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Paul R. Epstein: Finding the green solution to global climate crisis

By Paul R. Epstein -

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With weather turbulence turning heads on Wall Street, an emerging call among evangelicals for "creation care" and a barrage of energy bills on Capitol Hill, are we about to get serious about climate change? Trimming energy use 60 percent to 80 percent, while priming the economy and preserving the environment is the task we face.

California is, as usual, the pacesetter, and can invigorate the Northeast Regional Greenhouse Gas Initiative; and other governors are grabbing hold of the mainsheets. But we need a national plan, and may have just months before the next presidential election to craft a solid one. What follows is a suggested framework for overarching principles and financial and policy instruments for implementing the plan.

Comparing life-cycle costs -- health, ecological and economic -- of proposed solutions can separate safe solutions from those warranting further study and those with prohibitive risks. Those serving multiple goals merit a high rating.

Energy conservation, smart growth; a smart grid; plug-in hybrids; heat capture from utilities (known as cogeneration); green buildings; plus walking, biking and public transport can get us halfway there -- and save money.

Distributed generation -- power produced near the point of use -- with solar, wind, wave, geothermal and fuel-cell power can be fed into existing grids -- and generate income. (And geothermal heat pumps provide air conditioning.)

Where energy is scarce, such systems can pump water, power clinics, light homes, cook food and drive development. Clean distributed generation power improves resilience in the face of weather extremes (adaptation), reduces carbon emissions (mitigation) and creates jobs.

All fossil-fuel-based methods demand the utmost scrutiny, for their exploration, extraction, refining, transport and combustion are taking an enormous toll on human health, and ecological and social systems. Burning coal and sequestering CO2 underground may work in restricted areas; but there are risks of lead and arsenic leaching into groundwater, and limestone fractures causing leaks and releases in quantities toxic to plants and animals.

Nuclear power is under consideration for a revival -- even among some environmentalists and scientists, desperate for a solution, as Earth's ice cover dissipates and wind patterns shift. But replacing carbon pollution with radioactive pollution is hazardous. Safety may be solvable; but security and storage may prove intractable. Meeting a significant portion of energy needs with nuclear power would generate enough radioactive waste to fill one Yucca Mountain (the long-proposed site in Nevada for waste) every 5-10 years; and we've yet to resolve the first.

Biofuels hold promise. But converting corn to ethanol may yield no net energy gain, and while sugar ferments without added energy, large plantations can deplete soils and groundwater. Using range grasses, farm waste and grease does not displace edible crops, and recycling garbage helps with disposal. But burning anything organic produces CO₂ and volatile organic compounds, which increases smog.

Green buildings with green environs create a critical syzygy, aligning clean energy with sustainable forestry and green chemistry; the last eschewing petrol-based carcinogens in the production of carpets, paints, fertilizers and pesticides.

For central and regional power -- to complement distributed generation -- the U.S. Energy Department projects that wind farms in the Plains, solar thermal arrays in the Southwest and deep geothermal in the Northwest could power the grid. And while it is unrealistic to think we can meet our energy needs in the short run without some fossil fuel use, natural gas offers the cleanest burning, back-up source during the transition.

To make all this happen, corporations can -- and many have begun to -- change their products and practices. Financial institutions -- with long-term perspectives -- have a pivotal role to play in redirecting investments and insurance.

But governments must provide the incentives and the infrastructure. Credits for clean-tech industries, progressive procurement practices (e.g., for hybrid and electric car fleets) and tax benefits for commercial models that defray upfront capital costs for distributed power generators are among the carrots needed to launch infant industries and drive market shifts. Aligning regulations and rewards -- and dismantling financial and bureaucratic disincentives -- can help erect the necessary scaffolding for the low carbon economy.

Fortunately, forces are converging. Concerned capital is emerging, with companies worried about escalating damages and missed opportunities. But the opportunities for building real wealth (unlike the substantial paper wealth that recently evaporated) are burgeoning and a stirred polity is demanding cleaner practices, products and produce.

Finally, we must rejoin the international community and sign the Kyoto Treaty. In its second phase (post 2012) a Global Fund for Adaptation and Mitigation (climate stabilization) on the order of 1 percent of world output -- \$350 billion a year, as called for by the authoritative Stern Review -- would be a substantive investment in our common future, and can make the clean energy transition a win-win-win for energy, the environment and the global economy.

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