The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

The Future of Medicine in a Time of Resource Deprivation?

Posted by Prof. Goose on January 12, 2007 - 12:29pm
Topic: Sociology/Psychology
Tags: dan bednarz, disease, economics, health care, medicine, oil, paul roth, peak oil, public health, who [list all tags]

This is a guest post by Dan Bednarz and Paul Roth.

Recently, Energy Bulletin posted a summary of a UPI story that described a WHO (World Health Organization) study projecting global mortality and disease patterns in developing countries to the year 2030. The UPI story is titled "Analysis: Wealth Brings New Health Threats," and concludes:

> As the level of development worldwide increases, the greatest threats to health will shift from infectious diseases to non-communicable health problems like smoking-related illness, obesity and depression.

At first glance, this story illustrates how economic growth and associated consumerism create "diseases of affluence" (such as heart attacks, stroke, obesity and diabetes). As these illnesses are already rampant in the Western world, their increasing prevalence supports the notion of a reduced marginal rate of return on health expenditure, once basic public health measures (such as sanitation, safe drinking water provision, and mass immunisation) are implemented.

But while this is a subject worthy of discussion in its own right, it is not what caught our eye about this study. Let us explain how peak oil and associated ecological crises are of the utmost importance to the future of global health.

WHO Study

The authors used a range of health and economic indicators to predict global patterns until 2030 for over 200 countries. They based their research on an earlier WHO paper that had attempted the same analysis.

Their basic premise was that continued economic growth would improve health in the same way as it had in Western countries, but also cause a swing away from infectious disease to what they term "non-infectious" ones (for example obesity or motor vehicle accidents).

Unfortunately they did not question their assumption of business-as-usual, nor did they acknowledge that currently developing countries might learn from, and avoid, some of the mistakes made in the past. There were several other methodological issues, which by themselves introduce significant uncertainty into the study conclusions:

1. No consideration of the emergence of drug-resistance in HIV, necessitating the need for multi-drug regimens or newer (and more expensive) agents.
2. Examples of both underestimation and overestimation of health burdens in the lead-up study suggests that the underlying methodology of this study could also be faulty.
3. No real attempt to account for emerging bacterial antibiotic resistance.
4. Quantitative and qualitative problems with mortality data from some countries (especially in Africa) were overcome with computer modelling, but while providing data for analysis, it also introduces potential bias into the results (as the quality of the modelling is uncertain).
5. Undue reliance on improved living conditions in sub-Saharan Africa (if this does not eventuate, the main conclusions become negated).

The fallacy of continued economic growth

Allow us to explain how the premise of perpetual economic growth in the WHO report is placed in sharp relief by peak oil and related ecological threats. By this we mean that in a larger context, this study illustrates how public health is unable to conceptualize or address the pressing sustainability issues of our time.

By sustainability we refer to both:

- The maintenance of appropriate technological and social complexity (including economic, political, and social institutions like healthcare); and
- The health of the biosphere that humans are dependent upon for life, but which they are, at the same time, endangering through their current practices to continually increase said social complexity.

Since one of us (DB) works in the nascent field of energy and healthcare (which most public health academics regard as a "fringe" topic, but is obvious once one understands peak oil in the metaphorical senses of E.O. Wilson's Bottleneck and Meadows' Limits to Growth), we were astounded by the naïveté of the WHO to only construct scenarios of positive growth for the year 2030.

Couldn't things be worse by then? Wasn't one (or even several) bad-news scenarios worthy of consideration, given the sustainability issues the world faces?

As those who read Energy Bulletin or The Oil Drum know, by 2030 the energy picture looks grim - we almost assuredly will be at the end of the fossil fuel era as the mainstay of energy supply to human life.

At best, we assume, humanity will be struggling to create energy systems that maintain complexity and do no further harm to planetary ecosystems. At worst, sea level rises may be flooding cities around the world and literally force-relocating human and animal populations; and human society may be economically devolving.

Dan Bednarz emails the WHO

One of us (DB) decided to find out what the WHO knew about peak oil and climate change, and whether or not they had considered these factors in their study. What follows are excerpts from Dan's investigations, including an email exchange with the study's author.

DB:

> I have read [the UPI story] "Analysis: Wealth brings new health threats," ... Can ... you tell me if climate change and the coming scarcity of oil and natural gas were variables in this analysis?

Study author:

> The projection methods primarily used historically observed relationships between economic growth and cause-specific mortality together with World Bank projections of income per capita. The coming scarcity of oil would only have been taken into account to the extent that it factored into the World Bank projections of income per capita. Climate change was not explicitly modeled as an input.

He directed DB to the full report which reads:

> [T]he researchers used projections of socio-economic development to model future patterns of mortality and illness for a baseline scenario, a pessimistic scenario that assumed a slower rate of socio-economic development, and an optimistic scenario that assumed a faster rate of growth.

Slow growth is "pessimistic" and, to repeat, negative growth is not considered. Why? Because the past is prologue:

> These "aggregate models" ..., use the previous trend of the variable of interest as the basis for predicting its future value.

If (probably when) peak oil and related "limits" issues damage the biosphere and human economies in the coming years, public health forecasters will no doubt exclaim, "We Never Saw It Coming." Consider in this context this qualifying comment in the WHO report:

> If the future is not like the past – for example, through sustained and additional efforts to address the [U N] Millennium Development Goals, or through major scientific breakthroughs – then the world may well achieve faster progress than projected here, even under the optimistic scenario. On the other hand, if economic growth in low-income countries is lower than the forecasts used here, then the world may achieve slower progress and widening of health inequalities.

So the caveat is that the future might be even better than the report estimates.

The blind-spot of academic public health

Along with astonishment we felt despair about this report: Just a few weeks earlier at the American Public Health Association meetings in Boston, DB had discussed how the leadership of public health was conceptually blind to the unprecedented population-level health threats posed by peak oil. And here was yet another example purporting to be a guide to health policy-making for the next three decades.

Unfortunately, many academic public health researchers work in settings that encourage them to avoid the discontinuous change that awaits the world. Instead they are busy working away at

"normal science" – some of them of great importance and merit – projections that literally ignore the driving forces of healthcare in the 21st century. In other words: They assume that technological progress and economic growth will always be positive.

Public health is supposed to use its foundational conceptual tools of epidemiology and biostatistics to perform its core functions of "assessment, policy development and assurance," in plain English, to anticipate, detail and respond to threats. In the case of peak oil – and the "bottleneck" and "limits" matrix of related problems – the discipline is virtually silent. Why? Here's what DB said at the APHA convention that also appears to fit this WHO study:

- **Brains:** Humans appear to have a cognitive bias of attraction to optimism and repulsion from "worst-case" thinking and scenario building. For instance, only 20% of those who may carry the genetic predisposition for Huntington's Disease take the test to find out – 80% would rather not know despite the consequences of remaining ignorant.
- **Beliefs:** As social creatures we naturally participate in various institutions that establish our values and beliefs, and criteria of evaluation and judgment. It is quite difficult for an individual to "think independently" of these institutional memberships, especially about worst-case outcomes that run counter to cultural values, in this case that of economic growth and technological progress. Put differently, contemplating the limits to growth calls into question our national identity --belief in the American Dream and unbridled optimism. Nothing short of physical survival itself –which we humans collectively may face in the coming decades-- is more important to a human being than a sense of identity. This is a critical reason why so many people –even in public health and medicine-- dismiss such concerns as peak oil –typically without so much as a wit of evidence-- as the latest disaster trope or quasi-religious revenge fantasy.
- **Bureaucracy:** Organizational hierarchies allocate status, power, rewards, and other incentives; and also control communication and information patterns. Bureaucracies tend to rigidify and lose sight of their mission. Studying bad news scenarios does not advance many careers; and it certainly increases the chances of derailing them. Hence the WHO study group issues a report about the future that ignores unavoidable driving forces: energy, global warming, and depletion of other resources such as water, forests, and so on.

Peak oil and third world health

So why does peak oil make it necessary consider negative scenarios for the of future global health? Consider the following points as you contemplate the fate of people living in Sub-Saharan Africa and other populous but relatively poor nations:

1. Humanitarian aid is currently dependent on oil-based vehicles to transport materials and personnel.

• Current Western agricultural surpluses that underwrite food aid efforts are subsidised by fossil-fuel dependent farming methods.
• Increasing oil prices will decrease Western disposable incomes and government surpluses (thereby reducing donor funding).
• Oil price increases in developing countries will consume progressively larger percentages of already meagre household incomes, thereby decreasing the amount of money available to buy food, medicine, and other essentials. This trend is nascent.
• Construction of large-scale infrastructure (eg dams, bridges and roads) currently requires oil-fuelled machinery and materials with high embodied fossil energy.
• Existing and currently planned large infrastructure designed around the availability of cheap oil

will be rendered obsolete, and may fall into disuse or disrepair due to escalating operating and maintenance costs.

- Natural resource development (like forestry or mining) will become more expensive and progressively more difficult for third world countries, as such activity is currently heavily subsidised by oil.
- Resource wars may become more common.
- War, water shortages and crop failures may prompt mass migrations.

Conclusion

Whether due to peak oil, limits to growth, methodological issues or some combination of these factors, any project with an aim like this WHO study must contend with so many variables that the task becomes insurmountable if one wishes reasonably to consider the future.

The only levelheaded, policy-relevant way forward is to develop a system that has flexibility to deal with an array of scenarios, from positive to negative. And since the current health care systems of many Western countries are cumbersome and handicapped by institutional inertia, they must somehow metamorphose if our society is to retain effective and affordable medical care.

Acknowledging this web of complexity, as a first step we need to know how vulnerable our current medical systems are to oil scarcity, what we can do to reduce that vulnerability, and how long it will take to provide adequate and affordable health care to entire populations. To achieve those aims, we need a "Hirsch Report" for both public health and acute (hospital) care.

~~~~~~~~~~~~~~~~ Editorial Notes ~~~~~~~~~~~~~~~~~~

Dan Bednarz, Ph.D., is a former Associate Director, Center for Public Health Practice, University of Pittsburgh Graduate School of Public Health (until 2005) and is now President of Energy & Health Care Consultants.

Paul Roth, M.D., is a family doctor practising in an Australian city. He has postgraduate qualifications in acupuncture and integrative medicine, a diploma of medical hypnosis, and has practised reiki for several years. He is interested in peak oil and what it might mean for health care. He hopes to raise awareness in the community of these issues, and create a dialogue about possible futures for peak oil medicine.

Check out Paul's new blog Peak Oil Medicine for some thoughts on health care options for a scarce oil future.
~~~~~~~~~~~~~~~~