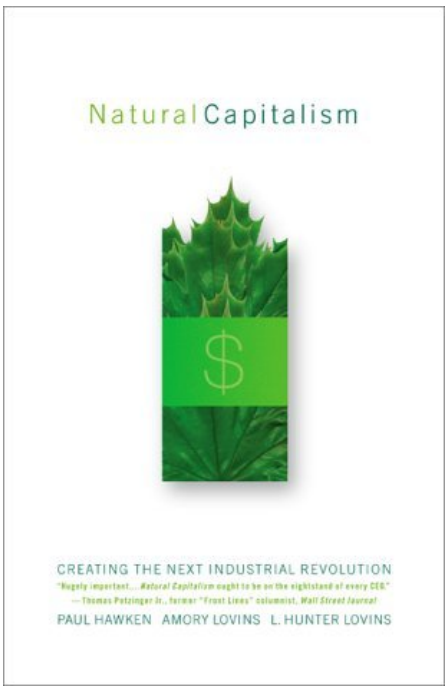

Natural Capitalism

Paul Hawken , L. Hunter Lovins , Amory B. Lovins

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This groundbreaking book reveals how today's global businesses can be both environmentally responsible and highly profitable.

Natural Capitalism Details

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Author	:	Paul Hawken , L. Hunter Lovins , Amory B. Lovins
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From Reader Review Natural Capitalism for online ebook

Willy says

I chose this book for my reading list this quarter because it is one of the most widely discussed books on the transition from our current unsustainable economic system to a more sustainable system. Natural Capitalism is listed amongst the books on Evergreen’s sustainability webpage, so I thought it was important in my path to understanding the various aspects of sustainability. It was then so unsatisfying then that this book is so significantly flawed. The author’s believe that the transition will be awesome and profitable that, by golly, everyone and every business will want to help out. The author’s maintain a position that the market will drive this transition to a sustainable market without unwanted and unwarranted government intervention. Their preface states: 'We believe the world stands at the threshold of basic changes in the conditions of business. Companies that ignore the message of natural capitalism do so at their peril....(We) show that the move towards radical resource productivity and natural capitalism is beginning to feel inevitable rather than merely possible.... If at times we lean more to enthusiasm than reportage, it is because we can see the tremendous array of possibilities for healing the most intransigent problems of our time'.
According to the authors, David Brower, the American environmentalist and mountaineer, once proposed a user's manual for those buying an Earth. 'This planet has been delivered in perfect working condition, and cannot be replaced. Please don't adjust the thermostat or the atmosphere'. The author’s do recognize the need for change from the unsustainable course we are on but believe that the answers lie in technology, if we but adopt what the authors call 'Natural Capitalism' - 'the next industrial revolution'. The question is do the author’s really believe in this position or are they cajoling us to act. They call their approach natural capitalism because it's based on the principle that business can be good for the environment. If natural capitalism continues to blossom, so much money and resources will be saved that societies will be able to focus on issues such as housing.
Admittedly this is an informative, visionary and thought provoking book that I would recommend. It is their faith in a technological solution to what I have come to view as a cultural and political problem, that I take issue with. They do have a plan that seems en face, very plausible and hopeful. It seems that they really do believe that the carrot approach will work without needing a stick at all. Natural Capitalism is a assemblage of successful entrepreneurial anecdotes of how more service can be gotten from less materials and less energy. In Natural Capitalism the authors expand the range of anecdotal information, gloss them with science, and extrapolate diminishing dollar costs into the distant future. In this rosy future there will be so much energy saving that oil will scarcely sell for $5 a barrel. To arrive at this sate of affairs they make some assumptions cast with an incredible reach. One example is asking the reader to interpret generalities such as '92% less energy use ' or '100% saving', or the claim that electricity from photo-voltaic devices is of 'higher quality' (p97), or that 'combined cycle gas turbines are not subject to Carnot's Law', or phrases like 'useful work extracted ... to more than 90% of the original fuel energy'? I asked someone more familiar with energy consumption statistics and she scoffed that the author was forgetting the laws of thermodynamics. Since Hawken is a physicist, this seems problematic.
They surmise that is waste was eliminated we would have a raw energy surplus. Those of us that have kept track of our time and then made (or tried to make) adjustments to wast less time, recognize the difficulties in eliminating wast. The technique is simple, recent technological developments are reported which can cut the energy and materials needs by half. Then new ways of doing things can cut the need for that energy by a further half (half of a half equals a quarter), then, since we have cut some inputs to a quarter, other economies follow. This is a very dangerous argument. Here is a quote from page 244:
"Over the next half-century, even if global economy expanded by 6 - 8 fold, the rate of releasing carbon by burning of fossil fuels could simultaneously decrease by anywhere from one third to nine-tenths below current rate. This is because of the multiplicative effect of four kinds of actions. Switching to natural gas and renewable energy, as fast as Shell Oil planners consider likely, would cut by one half to three quarters the fossil-fuel.”

The allure of this argument is clear- we don't have to change we just have to think smarter and develop more and better technologies. Like Lomborg in The Skeptical Environmentalist they use a process that Daniel Sarewitz criticizes as attempting to "support a view where appropriate action is determined by scientific inquiry." Sarewitz explores the problems inherent with using science to articulate, define and solve environmental controversies requires scientists to focus on reducing risks from uncertainty. Hawins and the Lovin's blithely reduce these risks by painting a very rosy future. Interestingly enough, in looking at the book, written nearly a decade ago, I did find the book outdated, particularly with regard to automobile technology.
In viewing this book from another angle, I have another concern. In economics, the theory goes that when you get more from less, you take advantage of the slack, this is know as the rebound effect. Common sense tells me that human greed with take advantage of this rebound effect and capture any possible savings.
The many happy solutions to energy problems did not convince me of their solution paradigm; in fact, I found much of the book redundant. I absolutely appreciate the author's for their optimism; I hope that corporations, business and consumers drive the revolution for change. I allow for the possibility that change can come from a utopian and peaceful adoption of appropriate technologies. I can understand that many students of environmentalism would hold this book with reverence and hope. Perhaps it is too cynical of me but I maintain that the revolution for a sustainable planet will only occur when we reduce what we want to what we need. And even then, it might be too little-too late.

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sdw says

Libertarians will love this book.

"We have lived by the assumption that what was good for us would be good for the world. We have been wrong. We must change our lives, so that it will be possible to live by the contrary assumption that what is good for the world will be good for us." – Wendell Berry.

Paul Hawken, Amory Lovins, and L. Hunter Lovins open the book with this quote, which I agree with. Where Hawken, Lovins, and Lovins and I disagree is the path to getting there.

What is Natural Capitalism? Well, it has a lot to do with Natural Capital. You see, Hawken, Lovins, and Lovins want to correct Marx's notions that natural resources and ecosystems are raw products which through the lands of labor are turned into commodities which produce wealth. Rather, natural resources and healthy ecosystems are themselves a form of capital – natural capital. They provide services necessary to the production of all wealth and they cannot be replaced.

Because of this, Hawken, Lovins, and Lovins believe that it is in the self-interest of businesses to preserve, conserve, and restore natural capital. They believe we are on the cusp of a revolution that will transform the world as much as the industrial revolution and that revolution is not at all like a revolution envisioned by Marx, but rather a revolution in natural Capital. This is the revolution that takes place as businesses realize the importance of investing in green technologies, the importance of asking for government regulation of the industry, even the importance of socio-economic justice.

Indeed, they tell us, "in a few decades, historians may write a history of our times that goes something like this: Now that the private sector has taken its proper place as the main implementer of sustainable practices, simply because they work better and cost less, the 1990s and 1980s approach of micromanagement by intensive government regulation is only a bad memory" (320).

Forgive me, but this sounds naïve. Does the corporate capital business model really have that much foresight? Is it rational to that extent? Will it ever sacrifice its own short term profit for the long term benefit of humanity? To what extent does this model depend on the good will, the good heart, the good morals and intentions of the world elites? Indeed, perhaps that is why the book is written as a utopic vision to convince the world's elite who control those businesses that this is exactly the revolution at which they ought to be at the vanguard, in order to reap profits and also assuage guilt.

I say this not to attack green entrepreneurs or small local business owners. I just think its naïve to think that Shell will on its own realize its better to be ecologically friendly (rather than simply appear ecologically friendly). But let's take a closer look at one of the examples they give for how this process unfolds…

"When the African writer Ken Saro-Wiwa and seven of his colleagues were hanged by the Nigerian military dictatorship after being convicted in a kangaroo court for leading the protests against the environmental degradation in Ogoniland caused by multinational petroleum companies, Shell stations in Germany were burned to the ground, boycotts in Holland slashed sales, and employees in London were chastised by family and friends. Since that time, Shell has begun to reexamine all its racial, economic, and environmental policies."

Now contrast the vision of change they give above to the statement with which they end the book:

" Natural capitalism is not about fomenting social upheaval. On the contrary, that is the consequence that will surely arise if fundamental social and environmental problems are not responsibly addressed. Natural capitalism is about choices we can make that can start to tip economic and social outcomes in positive directions. And it is already occurring- because it is necessary, possible, and practical" (322).

Sean says

Capitalism is probably here to stay. While there are alternatives that can work on a local level, I remain unconvinced that these can either be dispersed widely enough or "scaled up" enough to supplant capitalism as a whole. So the question becomes: how can we make it less damaging -- to our environment? -- to our spirit?

The answer proposed in this book is, simply put, to appeal to the logic of capitalism: i.e. profits. Being good makes sense because it makes money.

Well, almost. While their descriptions of lost opportunities for simple, yet dramatic, efficiencies is a little disturbing (putting the pipe there saves *how much*?), it is their plea to attach realistic costs to resource usage that really has force. Which is to say that being good doesn't necessarily make sense (money) now, but it will in the long run (if the right legislation is drawn up). Let's hope so -- not for the capitalist's sake but all of ours.

Truthfully, I have a hard time fathoming how anyone could write a book like this without a hefty dose of cynicism. I am probably more idealistic but less optimistic; maybe this book verges on the realistic? Regardless, it is definitely interesting, dense with information and ideas.

Gary Bruff says

This book lays out an economic program with a great deal of vision. Even though the ideas elaborated upon here seem in most cases like the best courses for economic action, it is doubtful for a number of reasons whether American society will be willing to accept these remedies for what ails us all.

I read this maybe ten years ago, so I am only able to present the ideas that made a vivid impression to me.

Pipes. Taking it as a given that we need to dispense with carbon fuels, the idea of hooking up all of America with pipes is touted as the way to go. We would first transition to natural gas, which is cleaner than oil and coal, but still a non-renewable carbon fuel. We would power our houses and cars with natural gas until it is gone, and then we would use these already established pipes to deliver hydrogen in order to recharge fuel cells for our cars and houses. Not counting the fact that the energy establishment would balk at this big time, I am not sure it makes good economic sense to take the leap of faith that hydrogen cell technology will be there once we are ready for it.

Ecological Industrial Complex. One of the most compelling arguments of this book relates to the amount of GDP tied to the defense industry. Defense, or war really, is seen as the primary engine of our economy. But it could just as easily be seen as waste. War is inherently destructive and shows no potential for driving economic sectors outside of itself. And it is incredibly expensive. As an antidote, green technologies could be seen as a peace subsidy paying massive dividends to the health of our planet and our ultimately to the sustainability of our economies. Were we to divert our capital to sustainable energy and the elimination of waste, we would see many clear benefits for all, including a healthier planet and greater quality of life around the globe. We have been immensely successful in developing technologies geared to war. The can-do, get-it-done attitude has yielded fantastic results from our engineering sectors. If we were able to apply that same energy and optimism to developing sustainable and renewable energy, well, the sky's the limit. It is unfortunate that typical Americans are so thoroughly convinced that the elimination of waste is itself a primary source of economic inefficiency.

Consumer ethics. The tragedy of the commons idea states that if something is everybody's problem it becomes nobody's problem and the problem just gets worse. Our fabulously free market creates a tragedy of the commons in this sense. It will take a great deal of consumer responsibility to make our ecological footprint more like humble Bangladesh and less like a commercial dinosaur. But we can all do our part, and every little bit helps, even if it doesn't seem like it. Fair trade, for example, enables consumers in the first world to pay for a higher standard of living to third world producers, partially out of guilt but mostly as a vote of no confidence in our currently highly alienated and alienating economic structures. More significantly, consumer ethics entails buying local to save transport energy costs, buying organic to reduce the amount of crap dumped on our land and in our waterways, or simply doing without things not necessary, thereby saving energy and materials in countless ways.

Carbon credits. I have no idea how this would work. Essentially a tax on polluters and a credit for the good guys, I see no way this is going to take off. It will probably go the way of the bit coin.

Massive transit. The idea of elaborate mass transit systems moving people continuously and efficiently has had a great deal of success in the third world. Energy is saved and the cost to the consumer is consolidated. But people of the third world do this out of necessity. They would much rather take our cars any day. And it is a human pipeline pipe dream to expect Americans to give up their cars without a fight. A move to get rid of the car here would be like a total gun ban in Texas. It simply ain't gonna happen.

There are many more ecological tidbits and conceptual treasures in Natural Capitalism, but the overarching theme seems to be that living right collectively and ecologically doesn't need to be painful and does not

necessarily entail a loss of economic growth. It is clear we must have the foresight to engage in sustainable practices, and we must provide the requisite incentives to get these eco-friendly industries off the ground (as we did with the defense industry). It is unfortunately not an open question as to whether these actions will actually come about. The powers that be in our country, from energy to defense to transportation to international commerce to finance to agribusiness, are all likely to send a resounding “no!” to any attempt to mess with the status quo, even if action is direly needed. We are not doomed yet. But without a raising of consciousness and a clear and focused campaign geared toward consumer education, the thoughts in this book might not actually lead anywhere. Yet books such as this one are necessary and in a sense golden in their effort to delay if not prevent the perhaps inevitable ecological collapse of our gluttonous economic engines and unsustainable lifestyles.

Justin says

I learned so much from this book that it is impossible to record in one review. To some extent I already knew or knew of many theories and approaches outlined in Natural Capitalism, however, finding it all in one coherent and interesting presentation was refreshing.

It has clearly refreshed and renewed my desire to study further system engineering approaches to civic problems.

More review details at: http://jritch.net/2008/12/29/finally-...

Leonkm08 AWOL says

On a society based upon this system, we have to manage ourselves to be responsible with the planet and our environment. Take care of it and try to make the less negative impact on it and also being affordable for the businessman and profitable.

Linda says

I think this book should be a must read for every single person in America. Whether you believe that Global Warming is happening or not, it gives food for thought on how simple changes can have a big impact on how we consume.

Alex says

ugh. utterly unrealistic book in the vein of "green capitalism," i.e. myth-making for the sake of preserving power hierarchies that dominate us and destroy the planet.

Scott says

What a surprising book. Written by three economists, it reads as one would expect: lots of repetition and economic data encoded in a cascade of prose. However, it is clever, insightful, humorous (at key points), and optimistic in outlining how we can adjust our industrial capitalistic worldview to a more natural capitalistic worldview. The natural capital - the planet and all its resources: air, land, soil, water, coral, ice etc - that we have for the most part not taken into consideration when we make decisions about how to live our lives is something that must be added into our daily to generations-long calculus about how humanity will exist and possibly continue to exist on this planet.

This worldview does not mean we should shutter factories, stop using coal entirely, stop flying in planes, and wear homegrown cotton clothing; on the contrary, they make the sturdy case that business and our way of life should be adapted to understand the true "cost" of our activities (rather than the current "price" of them). We would then make the smart and enlightened changes to make the cycle of resource extraction and usage less damaging and more, well, natural.

It is striking to me - just finishing *Tribe*, by Sebastian Junger and having read *The Art of Motorcycle Maintenance* and other books about our human needs, human society, and our satisfaction and harmony within it - that this book also references the idea that people don't really just want to be told what to do and feel the expectation of keeping their head down while doing it; we need to feel accomplished and authentic while doing it. We want to feel connected, valued, and important within our communities, and it is important to remember that we are all in a community on this planet. As members of a community we are held to a social contract simply by being born within it; shouldn't we be held to a natural contract with our planet and one another? It is a larger - and smaller, more vulnerable when considered in context of our solar system or interstellar space - community than our visible human one, and arguable as important.

There is too much in this book for me to spill out here, and I most definitely skimmed many of the more boring (to me) chapters that detailed in-depth examples, but I would highly recommend several chapters - the "Reinventing the Wheels", "Waste Not", "Making the World", "Capital Gains", and "Climate" chapters were fascinating - the "Making Markets Work" chapter was also great up to the point where economic theory was broken down into several additional sub-headings.

In general, the authors convinced me that there are alternatives to our market-driven, heedless focus on our human societies as if they were in a vacuum. They are not. We are part of the world, part of a community, and (hilariously, yet seriously) we need to follow the user manual for our planet as outlined in one of the later chapters (p 313).

This book was published the year I graduated high school, so it certainly dated in much of its data and the examples chosen. That said, even with skimming the book provided much food for thought, and I very much recommend it to anyone who wants to take glimpse a vision for how we can adopt a more green/renewable/sustainable economic system that is fair and just for ourselves and our planet. Some of my favorite tidbits are below, but the larger, charismatic (to me) ideas (such as making drivers pay the true cost of driving, rather than simply the prices of driving as we currently do; or even the examination the authors make into the journey a simple can for soda or beer makes - which is staggering), are probably for you - the future reader - to uncover on your own:

- "...the present industrial system is, practically speaking, a couch potato: it eats too much junk food and gets insufficient exercise.... industrial 'empty calories' end up as pollution, acid raid, and greenhouse gasses, harming environmental, social, and financial systems." (14)

- "In nature, nothing edible accumulates; all materials flow in loops that turn waste into food, and the loops

are kept short enough so the waste can actually reach the mouth. Technologists should aim to do the same." (71)

- "On the environmental side, scientists are frustrated that many businesspeople do not yet understand the basic dynamics involved in the degradation of biological systems. For business, it seems unthinkable if not ludicrous that you shouldn't be able to create the future by using the same methods that have been successful in the present and past." (159)

- Related to the previous quote: "...the ability to accelerate a car that is low on gasoline does not prove the tank is full." (310) Just because it has been working doesn't mean it will always work.

- "People now know the price of everything, but the true cost of nothing. Price is what the person pays. Cost is what society pays, here, now, elsewhere, and into the future." (168)

- Wendell Berry is quoted at the beginning of the chapter on food production: "When we came across the continent cutting the forests and plowing the prairies, we have never known what we were doing because we have never known what we were undoing." (190)

- "The environmental debate is conducted in a predictable cycle: Science discovers another negative human impact on the environment. Trade groups and businesses counter, the media reports both sides, and the issue eventually gets consigned to a growing list of unresolvable problems. The point is not that one side is right and the other wrong but that the episodic nature of the news, and the compartmentalization of each successive issue, inhibit devising solutions. Environmentalists appear like Cassandra, business looks like Pandora, apologists sound like Dr. Pangloss, and the public feels paralyzed." (309)

Tim says

This book changed my life and set me on my current path, which I hope will be a career in corporate sustainability. Basically, this is a primer for the next industrial revolution which we are currently entering and seeks to change the paradigm which says sustainability and a good bottom line for countries/corporations are mutually exclusive. In fact, it is now emerging to be just the opposite. The Lovines and Hawkin were prophetic in their predictioins, as we are now seeing what they spelled out in their book.

Ross Venook says

Not terribly easy to read, but full of vision and inspiring tales of companies that are both economically and environmentally sustainable.

For a preview (or the whole book, if you're a cheap student) you can download pdf's chapter by chapter at [http://www.natcap.org/].

ValerieLyn says

Not quick or easy (nor off-puttingly technical), but this book has a ton of great information about what it means to overhaul society to make it greener and how doing do would make it a less anti-social society.

Best read over tea, and not necessarily in order.
Generally, there is a specter haunting non fiction, namely that the authors take about 35% more pages than they need to expound their ideas. I want to scream "I GET IT! LET'S MOVE ON!" but no one is listening. I'm sure there were some excellent concepts in the last 100 pages, but I'll probably never see those pages. Let's return to the era of the pamphlet, the broadside.

Linda says

Readers are offered a view of the sustainability movement during the late 1990's in Natural Capitalism: Creating the Next Industrial Revolution, by Paul Hawken, Amory B. Lovins, and L. Hunter Lovins. It was first published in 1999. A 10th Anniversay Edition was published in 2010 with a new introduction by Amory B. Lovins and Paul Hawken that updates the story to include successes of the last decade.

The Bottom Line

Reading about sustainability from a distance of over a decade gave me a new perspective on where we have come from, some successes, and how much further we still need to go. The authors are well respected experts in their fields and delivered information in an interesting and readable way. Showing companies how to change from a businessperson's perspective makes sense to me — companies need to stay in business while they change. I would recommend Natural Capitalism to people interested in a sustainable economic and business future.

Read the whole review at: http://greengroundswell.com/natural-c...

Aurin Shaila Nusrat Sheyck says

“I don't want a nation of thinkers, I want a nation of workers.”— John Davison Rockefeller. John D. Rockefeller was an American business tycoon and industrialist. I quoted him to illustrate that how capitalism really works, and this book serves as a cornerstone to refute the claim that exploiting capital will sustainably maximize wealth without posing any threat in the long term.

Even after 19 years of its publication, “Natural Capitalism: Creating the next Industrial Revolution” co-authored by Paul Hawken, Amory Lovins and Hunter Lovins, is still so opportune and meaningful. The book is full of ideas of innovation and revolutionary examples which businesses or entrepreneurs can take inspiration from. Authors tried to distinguish Natural Capitalism from Capitalism, but, I believe, an integral part of the economic system called capitalism, is natural capital which has been ignored from the very beginning by not taking into account the environmental footprint or irreversible repercussions of the industrial actions into the cost of production. This is high time we got out of the short-term wealth maximization mentality for environment is where all the economic activities take place and we have been granted only one earth. “First, many of the services we receive from living systems have no known substitutes at any price; for example, oxygen production by green plants. This was demonstrated memorably in 1991-93 when scientists operating the $200 million Biosphere 2 experiment in Arizona discovered that it was unable to maintain life-supporting oxygen levels for the eight people living inside. Biosphere 1, a.k.a Planet Earth performs this task daily at no charge for 6 billion people.” We have been exploiting nature—clean air, water, fertile soil, rainfall, ecological systems etc. as if it were free: Has any grain producing company tried to determine the value of 1mm of rainfall and to incorporate it in the "Liabilities" section of

Balance Sheet or in the cost of goods sold? Poorly-designed business processes, population growth and wasteful consumption (both by individuals and businesses) are the main causes of depletion of natural resources and obstacles towards sustainable economy.

Automobile transportation is one of the biggest industries of the world and in the chapter 2 of the book, the authors talk about how a transformation in the energy source and material can prevent the destruction of natural capital. Polymer composites instead of steel to make the body of car and hydrogen fuel cell to produce electricity in the cleanest and most efficient way are the two most game-changing ideas, but sadly yet to be put into effect in a commercial way. Coupled with sensible design of cities that limits use of car, Hypercar could reverse the erosion of natural capital.
Chapter 3 is eye-opening exposing the amount of waste we produce (in 1999) because we fail to “close the loop” or recycle like biological systems do. “Two quarts of gasoline and a thousand quarts of water are required to produce a quart of Florida orange juice. One ton of paper requires the use of 98 tons of various resources.” “Total annual wastes in the United States, excluding wastewater, now exceed 50 trillion pounds a year. (A trillion is a large number: To count to 50 trillion at the rate of 1 per second would require the entire lifetimes of 24,000 people.” We also waste human capital. Rikers Island (in the US) is the world’s largest penal colony which needs an annual budget of $860 (in 2015) million with an average daily population of 10,000 inmates. Isn’t there something profoundly wrong with the design of the society that incarcerates so many people at an overwhelming cost to the society itself?

The authors emphasized the fact that the society that wastes its resources wastes its people and vice versa by providing statistics of unemployment and disemployment rates which are rising faster than employment rate globally. Companies are downsizing to increase the profit one more percent; but greater gains can come not from eliminating people, but from eliminating those wasted energy used by ACs to keep the temperature exceedingly lower in summer days, those extra barrels of oil that were mishandled and those wasted papers to produce hundreds copies of reports which could easily be e-mailed.

The book is also filled with lots of examples of how businesses benefitted from small and smart changes in design and process making the system more efficient and cost-effective by wringing more service from a given artifact. Remanufacturing and recycling are essentially closing the loop and “saving energy equivalent to the output of five giant power stations”. For example, big companies like Xerox and IBM employ “Dedistributing” where products come back from customers for remanufacture.

Chapter 5 and 14 are my personal favorite where in chapter 5 authors underscores the importance of building self-sufficient green buildings as oppose to just laying out some concrete blocks. Because we spend ninety percent of our time in them (nowadays it should be more than ninety five percent) and “one-third of our total energy and two-thirds of out electricity” are consumed by them. Also billions of tons of raw materials are being used annually to construct them and a major part of it goes wasted instead of going into the building because of improper planning. ncorporation of natural air and light handling, solar design, strong sense of community etc. would contribute to astonishing energy savings as well as to an increment of quality and value of human lives. One solution could be paying compensation to designers and architects on the basis of what they save in terms of energy consumption by the building, instead of paying them a percentage of the cost of the building. There are also various examples of innovations in the book, for example, photovoltaic power generation, superwindows, which could make buildings more efficient optimizing passive solar heat gains and passive cooling.

The highlight of chapter 14 is how Curitiba, an archetypal Brazilian city with chaos, poverty, unemployment and pollution at its center of existence, became a standard in sustainable urban planning by being the greenest city or the most innovative city in the world in only three decades. Combining entrepreneurship, good governance and vital leadership, Jaime Lerner, an architect and also the mayor of the city by treating all its citizens not as burden but as its resource. If someone is intrigued by the book, but does not want to read the whole book, she or he may go through this one chapter.

Industrialization of farming may seem to be a triumph of technology, but actually it uncomfortably worsens the situation. Despite improving efficiencies, “….farming still uses ten times as much fossil-fueled energy in producing food as it returns in food energy. Our food, as ecologist Howard Odum remarked, is made wholly of oil with oil left over.” Industrial agriculture destroys soil’s organic richness and most civilizations collapsed because they destroyed their topsoil. It also uses about two-thirds of all water drawn from the world’s rivers, lakes and aquifers. One-third of world’s cereal are being fed to livestock which turns only 10-45% of grain inputs into meat. Organic farming, Biointensive minifarming could be the answer.

There is a chapter dedicated to fresh water usage and designs to minimize water waste. Charging households for their actual use rather than a flat rate combined with education and awareness program usually saves up to a third of water usage. Harvesting rainwater, using of graywater for flushing toilets, biological treatment plants in neighborhoods are proving to be pioneering.

The economic viability of the businesses who not only want workers, but also thinkers suggesting and designing innovative ways incorporating the value of natural and human capital should be considered by businesses.The simple proposition of this great work is that all capital be valued. If it is not practically possible to attach a value to a hundred years old tree, one may ask how much it would cost to make a new one. How much would it cost to make a new atmosphere after we are done destroying this, a new culture, a new Earth?

Cambridge Programme for Sustainability Leadership says

One of Cambridge Sustainability's Top 50 Books for Sustainability, as voted for by our alumni network of over 3,000 senior leaders from around the world. To find out more, click here.

Natural Capitalism suggests that the world is on the verge of a new industrial revolution - one that promises to transform our fundamental notions about commerce and its role in shaping our future. The authors describe a future in which business and environmental interests increasingly overlap, and in which companies can simultaneously satisfy their customers' needs, increase profits and help solve environmental problems.

Natural capital refers to the natural resources and ecosystem services that make all economic activity possible. Yet current business practices typically fail to take into account the value of these assets, a value that is rising as they become scarcer. As a result, natural capital is being degraded and liquidated by the wasteful use of such resources as energy, materials, water, fibre and topsoil.
