Peak Oil & Deficiencies In Risk Assessment Methodologies

Contributed by Charles Cresson Wood
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Editor's note: This technical analysis nails the failure of government and corporate culture to address peak oil, laying bare the shortcomings of planning only for short-term goals. He has welcomed my putting his analysis into the broader context, which I do in a comment at the end. - Jan Lundberg

Serious and sustained disruptions caused by peak oil -- up to and including total systemic shutdown -- face the food, water, transportation, and other complex systems
found in modern industrialized societies.

Yet the methods now used to perform risk assessments are too short-term, and too focused on traditionally encountered threats, and too single-organization-centric, to include peak oil as a legitimate threat worthy of serious consideration. This article briefly covers how the approaches used for risk assessment, now found in modern businesses and modern government agencies, must change to properly understand both the seriousness and the pervasiveness of the peak oil threats now facing us. Only after we sufficiently understand the nature of these threats can we have any sort of a grounded conversation about the necessary steps to:
(1) shift these complex systems to alternative energy sources,
(2) alter existing systems to be less energy consuming,
and (3) avoid and/or mitigate the many adverse impacts of peak oil that now loom on the horizon.

Short-Term Perspective: A few days ago, this author attended a lecture delivered by a seasoned senior manager at a Fortune 500 company. This executive described the company's risk management system, including the process that the company uses to determine which risks are worthy of top management attention and budgetary recognition. This process was considered "best of breed," and from the audience the presenter received many positive comments during the question and answer session. Nonetheless, the process described had one serious flaw that prevents it from even considering peak oil as a threat: the time horizon for the threat evaluation process was one year. For each prospective threat, managers evaluate the likelihood, or probability if you prefer that word, that the threat would take place within one year. Peak oil is widely considered to be a concern far into the future, perhaps a decade, perhaps several decades, out into the future. And so it was no surprise that peak oil was not even mentioned as a threat to be examined.

Granted, some of this problem has to do with deficient awareness campaigns mounted by government and other sources considered to be authoritative. The effects of peak oil no doubt will be felt much sooner than most members of the public anticipate. Nonetheless, even if the general public shifted the expected arrival date when adverse impacts of peak oil were felt, to be a date much closer to the present, this date would still in most cases be outside the time horizon used by this risk assessment methodology. The widely encountered short-term management decision-making time horizon thus blocks us from taking prudent action in response to peak oil. This is especially worrisome because it took many decades for us to build our current petroleum-dependent systems, and it will probably take many decades for us to retrofit these systems to be reliant on other forms of energy.

This author's 30+ years of consulting in technology risk management, and his consulting experience with over 125 different organizations, all point to this short-term thinking problem being pervasive, not the unique oversight of this highly respected company. A Ph.D. dissertation by James R. Young, titled "An Evaluation Of The Readiness Of UK Companies For Disruptions In Energy Supply," comes to similar conclusions. Specifically Young indicates that there are serious deficiencies in current risk assessment methods used by business, and that these deficiencies blind top managers to the very serious risks posed by peak oil.

Fixed Threat Lists: Another serious problem with most of the risk assessment methods now being used in government and business has to do with scripted lists of acknowledged threat types. Rather than thinking "outside the box" (in creative ways), many of the people performing risk assessments today are simply following scripted procedures, so as to meet

contractual, regulatory, or legal requirements. The approach they use is driven largely by compliance concerns and auditor findings, rather than by overall risk management. As a result, the people performing risk assessment are often focused on proper execution of the process, preventing management liability, and other issues tangential to the truly important focus on which they should be riveted: deeply understanding and appropriately preparing for the full spectrum of risks that now face their organization.

Peak oil has never happened before, so the people who are performing risk assessments will not find it on the list of threats that should be examined when performing risk assessments. Ironically, threats which pose much less of a financial risk, such as pandemics, are routinely evaluated by these risk assessment approaches. It is additionally ironic that threats that are much less likely, such as a serious incident of workplace violence, are also routinely included in these risk assessment processes (peak oil is a certainty, the only chronological uncertainty is when it will happen and when its impacts will be felt). Organizations must rewrite the list of threats to be evaluated so as to incorporate peak oil. Some organizations are now including climate change on their list of threats, but peak oil is still almost always missing. This is further ironic in that most organizations will feel the impacts of peak oil much sooner, and much more painfully, than they will feel the impacts of climate change.

Single-Organization-Centric: A third problem with existing risk assessment methods involves a single-minded focus on the impact on the organization in question. Traditional risk analysis methods look at a range of scenarios, such as a major fire in an office building, and the impact of such an event on the organization in question. But the serious risks posed by peak oil do not come from any one specific event like a fire. They arrive over a long period of time, and they come from the interaction of many parties, not just the internal activities of a single organization. Likewise, these impacts are cumulative and multi-directional in their influence. For example, the peak oil event that happened last month to a supplier very well may affect what happens this month to the reader’s organization. Most current risk assessment methods do not embrace this multi-organizational complexity.

Peak oil is thus a systemic threat, and it needs to be modeled accordingly. Aside from the US Department of Defense, and a very few other sophisticated organizations, most have not taken the time or set aside the resources to look at the way that many different organizations will respond to peak oil, and how those responses will make problems better or worse. Such modeling efforts are badly needed in order to increase our understanding of peak oil, how to prepare for peak oil, and how to mitigate the adverse impacts of peak oil.

Sudden Changes: The traditional management approach to serious threats that we don’t know how to address has been to wait until a crisis takes place, and then undertake some intervention. The United States Congress provides a good contemporary example of this management approach. For example, consider the financial system liquidity crisis that began in 2008, which by the way is considered by many economists to be the worst financial crisis since the Great Depression of the 1930s. This crisis was not proactively addressed by Congress, even though there were many warnings of serious problems. These ominous warning signs included rapidly rising default rates on sub-prime mortgages, a real estate price bubble, widespread predatory lending, and conflicts of interest on the part of those who rated mortgage-backed securities. In spite of these and other alarming and quite public red flags, Congress did nothing until a systemic failure was upon us.

In defense of the members of Congress, it is true that the world financial system has become incredibly complex, and many members of Congress probably did not fully appreciate the risks. Without markedly improved risk assessment approaches, we can expect that top management in business and government will act the same way when it comes to peak oil. And the public will probably let them get away with it because it will then be true that they did not truly appreciate the risks of peak oil.

Unfortunately, this evolutionary, crisis-management approach, where we try to pick-up-the-pieces after serious damage is already done, won’t work well for peak oil. As was the case with the recent financial crisis, we are now dealing with

systemic risks found in many inter-dependent complex systems. The traditional ways of thinking about our complex Internet- and computer-enabled infrastructure will not work because this infrastructure has changed so much in the last few decades. If management tries to use traditional approaches that are incompatible with the new complex computerized and tightly knit systems, these efforts will be ineffective or will fail. Just as the US economic embargo of a country such as Cuba is increasingly ineffective in the modern interconnected world, so too will traditional tactical approaches be ill suited to deal with the problems of peak oil.

In addition, management in government and business is currently far removed from the daily activities of these system components. This distance means that that management does not understand how quickly or how easily a systemic collapse could take place. Likewise, this lack of understanding about the underlying processes means that management believes that we can go back to the way things were. But if we have significantly less resources with to build new systems, and if we have significantly less energy on which to run these new systems, we cannot simply go back to doing things the way they were done in the past.

Much Better Modeling: If business and government do not promptly invest in developing new and more sophisticated risk assessment models -- that reveal the reality of our complex interconnected systems in the food, water, transportation and other areas, and how these will be affected by peak oil -- we run an additional and largely unappreciated risk. Of course, without these improved risk assessment approaches we will suffer many adverse impacts of peak oil that could have been avoided or prevented if we had understood and proactively dealt with the risks. But we need to understand that, under pressure, and facing a widespread and painful crisis, management will be likely to make impulsive, ill-informed, and maladaptive decisions.

For example, in the midst of the oil embargo of 1973, the US government imposed price controls. Economists now generally agree that price controls further restrict the supply of a particular commodity like oil. And so the US government actually made the 1973 oil crisis worse thanks to price controls. Without much better risk assessment models, we can expect that similar decisions will be made in response to peak oil.

Comment by Jan Lundberg of Culture Change:

Anyone should appreciate this rundown of the failure of risk assessment as commonly practiced. In our efforts to understand the psychology of resistance to accepting peak oil as an historic crisis of unprecedented proportions, do we have to be concerned about Big Business's ability to survive peak oil? Few of today's large corporations will be needed after the crash, although petroleum-dependent populations are indeed vulnerable to corporate failure. An example is agribusiness: needed now, but it should be minimized ASAP, as it can't last much longer.

Most corporations are not necessary for real needs when they sell consumer stuffs nationally or globally instead of serving local communities with locally produced items that help local economies. The big corporations mainly provide nonessential services. It is increasingly clear that large systems including the U.S. government are unable to lead, when it comes to the ascendancy of local economics in the future. I wish this were not so, but the track record of the U.S, such as in the Gulf of Mexico region -- Katrina, Rita, and the BP Blowout -- is dismal, as the peak oil crisis develops into petrocollapse.

In the author's discussion of food, water, and transportation, these sectors are not being dealt with meaningfully by large organizations so far. But this neglect will prove worse after the crash. The inability to salvage those industries and systems will leave locals responsible who also are for the most part failing utterly to plan for peak oil. But even if better planning on all levels were to begin in earnest now, crash or collapse will happen. If the risk assessment planners could do their job as best they can, this will still not forestall or mitigate collapse by much. Large and complex systems will fail no matter what.

The example of the 1973 oil shock is good, but we are far more vulnerable now. The Hirsch Report for the U.S. Dept. of

Energy in 2005 makes clear that the adverse impacts of peak oil could have been avoided only if we had understood and proactively dealt with the risks by around 1990 at the latest. (Some of us knew this quite well before we heard of Robert Hirsch.) To read the Hirsch Report, formally called "PEAKING OF WORLD OIL PRODUCTION: IMPACTS, MITIGATION, & RISK MANAGEMENT" see Oil_Peaking_NETL.pdf

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