

Ozzie Zehner

**Green Illusions: The Dirty
Secrets of Clean Energy and the
Future of Environmentalism**

Made by Blinkist



These key insights in blinks were written by a team of experts at Blinkist. We screen the world of nonfiction to choose the very best books. Then, we read them deeply and transform them into this concise format that brings you the most inspiring ideas from the text.

Maybe these blinks will inspire you to dig deeper, or maybe they're enough to start you thinking and then on to something new. However you read blinks, we hope they help you become an even brighter you.

What's in it for me? Find out why changing our behavior is the only way to end the energy crisis.

If you consider yourself an environmentally minded person, you may sincerely hope that one day all the world's energy will be generated by alternative energy sources like the sun and the wind.

And in this case, these blinks may shock you.

The hype surrounding these alternative energy sources is overrated, as each of them has serious drawbacks.

What's worse, you'll discover why placing our hopes in technological solutions is merely an excuse for us to maintain our excessive lifestyles: if we really cared about the environment, we'd cut back on consumerism.

In these blinks, you'll discover:

- why biofuel causes starvation,
- how being lazy and taking some time off work could actually help save the planet, and
- why solar energy is actually accelerating global warming.

Conventional energy sources, like fossil fuels and nuclear power, are dangerous and environmentally damaging.

For over a hundred years, humanity's energy needs have been met for the most part through the use of *conventional energy sources* like fossil fuels and uranium. But herein lies a problem: the quantity of these resources on earth is finite and humanity's need for energy is infinite. All experts therefore agree that we need alternative solutions.

But before we dive into alternatives, let's examine the primary conventional sources used today.

Of all conventional energy sources, coal is by far the worst environmental offender as it is the largest producer of carbon dioxide (CO₂), *a greenhouse gas* that contributes to global warming.

Another obvious downside is that burning coal pollutes the air and exposes people to health risks. Installing filters is of no help because they produce a toxic sludge that poisons the groundwater. And since the coal has to be mined before it can be burned, it devastates entire landscapes.

Yet, despite its negative impact, half of America's electricity and 80 percent of China's electricity is generated with coal simply because it's cheaper than oil.

Another prominent conventional energy source is uranium, which is used to generate nuclear energy. But unfortunately, it's not much better than coal because it's so dangerous.

Though nuclear energy accidents are less likely to occur than, say, oil spills, their damage potential is exponentially greater. Accidents can happen due to operating errors, like in Chernobyl, or natural disasters, like the tsunami that

caused the Fukushima catastrophe. On top of that, since they can be so damaging, nuclear plants are also terrorist targets.

What's more, storage of the radioactive waste generated through nuclear power is both expensive and fraught with uncertainty, as engineers have yet to find a long-term storage method that is safe and impenetrable to the radiation from the waste.

In addition to the environmental and health risks, coal and nuclear power really aren't that economical, either: according to one subsidy watchdog, they're only profitable due to state tax subsidies.

Alternative energy sources, such as biofuels, also have dangerous side effects.

In contrast to the conventional energy sources discussed in the previous blink, *sustainable energy* sources are thought to be capable of fulfilling our present energy needs without depleting a resource that future generations will need to generate energy.

Alternative energy-generating technologies, such as solar, wind, water, hydrogen and biofuels, aim to reduce emissions of CO₂, thereby lessening global warming. Another goal is decreasing humanity's use of and dependence on fossil fuels to negate their ill effects.

Typically, alternative energy sources can be split into two main groups: *regrowable energy sources* and

renewable energy sources, also known as *regrowables* and *renewables*.

But are they really *sustainable*? Let's first take a closer look at *regrowables*, and dive into the *renewables* in the next blink.

At first glance, regrowables look like a great replacement for our dwindling conventional energy sources. One classic example is good, old firewood. You burn it for heat and more trees grow to replace the one you chopped down. As long as there are trees, you'll never run out.

Today, biofuels, such as biomass, biogases, bioalcohol and biodiesel, are all based on the concept of converting plant and animal matter into energy, and then regrowing that matter after it's harvested. At the moment, these biofuels meet roughly 5 percent of the United States' energy demand.

But, despite its benefits, the production of biofuels is both risky in terms of food security and climate change.

Why?

Because farmers forego producing food crops in order to produce lucrative biofuels and, as researchers have warned us, this will drive up global food prices, which will hurt poor people around the world.

What's more, biofuel production can actually accelerate climate change – which would completely negate the desired effect of biofuels in the first place!

In Brazil, for example, farmers are so eager to produce biofuels that they plant them on land formerly dedicated to sugarcane. And to make up for the shortfall in food production, they mow down rainforests for sugarcane plantations. But food crops like

sugarcane don't absorb sunlight as well as rainforests, which means climate change is actually accelerated.

Renewable energy sources, like hydropower and solar power, aren't perfect either.

As mentioned in the previous blink, the other group of alternative energy sources is called *renewables*, or sources that are near infinite, such as solar and water power, which we'll examine now in more detail.

Solar energy is also problematic because it's generated by solar cells, and the manufacturing of solar cells produces a great deal of highly potent greenhouse gases.

How potent?

Take just one of the gases, nitrogen trifluoride (NF₃): it's 17,000 times more potent than CO₂ and the concentration of this gas in the atmosphere is rising at an alarming rate of 11 percent per year.

Hydropower, on the other hand, is actually a highly sustainable way of producing energy. It is generated by building dams on rivers and then letting water pass through so that it powers turbines. Thanks to the natural water cycle on earth, once the dam and power plant have been built, they will provide energy well into the future.

Today, some 15 percent of worldwide electricity generation comes from hydroplants.

Unfortunately, hydropower isn't perfect, either, as it can trigger international conflicts.

That's because rivers run across borders. The Congo, Nile, Rhine and Niger rivers flow across approximately ten countries each. When one nation builds a dam to generate hydropower, countries downstream may suffer a water shortage, leading to drought and potentially even hunger. This can create

conflicts, as can be seen today in the disputes between Pakistan and India as well as Uzbekistan and Tajikistan.

*“What’s possible isn’t always
what’s preferable.”*

While alternative energy sources may be sustainable, producing them is not.

Perhaps the main trap in alternative energy sources is that, although they may be renewable or regrowable, the equipment and processes required to actually generate power from them are not. Let's take two examples:

The *hydrogen-powered car* seems like the perfect green mode of transportation, as it's powered by a hydrogen fuel cell that emit nothing but pure water.

But, in fact, the hydrogen production for the fuel cell always requires significantly more energy than the cell eventually provides. That's because hydrogen gas must be converted into liquid form through high pressure and refrigeration, which demands massive amounts of energy that's usually produced by conventional means. And other

conversion approaches seem less feasible: in 1994, researchers built a solar-powered hydrogen production plant in California, but it took *ten hours* just to produce one kilogram of hydrogen, equivalent to a gallon of gasoline.

Wind energy has similar limitations. While the wind itself is certainly a renewable resource, the turbines for turning it into energy aren't. We can use *lifecycle calculations* to examine how they impact the environment throughout their lifecycle – i.e., production, transport, maintenance, disposal – and the results show that wind turbines actually require a lot of conventionally produced energy.

We can also examine the *carbon footprint* of wind power plants, meaning how much CO₂ they produce overall. Though you might think their footprint would be lower than those of

conventional sources because the turbines themselves don't produce CO₂, you'd be wrong: CO₂ emissions during the production of the turbines are so high it often more than negates wind power's benefits over conventional energy sources.

According to a British study, two-thirds of the wind turbines built in Manchester will result in a net increase in carbon. The only way to mitigate this is to place the turbines on highly windy spots, but most of them are already in use to meet just 1 percent of the global energy demand.

*“Alternative-energy technologies
are only as durable as the
contexts we create for them.”*

People like to believe that new clean technologies will solve our environmental problems.

Considering all these negative side effects, the hype surrounding alternative energy sources seems excessive to say the least. So why do people tend to ignore all the negative side effects of alternative energy sources?

The answer lies in our inner motivations.

First, the idea of being able to maintain our current excessive way of life thanks to new clean-energy production technologies is seductive. Because we don't need to curb our rampant consumerism if scientists and engineers can solve the problem for us, right?

This phenomenon is known as a *green conscience* and it allows us to enjoy our lives without fretting about our planet's future.

To actually confront the downsides of alternative-energy sources would force us to recognize that we need to use less energy, and people tend to find this idea unpleasant. It calls to mind things like taking cold showers, reading in the dark, sweating in a bus with no air conditioning, etc.

Second, many people firmly believe that technological advancement will be the solution to all our problems. Since 1970, environmentalism in Europe and the United States has been dominated by the idea that technological progress and innovation will result in ecological modernization, meaning that both the environment and the economy benefit.

But some researchers claim this is merely an illusion and believing it makes us think we can have free energy with no environmental impact. As one Swedish researcher says, the hype surrounding developments like the hydrogen car and

nuclear power are based on this same hope. They effectively reflect humanity's age-old dream of creating a perpetuum mobile – a hypothetical machine that works without energy. But, of course, such machines are a physical impossibility and pursuing the dream through hydrogen fuel cells and uranium can be downright dangerous.

Green marketing promotes an idealized view of alternative energy sources.

Have you ever felt that alternative energy sources are advertised as the solution to all our problems by almost every politician, media source and company?

If so, you'd be right on: *green marketing* is omnipresent in public discourse. But why is that?

For starters, because politicians see the potential economic benefits of new energy technologies. They hope the alternative energy industry will invigorate the economy and improve employment figures.

Even more importantly, today's journalists seem to vehemently support alternative energy technologies without doing their homework. They rely on material provided by alternative energy companies and public relations firms

instead of engaging in proper investigative journalism.

This practice of *source journalism* is due to the fact that the media sources can't afford to keep as many journalists on staff as they would like. Consider that two-thirds of online journalists feel that they have to focus on delivering rather than debating information due to cost pressure.

And so, journalists don't dig deep enough to find the downsides of alternative energy forms.

What's more, journalists' attempt to be objective also presents its own dilemma. It may seem as if they're living up to their principle of objectivity by reducing the energy debate to a battle between alternative and conventional energy sources, but in doing so they totally overlook simpler, non-technical alternative solutions, such as car-sharing,

commuting by bike and other energy-saving measures.

There are always more than two sides to any debate.

Journalists also find themselves pressured by multinational firms that support alternative energy solutions. A recent report by the Pew Research Center found that 68 percent of journalists who wrote for local newspapers felt that business pressure influenced their writing. This does not mean companies are actually instructing journalists what to write: they wield a subtler influence. One example is that, typically, companies have financed the studies that journalists use as their information sources.

Technological solutions fail to address the core of the energy crisis: our excessive demand for energy.

In addition to all the negative side effects mentioned in the previous blinks, alternative energy sources have one more crucial flaw: they don't address the real core of the energy crisis, i.e., our high demand for energy. Instead, they just offer technological solutions or ways of producing more energy or increasing energy efficiency. In other words, they're aimed at treating the symptoms, not the disease itself.

And even something as seemingly benign as improving energy efficiency has negative side effects, as it can ironically lead to a higher, not lower, demand for energy.

This phenomenon is due to the *Jevons Paradox*, named after economist William Stanley Jevons. In 1865, he examined how

the nation's consumption of coal was impacted by James Watt's invention of a more efficient steam engine. He found that although at first the invention improved overall energy efficiency as it decreased the consumption of coal, in the long run, it helped make steam engines more affordable and popular so that coal usage actually increased.

Analogously, increasing the efficiency of modern devices and machinery will make energy cheaper, thus increasing demand for it and bringing us right back to where we started: high energy consumption and an insufficient energy supply.

Bearing all this in mind, why do still we prefer solutions addressing energy production to those addressing energy reduction?

Because for a long time our economy has been dominated by an attitude called *productivism*, which primarily values things that are produced and those who

produce them. Thus, productivism discourages us from searching for energy-reducing solutions, such as creating walkable communities or commuting by bicycle. Such solutions don't produce things the same way that, say, new wind turbine factories do. Energy reduction ideas usually can't be patented and commercialized, and hence can't benefit the economy.

Persuading people to consume less is easier if it focuses on tangible benefits.

By now it's become clear that the energy crisis doesn't stem from a lack of energy, but from our high level of energy consumption. This means everyone can help solve the crisis by deciding to consume less.

But how can we transition from our current productivist-consumerist oriented way of life to something more modest?

The biggest obstacle is that, in general, people either don't really understand or care about how their present behavior impacts the future. Teen smoking is one example: although they're told smoking can cause cancer, teens aren't deterred from smoking if the negative effects can't be felt immediately. And the same is true for climate change: it's not an

immediate threat, so people can't really imagine what the negative effects will be.

To negate this tendency, efforts to change people's behavior should revolve around more tangible and immediate negative impacts.

For example, one anti-smoking campaign focused on how a date can be ruined if you have smoker's breath. This immediate downside proved far more persuasive than the possibility of cancer in the future.

Similarly, persuading people to limit their energy consumption will be easier if it brings tangible benefits, like saving time or money. And that is evidenced by the fact that, on average, Europeans consume less than Americans and also tend to be happier.

Americans find themselves in a *work-spend cycle*: that is, they consume more, so they also need to work harder to earn

more money. Their vacation time, for example, has decreased by an average of 28 percent in the past two decades.

Or consider Americans' consumption of sweets, snacks and soft drinks. They have little nutritional value, yet a third of the US food industry's energy consumption goes into producing them. So if you decide to limit your consumption, you'll be healthier and save energy at the same time.

“The best way to get precious renewable energies to meet our needs is to simply need less – a chore that will be more fun than we might think.”

The government should adopt policies to encourage companies and people to cut energy consumption.

In addition to convincing people to change their consumer behavior, there are other steps the US government can take to save energy on the level of the entire economy. For them to be effective, these measures should be aimed at decreasing energy consumption while increasing well-being, and not be too expensive.

First of all, taxation should shift away from income and focus more on consumption. Up until now, the prices of goods haven't really reflected the negative side effects of the energy required to produce them, and this needs to change.

In California, for example, cost penalties were introduced for products that require heavy energy use. The results of

this intervention are convincing: over the last decade, the national average per-capita energy consumption has doubled, while California's has remained stable. And despite this energy frugality, California remains one of the top ten happiest states in America.

Second, the government should start supporting smart packaging.

Around a third of Americans' trash consists of packaging material. Just imagine how much energy is spent on producing, recycling and disposing of all this material. To remedy this, the US should emulate Europe and require marketers to bear the cost of recycling and disposing their packaging.

Another good reason to force companies to rethink their packaging is that over 300,000 Americans end up in emergency rooms each year because they've injured themselves while unpacking a product.

Finally, the government should allow and enforce legally binding “No junk mail please” stickers on people’s mailboxes, as governments do in Europe. This would drastically reduce the amount of energy needed to produce all that unwanted junk mail. One expert estimated that all the junk mail in America has a carbon footprint equivalent to eleven coal-fired power plants.

Consumption can also be curbed by taking social measures.

One of the most obvious influences on global energy needs is the size of the population: more people require more energy.

Many environmentalists are thus in favor of implementing policies to reduce birth rates. But as women's rights advocates state, this approach effectively treats women as nothing but wombs, without respecting their right to control their own reproductive behavior.

Thankfully, new approaches to environmentalism aim to mend this rift by empowering women instead of implementing technocratic birth-rate policies. Research shows that the more governments focus on educating and empowering women, the lower the average birth rates. Using this approach, the interests of environmentalists and

women right's advocates merge together.

Another social measure we could take to reduce energy consumption would be to shield children from advertising: because ubiquitous child-directed ads are raising an entire generation of consumerist children.

But this is no easy feat for parents: just ask yourself how you'd prevent your children from seeing ads. Or imagine trying to explain to your kids how important it is to be critical towards consumerism.

In 1970, the US Federal Trade Commission and Federal Communications Commission tried to outlaw advertising directed at children, but corporate lobbyists managed to convince Congress to block the effort.

Compare that with the situation in Sweden, where all advertising targeting

children under the age of twelve was banned twenty years ago. A current study indicates that this has decreased children's tendency toward consumerism: in their letters to Santa, Swedish children tend to ask for fewer Christmas presents than countries without such advertising restrictions.

Living in cities is greener than living in the suburbs.

When one thinks of an environmentally friendly lifestyle, the cliché of a house somewhere in the countryside or suburbs often springs to mind. But this is only true in the case of an *autarkic* lifestyle, i.e., one independent of transportation.

Usually, living in the suburbs has one major environmental disadvantage: having to drive long distances by car to get anywhere. As America has become increasingly suburbanized, the amount of time that average Americans spend in their cars has doubled over the past 30 years to 45 hours per month.

Taking this into account, it is in fact city living that is more environmentally friendly because cities tend to be walkable and offer public transportation options.

For example, New York City is the most densely populated place in North America but it also has the lowest per-capita greenhouse gas emissions precisely because people walk and use public transport more than in other North American cities.

Cities frequently also tend to be more bicycle friendly. This is a trend most Americans have yet to embrace: they make less than 1 percent of their trips by bike, whereas Germans make nearly 10 percent, and the Dutch nearly 25 percent, of their trips by bike. Some might claim this is due to the longer distances in the US, but actually, 90 percent of the trips Americans use cars for are between just one and two miles long.

If more people could be persuaded to use bikes and public transport rather than their own cars, there wouldn't be as much need for parking spaces and

garages in cities. The newly freed up space could be used for public parks or other green areas. This would not only help the environment but also give people a greener living space.

Transforming cities into more liveable, environmentally friendly places is a key challenge for future environmentalists as it is the only way to get people to prefer the city over the suburbs. A good place to start would be by widening sidewalks, planting trees, defining safe bicycle roads and creating lots of new parks and pedestrian areas.

*“After all, we are the architects
of reality. The question is: What
kind of reality do we want to
build?”*

Final Summary

The key message in this book:

If we want to save the planet and resolve the energy crisis, we can't sit around hoping that technological solutions will be invented to allow us to keep up our excessive energy consumption. Instead, we must encourage decreased consumption.

Actionable advice:

Commute by bike.

Have you ever considered taking your bicycle to work instead of driving? If your morning commute involves heavy traffic, you may well find that biking is as quick or even quicker than driving. You're also saving time by getting a workout during your commute. And after a shower at the office, you'll be full of energy for the day.

Suggested further reading: *Energy Myths and Realities*

Energy Myths and Realities by Vaclav Smil provides an objective, science-based look into the global energy debate that is so often dominated by the misleading rhetoric of politicians, industry leaders and activists.

Nice work! You're all done with this one.

We publish new books every week at
blinkist.com.

Come and see – there's so much more to learn.

Inspired to read the full book?

[Get it here.](#)

Copyright © 2014 by Blinks Labs GmbH.
All rights reserved.