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## A Long Green View

Keiretsu Forum cleantech chairman Jon Bonanno identifies four long-term trends and backs them in a new self-funded venture called Principle Power.

by: **Jon Bonanno**, president of [Principal Power](#) and chairman of the [Keiretsu Forum's](#) Cleantech Investment Committee

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*The following opinion piece is from an independent writer and is not connected with Greentech Media News. The views expressed here are those of the author and are not endorsed by Greentech Media.*

As a close first-hand witness to the destruction of the World Trade Center -- standing in my downtown New York office, one block from Ground Zero -- I was particularly impacted by the events of Sept. 11, 2001. The message and motivation of the tragedy, although layered with politics, religion and ideology, boil down to one thing: our reliance on fossil fuel. From that moment forward, I have become a student of global energy and have supported various efforts for decentralized, renewable and nonfossil energy-generation solutions.

After pondering the energy problem from the outside for five years, I decided to leave the IT company I had founded and make cleantech my full-time profession. Last January, I assisted in forming the Cleantech Investment Committee of the [Keiretsu Forum](#), the world's largest angel investing network, and was selected to serve as its chairman. Over the past year, we have seeded 12 cleantech companies with potential solutions for the future and mentored 11 companies in the California Cleantech Open.

But while we have made some progress, we have not yet moved the needle away from fossil usage or significantly changed the energy game. In surveying the cleantech-venture landscape, I found hundreds of national-labs scientists, budding entrepreneurs and reputable university professors trying to "build a better mouse trap," but not necessarily looking at the bigger picture of offsetting fossil usage on a large scale with tools we already have. What was missing was a renewable-energy independent power producer.

With that discovery came the realization that I should be working on the other side of the equation as a cleantech entrepreneur. After all, I have a sizeable network in the space, a personal portfolio of cleantech companies in which I have been a key investor and past experience as a successful startup operator. So, about six months ago, I withdrew to my garage, flipped through my notebook of ideas, brainstormed with peers, did a "sanity check" with my wife and forged a business plan that I am passionate about and that I believe will make an impact now. My new



*Jon Bonanno, president of Principal Power and chairman of the Keiretsu Forum's Cleantech Investment Committee*

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venture, founded just Tuesday, is called [Principle Power](#).

Simply put, the goal of Principle Power is to make projects happen. This means building large-scale facilities to produce clean electricity, desalinate salt water, pump liquids and make synthetic biofuels from renewable and sustainable sources on economic parity with fossil substitutes. The true competition is the cheapest energy option. As Vinod Khosla stated so accurately in a recent conversation, "If we cannot beat the true cost of burning wood, coal or dung, which includes their emissions costs and without subsidies, we have lost."

To meet this challenge, we have identified four areas of focus that aren't being optimally leveraged or expanded today. We believe we can bring about major positive changes in energy security, health, economic growth and geopolitical stability by concentrating on run-of-river hydroelectric-power plants, concentrated solar-power stations, waste-to-energy conversion installations and economical storage facilities for intermittent renewable energy. These areas are bolstered by four cleantech trends I expect to see beginning this year.

With no technical risk, run-of-river hydroelectric projects are attractive because they present both traditional debt and project venture-finance opportunities. These projects offer many fantastic attributes. They provide base-load power to the energy purchaser, are environmentally safe, can be sited near the load and have reasonable capital costs with low operations and maintenance. Additionally, there is clear market-based evidence that successful run-of-river projects yield strong financial returns to their investors.

Building concentrated solar-power plants is another appealing option. Although these projects include some technical risk, they are environmentally benign, produce huge amounts of energy at times of peak demand and can be used for many purposes besides adding electricity to the grid, such as pumping or desalinating water -- especially valuable in arid, sunny desert climates where concentrated solar-power plants are most effective.

A third hot cleantech trend is waste-to-energy conversion, where waste streams are changed into high-value energy products without emissions or additional waste. Waste-to-energy technologies are important as they provide base-load power and synthetic liquid biofuels for transportation and clean up a waste stream.

Finally, renewable-energy storage is a small and growing trend. Although not yet cost-competitive, some very promising technologies are on the verge of being used as a peak-power-shaving tool by independent service operators and utilities. By purchasing and storing multiple megawatts of off-peak renewable energy when demand is low, then supplying it during peak demand times, utilities can use more renewable energy -- helping to meet their renewable-portfolio requirements -- and natural-gas plants built to provide peak power can remain unlit. The key here is in the storage efficiency and the installed cost per megawatt for the storage technology.

The cleantech band marches on, with established venture investors digging deeper into national and international labs, universities and entrepreneurs' garages and new investors climbing rapidly up the very steep and multidisciplinary cleantech learning curve. Over the last year, old-school venture-capital firms and even new industrial brands, like Virgin, have joined the chorus by raising very large funds focused on this emerging sector. With war chests brimming in the tens of billions -- and growing -- and with the sustainable and renewable sector getting crowded, they will need to think differently. In the cleantech race, my best bet is on the four areas outlined above, which I think will be "hot" not only in 2008, but for the foreseeable future.

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