it costs $100 per ton to landfill waste (which doesn't take into consideration the financial waste associated with lost resources or the health impacts of landfills and incineration). On a per capita basis, it costs close to $75 per person per year for burying resources.[xxiv]

- **Landfill space is running out around the world**. The Local Government Association in the UK estimated that in 2007 they had between six and nine years before they would run out of landfill space.[xxv] The US in general has only about 20 years left of disposal capacity in landfills, with some states – Alaska, Connecticut, North Carolina, Rhode Island, Delaware, and New Hampshire – with only five years remaining.[xxvi] Communities in Asia, including Hong Kong, are also facing serious landfill constraints and expect to run out of space within the next 10 years.[xxvii] As landfill space becomes more scarce, it also becomes more expensive and environmental detrimental.

- **Toxicity of landfills:** Of all the Superfund sites in the US, 20% were former municipal landfills, all of which contribute to soil and groundwater contamination. Of the currently operating landfills in the US, 25% of them (800 or so) are exempt from groundwater monitoring requirements. Recycling fashion items therefore helps to keep toxins out of the environment.[xxviii] Sending textile and fashion waste to landfills contributes to the toxicity of

these waste disposal facilities, especially if toxic chemicals were used to create or treat the materials. Known hazards related to municipal landfills include the release of carcinogens into water and soil, risk of death and injury from fires and explosions, release of hazardous air pollutants like toluene, benzene, chloroform, trichloroethylene, and carbon tetrachloride and more. By taking used fashion out of the waste stream and extending its life, this toxicity is eliminated. [xxix]

- **Lost opportunities for jobs and resource conservation:** By incinerating and landfilling waste, society loses the opportunity to stimulate the economy and create jobs. It is estimated that recycling creates anywhere between five and 60 times more jobs than landfilling on a per-ton basis. [xxx] [xxxi]

Once again, the disposal phase of the consumer cycle poses moral hazards. Most consumers don't think about waste – they just assume it "goes away" when tossed in the trash can. But consumers who find out that "away" may be near their neighborhood soon start to speak up to ensure it stays as far away from them as possible. This leads to the export of trash to other communities and sometimes to entirely differently countries.

Sending toxic waste to other countries where environmental regulations are much more relaxed is a violation of environmental justice principles and contributes to the creation of slums. As waste piles up in poor communities – both at home and aboard – it contributes to the degradation of quality of life and concentrate pollution in those areas, creating exponentially greater environmental problems.

So far we've shown all of the environmental hazards of our fast consumption system – from extraction, through production and finally disposal. It's an economy that, driven by profit and motivated by quick, cheap systems, cares little for the health of the planet. Yet there's one more issue – climate change – that overshadows all other environmental concerns.

FAST CONSUMPTION AND CLIMATE CHANGE THROUGHOUT THE VALUE CHAIN

Larger than the issue of pollution, bigger than over-extraction of natural resources, and more massive even than the mass extinction of species we are currently facing is the overwhelmingly pervasive problem of climate change. This issue takes precedent in terms of its destructive potential because, without a stable climate, nothing on our planet will survive.

Don't let popular media lull you into believing that there is some doubt in the scientific community about the causes and seriousness of climate change. There is an overwhelming consensus among scientists from every possible discipline that climate change is real, it is extremely serious, and it is being caused by humanity:

- **Consensus over 928 scientific papers:** A thorough review by science historian Naomi Oreskes of 928 scientific papers published between 1993 and 2003 on the subject of climate change found broad consensus.[xxxii]
- **Climategate is unsubstantiated:** Claims that there was a conspiracy by scientists to silence opposing views has been dismissed by an independent review board.[xxxiii]

- **18 scientific bodies agree:** Leading scientific society and association in the US has signed the Statement on climate change, which says that if we are to avoid the most severe impacts of global warming, we need to dramatically reduce our greenhouse gas emissions.[xxxiv] These 18 bodies are:
    - American Association for the Advancement of Science
    - American Chemical Society
    - American Geophysical Union
    - American Institute of Biological Sciences
    - American Meteorological Society
    - American Society of Agronomy
    - American Society of Plant Biologists
    - American Statistical Association
    - Association of Ecosystem Research Centers
    - Botanical Society of America
    - Crop Science Society of America
    - Ecological Society of America
    - Natural Science Collections Alliance
    - Organization of Biological Field Stations
    - Society for Industrial and Applied Mathematics
    - Society of Systematic Biologists
    - Soil Science Society of America
    - University Corporation for Atmospheric Research

Much more could be said about how much scientists agree on the problem of climate change. Needless to say, the problem is extremely dire. The most serious problems of climate change are already impacting the environment:[xxxv] [xxxvi]

- **Loss of snowpack and glaciers:** Decreased snowpack because of warmer temperatures leads to less rain, which will negatively impact agriculture. As glaciers melt, they change the temperature of oceans and raise the levels of water along coastlines. Oceans are already starting to swamp some coastal communities.
- **Biodiversity loss:** As temperatures warm, tropical rainforests – where most of the world's species live - will shrink, causing a massive loss of biodiversity. Between 20% and 30% of all plant and animal species could be at risk of extinction this century if temperatures continue their upward trend.
- **More extreme weather:** Warmer air holds more water, which is causing a higher incidence of extreme weather, such as hurricanes, flash floods, and severe snow storms.
- **Droughts and wildfires:** Warm air also evaporates more water from the soil, which creates extensive droughts and contributes to hotter, longer-burning wildfires.

If you need further convincing of the seriousness of climate change, we encourage you to read Bill McKibben's article, Global Warming's Terrifying New Math. It outlines some devastatingly bad news regarding the current state of our climate and predicts that we may have already pushed the planet

beyond safe limits. If this is the case, we will see natural consequences of a warming climate that are far worse than what we have already described – and within our lifetime. This is serious business.
More importantly, we must understand that our cheap consumption system is largely to blame for global warming. Why? Because of the energy expended throughout the system. Energy is needed for transporting materials and finished goods, for running machinery and production processes, and also for lighting distribution centers and retail stores. If the energy burned to fuel these processes are fossil fuels, they release dangerous greenhouse gas emissions.
The problem of fossil fuels isn't just climate change. Energy used through the value change is generally derived from non-renewable fossil fuels – oil, natural gas, coal, and nuclear power - all of which must be mined. Not only are these fuels limited in quantity, they are incredibly dirty for the planet.

- **Water consumption for fossil fuel extraction:** Worldwide, 22% of all water consumed by humans is used for industrial purposes, including the mining and fossil fuel extraction industries. Wastewater from these industries contains toxins such as benzene, toluene, hexavalent chromium, heavy metals, selenium, hydrogen sulfide, boron, and hydrocarbon residues, all of which are toxic to humans and the environment.[xxxvii]
- **Oil and gas and deforestation:** Extracting fossil fuels contributes to the destruction of rainforests through deforestation and oil spills due to burst pipelines, malfunctioning pumps, and direct dumping. Crude oil kills birds, marine species, and other wildlife immediately, and poisons soil and water which causes chronic, long-term health problems for the wildlife.
- **Pollution from oil spills:** On average, 6,100 barrels of oil (42 gallons each) and other toxic chemicals related to the industry spill into the environment every year (up from 2,900 barrels in 1980s and 4,400 barrels In the 1990s).[xxxviii] The US Department of energy estimates that 1.3 million gallons of crude oil is spilled into US waters annually.[xxxix] The Deepwater Horizon oil spill was one of America's biggest, but more oil spills in Nigeria every single year than what spilled during BP's disaster.[xl]
- **Chemical spills related to fossil fuels:** Electric power plants and the mining industry together release more than 7 billion pounds of toxic chemicals into the environment every year.[xli]

So not only is the planet in peril because of climate change, the process of extracting so much oil and gas to run our fast consumption system is also leaving our world dirty and poisoned. This underscores our need to divest ourselves of reliance on the dirty fossil fuel industry.

ALTERNATIVES TO THE CONSUMPTION MODEL FOR PROTECTING THE PLANET

The fast fashion world bids you to buy cheaper, disposable clothing, which drastically increases the environmental impact of your sustainable clothing and accessory choices. But you as a consumer can make a difference by choosing ethical and sustainable fashion that's better for the environment. By making more environmentally sustainable choices, consumers can change the cycle of consumption – from extraction to production to distribution to disposal.

And while it's one thing to support a fashion industry that has a neutral impact on the planet, wouldn't it be better if you could purchase eco clothing and accessories that actually *enhance* the environment, by going above and beyond to bring a positive impact to the natural world? In an ideal world, sustainably produced products are those that are created in such a way as to enhance the ability of the planet to sustain all life, so that the earth is left healthier than it was before. These products prevent pollution, limit the production of solid waste, and save resources as well as enhance natural systems, rebuild soil, clean water, and filter the air so that future generations can thrive.

SUSTAINABLE CONSUMPTION: ECO FASHION THAT ENHANCES TO THE NATURAL ENVIRONMENT

How Sustainable Extraction Enhances the Natural Environment

Consumers have the chance to really enhance the planet by choosing fashion made from renewable, biodegradable, raw, and natural resources that restore and protect natural systems. Materials like hemp, bamboo, linen, and sustainable wood all have characteristics that are healthy for earth. Consider the following ways that linen, bamboo, and hemp plants enhance ecosystems where they grow:

- **Soil retention and health:** Bamboo root systems are incredibly complex. As such, they help to anchor precious soil and prevent erosion, which is extremely important for maintaining vegetation on the planet. When used as cover crops in conjunction with other plants, hemp actually helps protect the environment by preventing nutrient leaching and reducing the water necessary to grow the crops. In fact, hemp actually increases the soil nitrogen levels, leaving the soil in better health than it was originally.[xlii]

- **Low water consumption:** Bamboo plants do not generally require artificial irrigation which helps save precious water. This has a knock-on benefit of preventing desertification from over irrigation which can completely wipe out the vegetation in an entire area, as salt levels build up in the soil and organic matter is washed away.

- **Energy savings:** You save energy when you choose these materials. Renewable, natural fibers traditionally require less energy to manufacture, while synthetics require much more energy for raw material extraction, fiber production, and raw material production. Linen fabrics, which are made from flax, have the lowest energy use compared to all other fiber production methods, followed by wool and cotton. Viscose, polyester, acrylic, and nylon all require more energy, with acrylic topping the list.[xliii]

- **No deforestation required:** Bamboo is an incredibly beneficial plant. By planting bamboo in areas that have been affected by significant deforestation, forestry managers can replenish forested areas in much less time than if they attempted to replant trees. Plus, because bamboo plants regrow new shoots after stocks have been harvested, the recovery time is much quicker in existing bamboo stands as well.[xliv]

When it comes to the pollution created by the cultivation of fibers for the fashion industry, there are also less toxic alternatives than those traditionally used in the fast consumption economy.

- **Low toxin agriculture:** Hemp and bamboo require little to no pesticides and herbicides. Any fashion made from hemp or bamboo fibers, therefore, contributes significantly less to water and soil pollution related to petroleum-based agricultural chemicals.[xlv] Consumers who choose organic apparel have a similar positive impact on the planet. Organic cotton (and other organically-grown textiles) must adhere to strict principles that prevent the use of chemicals pesticides, herbicides, and fertilizers, as well as genetically-modified organisms.

- **Plants the purify water:** Amazingly, where bamboo is planted, water is also purified. The root system of the bamboo helps to remove toxins from dirty waters, restoring local water resources to their pristine condition.[xlvi]

Extraction that Reduces the Climate Impact of Consumer Goods

Organic agriculture also helps combat climate change. When organic agriculture methods are used to cultivate crops like cotton, hemp, flax, and even bamboo, they can actually reverse the impacts of climate change.

- **No tilling reduces climate impact:** Conventional farming techniques require tilling the soil. This tearing up of the soil introduces oxygen and exposes the humus to the sun. This stimulates the activity of microbes which eat carbon-containing organic matter, breathing out carbon dioxide. This results in the release of 50 tons of carbon dioxide per acre of land over a period of 100 years, and a depletion of the health of the soil over time.[xlvii]

- **Organic sequesters carbon:** By contrast, organic farming actually builds up organic matter in the soil, which helps to trap carbon on agricultural fields. By using no-till farming, farmers plant without plowing, incorporating last year's crop into the soil to replenish needed nutrients naturally without fertilizers and helping the soil maintain carbon stored in organic matter. If all agricultural soil in America were converted to no-till farming – including cotton and hemp farms that grow fiber for the fashion industry – the soil could soak up 100 million tons of carbon annually, which would be like taking half of all American cars off of the road.[xlviii]

- **Bamboo captures and stores carbon:** Bamboo plants release much more oxygen into the atmosphere. In fact, bamboo plants expire 35% more oxygen and sequester more carbon than trees.[xlix] This helps to prevent climate change and filter our air of pollution in the process.

That means by buying organic clothing made from cotton, hemp, or bamboo (when processed into a fiber correctly), you're fighting climate change!

Low Toxin Production Methods for a Cleaner Planet

Obviously there are many ways we can transform the extraction phase of our economy to benefit the planet. There are also many production methods that are much more sustainable alternatives to conventional methods of producing fashion products.

- **Product innovations:** imitation leather, such as Ultrasuede, is made from recycled materials such as water bottles, and is made without the caustic and highly hazardous substances used in traditional leather tanning processes. Consumers who choose recycled clothing made of Ultrasuede help to reduce waste, save energy, and significantly reduce the toxicity associated with leather-like goods.

- **Low impact textiles:** You reduce the production of toxic byproducts with natural, renewable materials. The use of natural fibers such as organic cotton, hemp, linen, silk, alpaca, and wool results in significantly fewer byproducts that by and large are much less toxic than the byproducts produced during synthetic fiber manufacture. Natural fibers also produce fewer greenhouse gas emissions and require fewer resources to produce than fibers based on petrochemical formulations.[i]

- **Natural options over synthetics:** As a consumer, if you compare natural materials to petroleum-based materials, your environmental impact is drastically different. Synthetics like polyester are made with crude oil, and require a lot of energy to create. They also emit toxins such as air-polluting particulate matter and volatile organic compounds (VOCs), gases that contribute to acid rain like hydrogen chloride, and other toxic byproducts. Natural materials like wood, silk, linen, hemp, organic cotton, and raw materials like quills and fossils all avoid the production of petroleum products which helps to protect the environment on a number of important levels.[ii]

- **Upcycling and recycling:** Repurposed or refashioned leather makes use of secondhand leather goods that would otherwise end up in the landfill. These leather materials don't need to be re-tanned, so they contribute no new toxins during their regeneration. Additionally, since no additional cows are killed to produce the leather, global warming emissions are also avoided through refashioned leather.

Textile dyeing is also extremely problematic for the fast fashion industry as it is highly toxic. But sustainable fashion designers are solving toxic dye problems in several ways.

- **Recycled fibers don't need dyeing:** When recycled fashion is created from secondhand clothing and linens, they are sorted by color, shredded, and turned into new fibers to make new fabrics. As a result, no new dyes are required during the textile recycling process. When consumers choose recycled fiber fashion, they are eliminating the need for new dyes to be made, consumed, and flushed into the environment.

- **Planet based dyes:** Indigenous and traditional fashion production gets around dye problems another way – by using vegetable and plant-based dyes. These colors are derived from materials usually found in their local environments, and are made free of chemicals and other toxins. As a result, when consumers choose naturally-dyed fashion, they support

local, traditional techniques that use waste products and protect local ecosystems from pollution.

Fighting Climate Change During the Production Phase

Wearing eco-friendly fashion is also one way you can combat climate change. There are many materials and processes used within the ethical fashion industry that, more than just neutralizing greenhouse gas emissions, actually go a long way to fighting against climate change by capturing carbon and emitting beneficial oxygen.

- **Linen is a superior textile:** The greenhouse gas emissions released during a fiber's production impacts climate change, but if you purchase natural fibers like linen, you're significantly reducing your impact, since it generates the least compared to cotton, wool, and synthetics.[lii]

- **Upcycling over recycling:** When you compare upcycling to recycling, upcycling is far better for climate than recycling. That's because upcycling requires much less energy than recycling, which means fewer greenhouse gas emissions are released during upcycling. If endlessly reused and recycled, fibers can continue to capture the carbon they embody to prevent further greenhouse gas emissions.[liii]

- **Low energy, natural textiles:** By choosing natural fibers like linen and hemp instead of synthetics like nylon and polyester, a consumer can significantly reduce the nitrous oxide emissions associated with their fashion. Nitrous oxide is a greenhouse gas that's 310 times more potent than carbon dioxide in terms of its heat-trapping ability, and is produced in spades during the manufacture of synthetics like nylon.

- **Low energy production methods:** Commercial fashion processes usually involve large machinery that consumes a lot of energy. Handmade fashion overcomes this challenge because it involves just the work of a person's hands. Machine-free fashion production usually results in better quality pieces, and is much less energy-intensive.

Another way many sustainable fashion designers like the Heart design team are helping combat climate change is by purchasing renewable energy credits to offset any energy that they require (we support CarbonFund.org). By supporting the expansion of solar, wind, geothermal, and biomass energy production, these green fashion producers help to mitigate their greenhouse gas emissions and make the world a more livable place.

SUSTAINABLE CONSUMPTION: ECO FASHION THAT SAVES RESOURCES (AND PREVENTS WASTE)

Industries and consumers together can also work to create products that limit the amount of waste being sent to landfills. Choosing recycled, upcycled, or secondhand products like eco fashion from Hearts helps to keep valuable resources out of the landfill by redirecting them back into the value chain in a cyclical pattern. The recycled and upcycled fashion movement helps to reduce the environmental toxicity related to fashion waste that collects in landfills.

Environmental Sustainability

Reusing and recycling fashion is also great for the climate. Recycling materials into new textiles and materials requires much less energy and produces far fewer greenhouse gas emissions than extracting and processing virgin materials. Even better is that the reuse or upcycling of fashion virtually eliminates the need to extract and process new resources, which means nearly eliminating the energy needed to produce refashioned items.

So as you can see, there are many ways we can use our purchasing power to transform the current economic system and protect the planet. Hearts is working hard to reduce our impact on the environment throughout our value chain with the goal of creating a more just and sustainable world.

GREEN LIFESTYLE TIPS FOR LIVING MORE SUSTAINABLY

1. **Choose refashioned items:** By repurposing secondhand and upcycled fashion items, no new resources like cotton, metals, or gems need be extracted from the planet. This also saves energy and reduces waste going to the landfill.

2. **Choose goods made from recycled materials:** Taking waste materials and transforming them into new products reduces resource extraction, toxicity during production, and energy use. Plus it's often a local source of materials, which reduces the need for transportation in many cases.

3. **Look for low toxin products**. The idea is to choose products that have been processed as little as possible. Avoiding plastics and other synthetics is extremely beneficial as well as these require a lot of toxicity to create. Unless it's up-cycled or recycled, plastic is a Hearts no-no.

4. **Avoid unsustainable wood products**: Protect forests in order to fight climate change, protect water and air quality, and ensure habitat for wildlife. You can do this by looking only for sustainably harvested wood products, including paper and stationary, personal care products, building supplies, and so forth.

5. **Lower your carbon footprint**: It is imperative that all humans significantly reduce the energy they consume. This means using less energy at home for heating and cooling, using less energy for transportation, and cutting your greenhouse gas emissions through low-carbon consumption.

As you embark into a lifestyle that benefits the planet, you may find that eco-friendly products cost somewhat more, but remember that by paying more, you're supporting an economic system that has a smaller planetary impact. Unless we choose to invest in products that invest in our future, the system won't change. However, you can guarantee our valuable eco system, our animal friends, and ultimately us, sure will pay the cost. So use your purchasing power for good!

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