



Get ahead of the Curve
As we enter
the age of constraints.

Be part of the change to sustainability

By Stephen Hinton

Get ahead of the curve

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Acknowledgements and resources

“Once in a while it really hits people that they don’t have to experience the world in the way they have been told to.”

-Alan Keightley

I wrote this book, and am giving it away, **because I am concerned that we citizens of Earth are heading for a crisis caused by the way we run things. Not just an economic crisis but a humanitarian crisis .**

This e-book will explain the five major reasons I see why you need to start re-thinking your business and your way of life.

I came upon this by accident. I was working with program management at Ericsson and was writing a book about sustainable development as a hobby. When downsizing came and Ericsson and I parted company, I decided to sit at home for a few weeks and do some background research. I was shocked and initially in disbelief as I saw sign after sign that we were near the end of the industrial age, or oil age, and there was no new solution in sight.

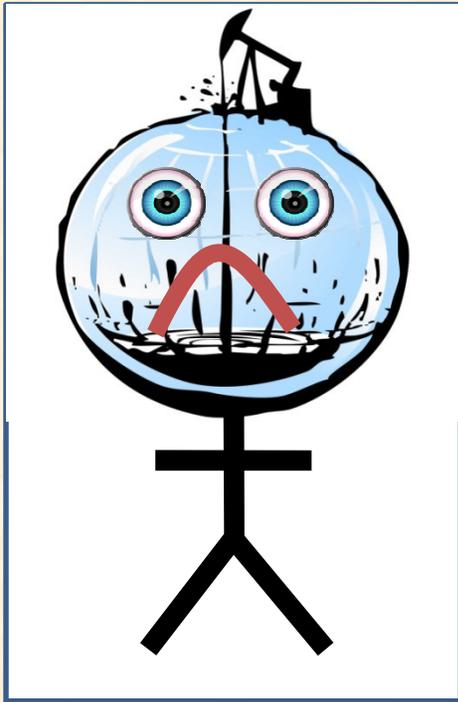
You might be thinking: “ Why haven’t I heard of this before?” Well, you have. It’s just that it has been a long time coming and you are probably like most people, bound up in daily life, with your own causes and issues and distractions. And the situation is complicated. That’s why I have tried to boil it all down to five aspects you can monitor and work out for yourself.

You might be thinking: “Why now?” Well, it’s been coming a long time. In 2005 the peak of oil production, or production of easy oil, was reached. Three years for the effects to work their way through supply chains and the World sees the first shocks – rapid rise of prices followed by economic instability.

Even if oil prices are not at their highest they are still at least 50% higher than a few years ago. The economic truths we have been living with for years, like ever cheaper food, are about to change.

Understanding these five simple things will get you started on rearranging and rethinking the way you do things in your work, in your business and in your daily life. Specifically you will need to think about where you are investing your time and money as an employee, investor, business owner and consumer.

Whatever you do, **don’t just believe me,** think about it and find out for yourself. I am not saying this because I don’t believe what I am saying. On the contrary. Once you have understood the seriousness of what I am saying you will get hit with a lot of contradicting information. If you haven’t worked it out for yourself it will weaken your resolve and you will take longer to act.



Mr. Oil is about to begin his long exit

part one

We are going to witness a fundamental shift in how we run things. We are staring at the end of the oil age. This is a fantastic opportunity to do something different and better. But it could also mean a humanitarian crisis if we don't wise up fast.

“We must leave oil before it leaves us”

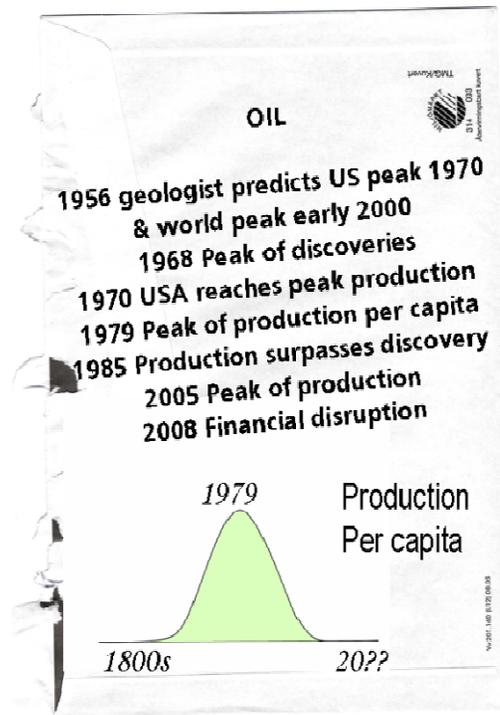
Fatih Birol, chief economist of the *International Energy Agency (IEA)* an intergovernmental organisation which acts as energy policy advisor to 28 member countries in their effort to ensure reliable, affordable and clean energy for their citizens.

Since the end of the First World War, oil has been flowing into almost every aspect of our daily lives: as fuel, as basis for chemicals, as plastic, fabrics etc. In fact, it is hard to think of a product that does NOT contain a large portion of oil or oil energy.

Oil is such a compact source of energy – one cup is enough to pull a small car up the Eiffel tower. Compare that to a chunk of wood the same size - it is mostly water! As I write this there is no known source of energy that is so convenient, compact and easy to transport, that can power the millions of vehicles and machines all over the world. You cannot fill a petrol tank with nuclear energy.

If you think that oil will be available to drive business indefinitely, think again. The fact is, oil is just not being found any more in large quantities. And we are using more than is being found.

The long exit was first announced in 1956 by petroleum geologist M King Hubbert. He calculated the US would peak in 1970 and the world around 2000. The Long exit started in 1968 when world oil discoveries peaked. Since then, year on year, less oil has been discovered.



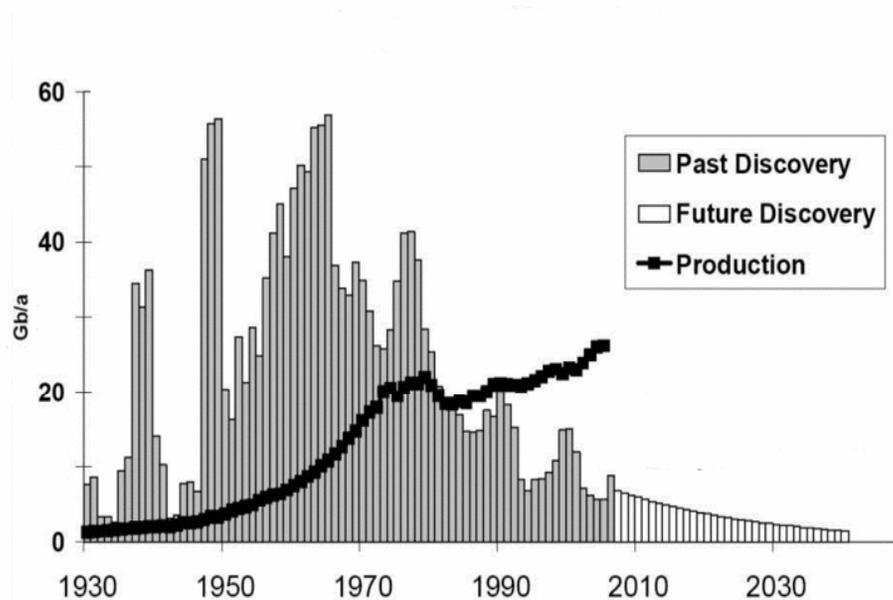
There have been no significant discoveries of new oil since 2002. In 2001 there were 8 large scale discoveries, and in 2002 there were 3 such discoveries. In 2003 there were no large scale discoveries of oil. For every year since the mid 1980s, annual production has been greater than annual discoveries.

Since 2005, there has been no real increase in world oil production, remaining at around 85 million barrels a day. But it gets worse. The oil remaining in the ground is harder to get out. The easy stuff was extracted long ago. At the beginning of the oil age the equivalent of one barrel of oil invested would bring you 100. Nowadays, depending on the oil field, it is between one and 18 you get back.

Many argue I am overstating the case. But many, most even, are heavily invested in Business As Usual and would be hit negatively if people started to change their ways. So it goes on. Not really talking about the thing that is going to change the way you live.

“We” fell asleep at the global wheel!

Matt Simmons, Simmons and Company, Investment bankers to the energy Industry



Something has to give - we are using more than we are finding

There is still little talk of the need for change. If we wait, circumstances may develop so we all go through a slow change, and we can hold onto Business as Usual as long as possible. This is unlikely for many reasons. If we choose NOT to act in time, the pressure to change as world energy supplies dwindle could trigger humanitarian catastrophes.

Take what happened in CUBA as an example. When Cuba lost most of their oil supplies as the Soviet Union collapsed, the farming system broke down and starvation was widespread.

Look for signs of Mr. Oil's exit:

production falling from 85 million barrels a day. Decrease in the amount of oil found especially in places easy to extract it. Rise in oil prices followed by economic contraction.

Advice: When planning your business, daily life and investments, factor in decreasing availability and increasing price of oil. Oil prices dictate energy prices so this applies to all energy sources, even renewable ones.

Things to be aware of: where am I or my business vulnerable? To what extent is my business or my daily life reliant on uninterrupted supplies of oil based products? What alternatives are available now? What services do I rely on that might be increasing in price soon?

In case I didn't make the point strongly enough:

WE ARE LIVING ON BORROWED SUNSHINE

A staggering 98 tons of prehistoric, buried plant material – that's 196,000 pounds – is required to produce each gallon of gasoline we burn in our cars, SUVs, trucks and other vehicles, according to a study conducted at the University of Utah.

"Can you imagine loading 40 acres worth of wheat – stalks, roots and all – into the tank of your car or SUV every 20 miles?"

Ecologist Jeff Dukes

The amount of plants that went into the fossil fuels we burned since the Industrial Revolution began [in 1751] is equal to **all the plants grown on Earth over 13,300 years.**

Source: Ecologist Jeff Dukes

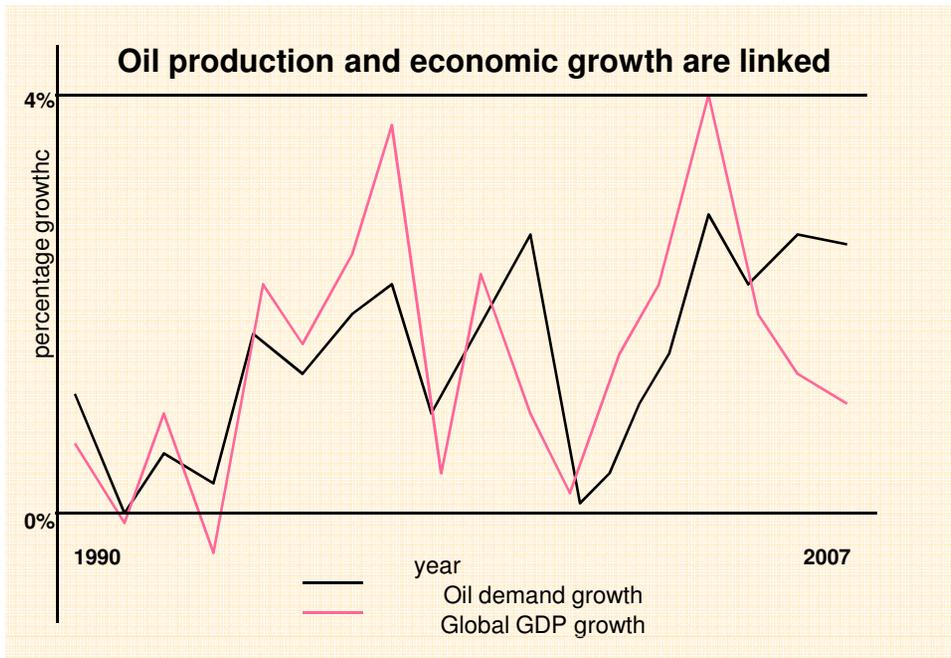
It's OK, we can live well, maybe better. We just need some changes. A lot of them in attitude.



Mr. Oil's long exit will drag Mr. Economic Growth and Mr. Work with him

part two

Cheap and readily available oil is the engine of economic growth. Without radical changes in the way we do things, the age of economic growth is over for ever. A lot of people will be changing their ideas about what they aspire to get out of life.



Many analysts call oil the engine of economic growth. In any business, smart use of cheap energy and or cheap products can improve your services to your customers whilst retaining a nice profit margin. More output means, per person, more turnover, more services and products and more growth.

Expect turbulent times: **if oil prices go through the roof, economic growth will slow.** If economic growth slows, oil prices will fall, and the engine of growth will start up again, only to splutter as this causes oil prices to rise yet again. The economic engine cannot be restarted now that oil production has hit its peak.

This will seriously impact people's world view, especially the way they think about jobs. Most people expect to be able to advance in their careers, to "climb up the ladder". **When economic growth slows or even goes negative, all those job opportunities vanish.**

People start to think "why am I working competitively 9 to 5 every day, at something I do not particularly like or even agree with its values? Even if I prove I am good, there will be no job for me as businesses are contracting.

People will start to ask themselves;
"If I have to work at all, why don't I do what I love doing, do something that pays my bills and does not require all my time, so I can be with family, friends and myself?"

Look for: rapid changes in oil prices, rapidly shifting views on where economic growth is going and shifting ideas about how to run things generally. Expect people's ideas of what constitutes a good livelihood to change. Expect employees to change attitude to job security and what they want from work.

Entrepreneurs

can play a vital role in redefining prosperity without growth. Catching the new paradigm, their businesses will thrive whilst they help to reshape the way we live.

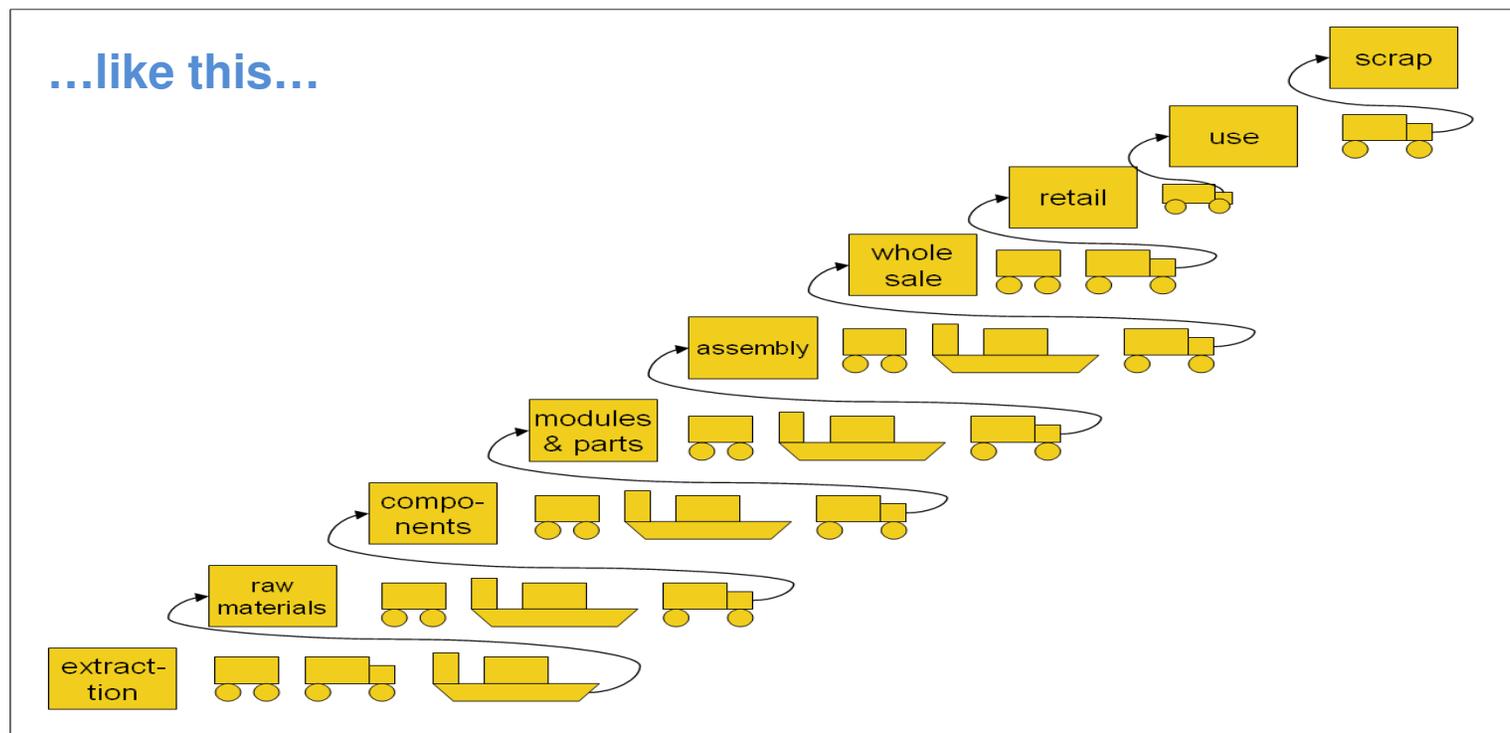


**Long supply chains are
about to get a lot
shorter**

part three

Globalisation has brought with it a plethora of supply chain developments like manufacturing in low cost regions, just in time and extreme specialization. Expect things to change as transport costs force a fast re-think..

It all sounds very good: set up a gigantic network of telephone and data communication. Develop huge shipping and supply routes. Each country, region and company specialises and masters one aspect of developing, manufacturing or supplying people's needs and you have – hey presto – an efficient global business machine that will create prosperity for all.



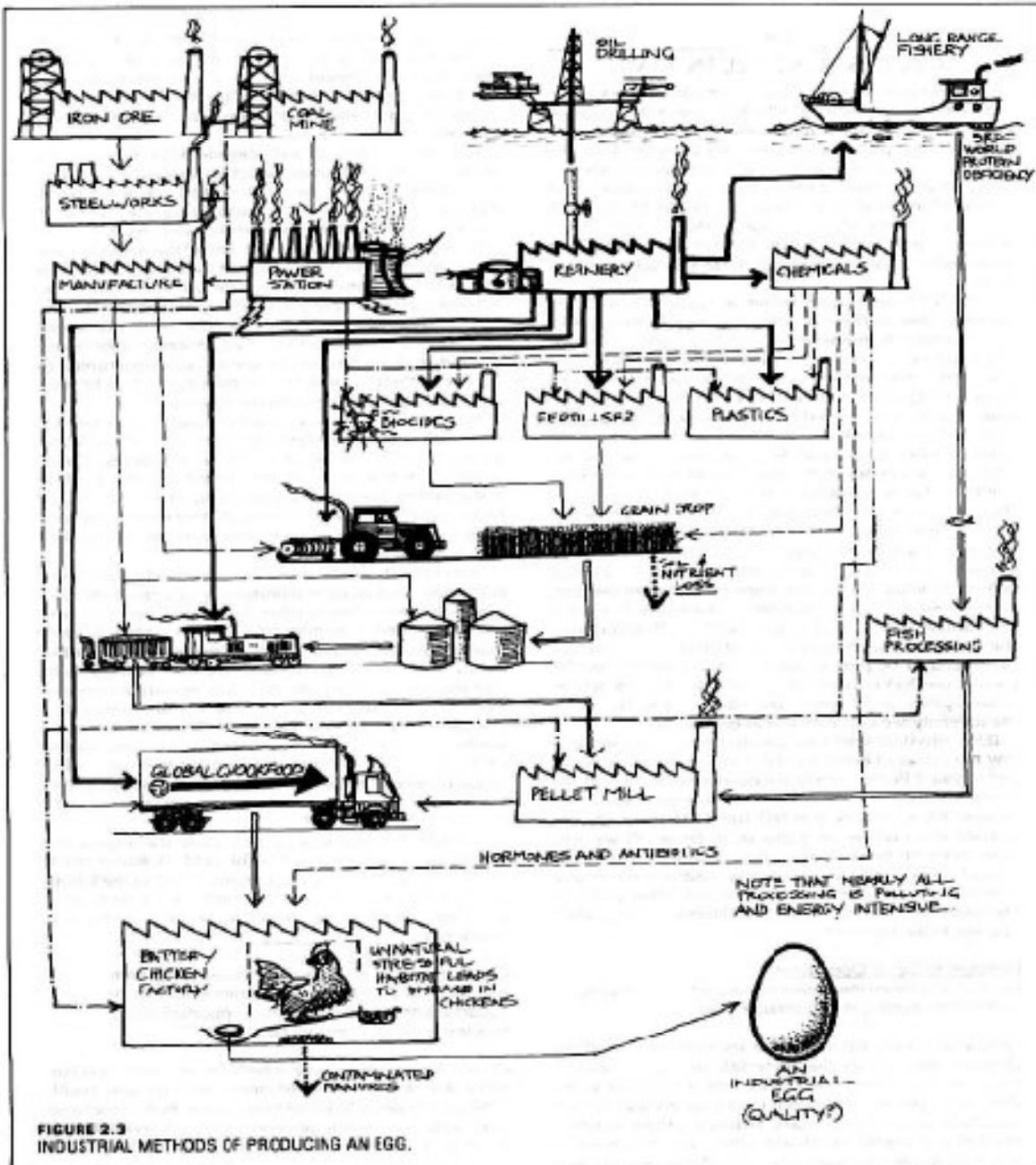


FIGURE 2.3
INDUSTRIAL METHODS OF PRODUCING AN EGG.

THE MODERN SUPPLY CHAIN

The good thing, if you want to see it that way, is that it creates a lot of work. All those invoices, shipping papers, customs papers, all that point of sale work, advertising, merchandising, all those companies, all those meetings.

The negative side – again if you are inclined to see it that way – is that all those steps add absolutely little value. In the case of the egg they probably reduce quality.

Anyway, these giant chains only work when energy is cheap and wages and taxes are low in certain areas.

And that is about to change.

Diagram: Bill Mollison, founder of Permaculture.

“Our central survival task for the decades ahead, as individuals and as a species, must be to make a transition away from the use of fossil fuels – and to do this as peacefully, equitably, and intelligently as possible”. Richard Heinberg

The food supply system, itself a gigantic supply chain, requires huge inputs of fossil fuel. For every calorie of energy in the food you buy, ten calories of fossil fuel are used to get it to your table.

Unless the food production system can become a lot more local, we could be faced with a humanitarian crisis on our hands as food supplies fail to get to people hampered by scarcity of fossil fuel supplies.

There are plenty of examples of thinking that transitions away from this giant fossil – fuelled, polluting and degrading supply chain complex we have become entangled in.

The eco-village where I live has a bit of forest. Felling the trees and selling them will give very little money. If we want to build in wood, we have to buy ready cut wood from a building yard. And wood is expensive.

Another example. Near our eco-village they farm deer. The deer roam freely on the estate and mostly live on what grows there. You can get deer meat delivered direct to your freezer. Natural, simple and convenient.

Look for: transport costs rise as fuel costs rise, and as wage differences get smaller. Businesses rethinking their supply chains.

Think: fewer transports, fewer manufacturing steps, and a better deal for the customer.

Look for opportunities that reduce supply chain and number of energy intensive steps. Look for opportunities to increase food security.

Goodbye consumer

part four

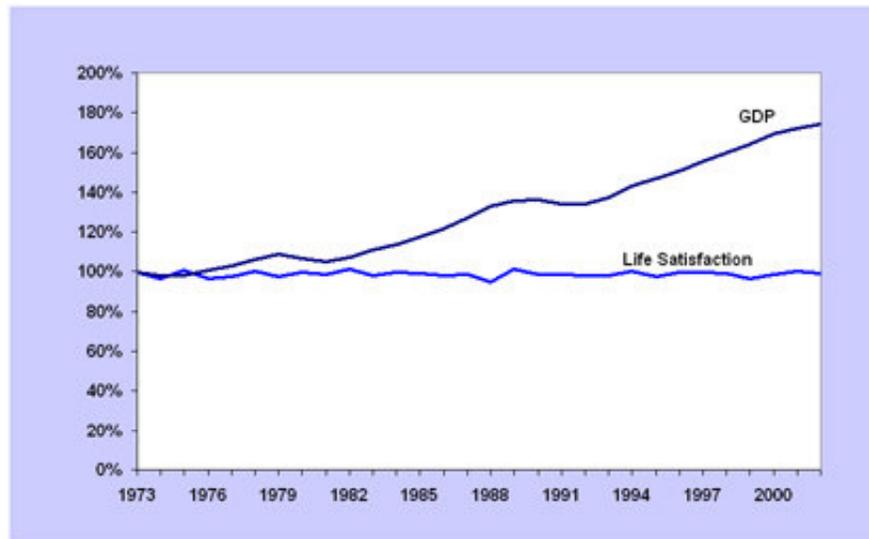
They will have neither the money nor the inclination to buy products. They will want to invest in sustainable solutions that create basic security for themselves. They will look to security from community solutions.

Business As Usual is getting a bad reputation. It doesn't make you happier and it creates an iron trap for you,

What constitutes a good deal for the customer and a good business proposition for the business are about to change.

Goodbye selling small quantities often. One of the sweetest types of deals of the 20th century has been where the customer buys some kind of equipment that they need to regularly purchase supplies for – from you. Little and often. This means the customers can get regular use out of their machine and you get regular income and regular customers. Sweet.

So why is Mr Oil, My Long Supply Chain and Mr Economic growth going to upset that? The answer is that consumers are wising up. Think about it. What do most consumers get for being loyal? Well if it's cigarettes they get lung cancer, and if it's washing up liquid they get higher prices. And if it's a car – they get a rusty car.



Source: British Sustainable Development Commission

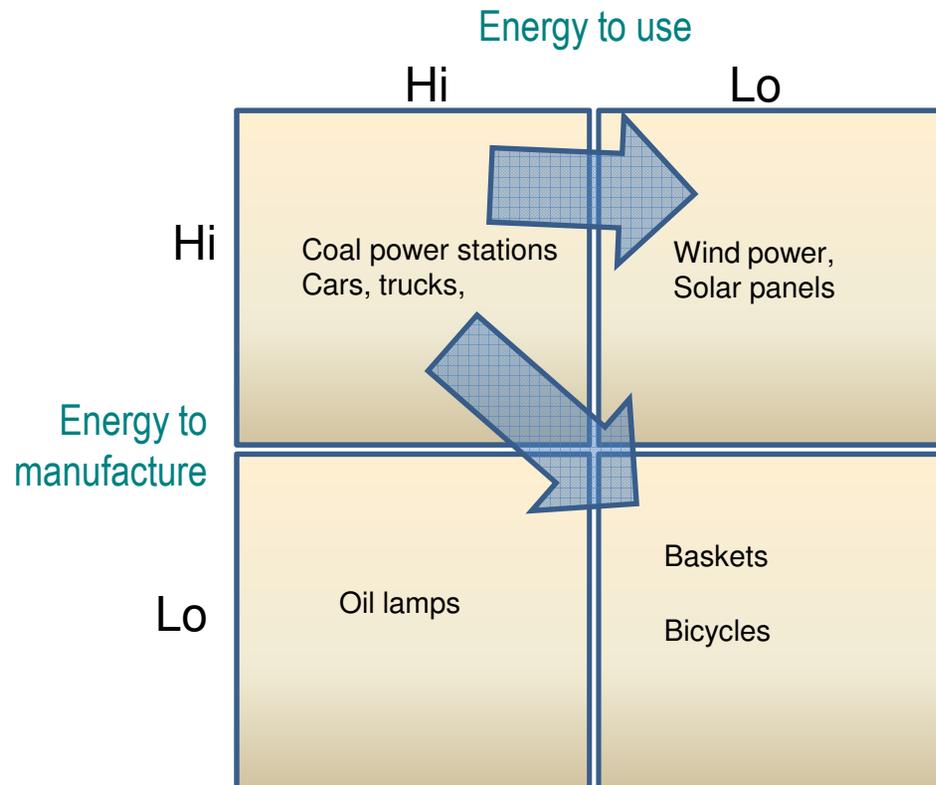
You see – there has been so much hard selling of the fact that everyone should be in business, that you should invest every penny you got, buy stock here, funds there, that consumers are starting to wonder why they have to toddle down the shops for their daily wares, paying ever increasing prices, when they can invest in businesses, or even set up their own backyard production.

The thing is, it is starting to show and they are starting to feel it as oil price hikes, and global slowdown means that buying power is slipping.

In fact, the very idea of consumerism, one of the pillars of Business As Usual, is getting a bad reputation. It doesn't make you happier (there is a lot of research available on that one) Furthermore, it creates an iron trap for you (not my words, but this comes straight from the mouth of the British Government's Sustainability commission).

Aim for better deals, where consumers invest and get long term benefits. (Read more about this in my **GUIDE TO SUSTAINABLE BUSINESS** – coming soon!)

High energy prices mean services migrate into new categories



This matrix divides products and services up depending on energy required to make and run them. What will happen as energy prices rise? Products that require a lot of energy to make and run will be less affordable. These “make once, run expensively” types of products will migrate to the quadrants on the right. The “make once, run cheaply” or “make cheaply, use cheaply” will take over.

The same thing with products that are inexpensive to buy, but have a high running cost. Already oil lamps are being replaced in Bangladesh by solar panels, which cost more in the beginning, but pay off over a longer period. This is possible thanks to some clever financing from Grameen Bank, where users pay the solar panels in instalments equivalent to what they would pay for the oil. Instead of an empty lamp, they get a working solar panel.

Aim to migrate your purchase or product offering. Think about it today.

Environmentally- friendly, may not mean sustainable.



Think about this: when you hand over your money, in any transaction whatsoever, the ideal would be where the transaction benefited both parties in that it improved the conditions for one or more of the basic foundations of sustainability

The foundations are:

- Economic soundness
- Promotion of health
- Eco-system health
- Thriving community

For example I give you money for some herb tea. This improves your economic stability whilst I get something that is health – promoting.

Fine so far. But if that is to the detriment of the other factors, like if it degrades the environment, or undermines the community (say by some poison produced in the manufacturing process) then you are not really doing a good deal - for yourself or anyone around you.

This is the position most businesses are in today, and why most transactions bring with them some element of counter-sustainability. For example, they may:

- Emit greenhouse gasses from the supply chain
- Reinforce systems dependent on non-renewables
- Replace a worker with a machine, driving unemployment
- Be harmful for your health

So while a marketing message may be “this product is green “ it may just be marketing speak.

Businesses are set up to make money for the owners and this must come first. Owners and workers have families to feed, after all. Stuck in this trap you end up promoting one thing, but will be negatively affecting others. The system is set up that way, and as long as we accept it, it will continue until it undermines us so badly we will be forced to do something about it.

I just hope this situation never arises as it may be too late to ensure the nearly seven billion on the planet get a decent chance at having a square meal every day.

Not all transactions are counter sustainable and this is the point I want to make: **concentrate on carrying out those purchases, investments, product offerings etc that are pro-sustainable.** As the tide of opinion changes, as restrictions increase, you will find you are on the right track.

Capital as we know it will dry up. Enter the alternatives.

part five

Negative growth prospects means people will be less inclined to risk money and lend capital to listed companies. Especially those where the only asset is a brand name. This signals the end of the large multi-national corporation as a way of investing for pensions. Alternatives will be based on real assets.

“The current madness, of course, is this expectation that the economy will just magically return to full throttle. This is not going to happen, of course”

James Howard Kunstler

If economic growth dries up, so will capital. Risk capitalists are chary about lending a lot of money in a declining market. Without capital, these large supply chains I talked of earlier will cease to function, as everybody will be asking for cash first. It would be like you have to buy the car, hand over the money and then sit and wait as someone extracted the iron ore to make the first screws. This has already happened with grain shipments, which dried up a while as no bank was willing to lend the money needed for the boat to set sail.

People will want to save more in a recession, so with less consumption going on, there will be less economic growth, and less reason to lend money.

This is unfortunate, because giving up the industrial age will mean we can all probably relax a little, do the things we love, and it would be good if we could use the money we have to invest in new, fossil energy independent solutions and technologies.

I said this before, but just to emphasise once more, this really is the beginning of the end of the way of things as we know them. So what will come in its place? As I see it, capital might run out, but not people's innovativeness.

Maybe even money will cease to be important. After the fall of the soviet union, money played only a symbolic role in the lives of the workers, who bartered and lived off vegetables they had grown themselves.

Look for: business opportunities that do not require a lot of loans, or companies that are debt-free.

Think: investment not consumption, alternative financing methods, asset-based financing and crowd financing. Localization of business, keeping money in the area from leaking out. New forms of cooperatives.

Look for opportunities to invest in food security and other basics.

And while all this is happening...

There are people who like to point out all the problems, and in a way, I'm glad they do. But I think there should be some people who point out the good, the beautiful, because this life, despite all the problems, is beautiful. And sometimes, caught up in our troubles, our turmoil, our ideas, our concepts, we forget what we have been given. Who are we?

Prem Rawat

Acknowledgements and resources

Acknowledgements

I'm grateful to a lot of people for analyzing the situation and not giving up, even when told they were not experts so they could never achieve clarity.

Dave Pollard for his blog "How to save the world" Richard Heinberg and others at the Post Carbon Institute. All of the researchers at the Uppsala Carbon depletion program in Sweden and people like Oscar Kjellberg at JAK Bank and Ekobanken for patiently explaining alternatives to debt based financing.

Resources

For more on oil:

- FOREIGN POLICY's oil issue
- <http://www.foreignpolicy.com/issues/174/contents>
- Association for the Study of Peak oil
- <http://www.peakoil.net/>

Oil and economic growth

- Biophysical restraints on growth
- http://www.peakoil.net/http%3A/%252Fwww.bu.edu/cees/people/faculty/cutler/articles/EOLSS_Biophys_sys.pdf
- [Richard Heinberg](http://www.richardheinberg.com/) <http://www.richardheinberg.com/>
One of the leading researchers, speakers and writers on peak oil.

The new face of consumerism

- The prosumer <http://en.wikipedia.org/wiki/Prosumer>

Supply chains

- The Earth Policy Institute <http://www.earth-policy.org/>

That prosperity does not need economic growth

- <http://www.sd-commission.org.uk/publications.php?id=914>

Money

The End of Money <http://www.chrismartenson.com/>

Coming restraints on fossil fuel use to save climate

- <http://RealClimate.org>
- <http://www.ipcc.ch/>

The EU offers good material on Social Economy

- http://ec.europa.eu/enterprise/entrepreneurship/craft/social_economy/soc-eco_intro_en.htm

When you spend more on fuel than food, an economic contraction will follow. *Jeff Rubin.*

For more on oil:

- FOREIGN POLICY's oil issue <http://www.foreignpolicy.com/issues/174/contents>
- Association for the Study of Peak oil <http://www.peakoil.net/>

Oil and economic growth

- Biophysical restraints on growth
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- The new face of consumerism
- The prosumer <http://en.wikipedia.org/wiki/Prosumer>
- See the book *"Why Your World Is About to Get a Whole Lot Smaller – Oil and the End of Globalization"* By Jeff Rubin

Supply chains

- The Earth Policy Institute <http://www.earth-policy.org/>

That prosperity does not need economic growth

- Prosperity without growth? The transition to a sustainable economy by **Professor Tim Jackson**, Economics Commissioner Sustainable Development Commission
- http://www.sd-commission.org.uk/file_download.php?target=/publications/downloads/prosperity_without_growth_report.pdf

Money

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<http://www.yesmagazine.org/issues/the-new-economy/why-this-crisis-may-be-our-best-chance-to-build-a-new-economy>

Coming restraints on fossil fuel use to save climate

- <http://RealClimate.org>
- <http://www.ipcc.ch/>

The Eu offers good material on Social Economy

- http://ec.europa.eu/enterprise/entrepreneurship/craft/social_economy/soc-eco_intro_en.htm