



Rio Grande Tribune

Renewable Energy

www.riograndetribune.org



The Missing Link In Renewable Energy Production

JW Madison, BHA, NFE

Renewably-generated energy----solar, wind, geothermal, bio-fuels and the ocean tides----is finally gaining acceptance and market share in America. Put all this together with a similar revolution in the storage and steady delivery of this energy and just maybe some of us will live to see the relegation of the expensive killers Coal and Nuclear (Fission) to their places in history along side other once-useful artifacts like the buggy whip and the carbide lamp.

There's no denying that our lives are much easier and safer (and probably more fun) after over a century of reliable fossil-fueled electricity. But, as Olive Oyl once said to Popeye, "Too much is enough!". We've got cleaner choices now. Renewables have proven themselves. Which is why writing the following makes me feel a little like the Ebenezer Scrooge of renewable energy.

Having fooled around with wind generators in the early '70's, and having long tried to promote "green" building (and re-building) as an old-house contractor, I'm naturally delighted with the rise of renewables. But; as with most great issue discussions, sizable gaps reveal themselves. With regard to renewable energy production, most of the everyday buzz centers on two extremes of generating capability: small installations serving one household and great big ones serving widespread millions.

These extremes are but two legs of what should be a three-legged energy production stool. Let's gaze at these legs. (See Sidebar).

The Small Leg:

A power plant on every roof! How feel-good and self-sufficiently All-American can you get? But, like hybrid cars and political term limits, this attractive notion reveals significant flaws upon further reflection. These flaws, in my opinion, include lack of efficiency in labor, materials and invested energy per kilowatt realized; including the energy it takes to make, ship and deliver each set of components. There are other problems with this model:

---- These home-size systems cost more than most of us can afford, even with generous tax breaks;

---- They encourage rural sprawl;

---- Sooner or later (probably later), each and every householder will have to face significant repair and replacement of system parts----a kind of energy balloon payment.

The Big Leg:

---- The bigger and more wide-serving any piece of infrastructure is, the more disruption and damage can be inflicted on its dependents by a single natural disaster or act of war;

---- Long-distance transmission of electricity is very expensive in materials and land (aluminum and easement acreage), subject to sabotage and theft (aluminum again) and easily interrupted by storms;

---- High-tension lines are being linked to radiation hazards;

---- A lot of power is lost in transmission, "falls off the wires", as it were. This loss of course increases with distance from the generator.



“City of Albuquerque solar installation on City Buildings costing \$5M part of the Federal Stimulus grant and created 55 green jobs.”

I leave it to the many engineers in this field to study and compare these various size-scale alternatives with respect to factors such as cost in labor and materials per kilowatt realized, efficient transmission, long-term maintenance and reliability, etc; and I hope somebody takes me up on this. I am no engineer, but my contractor’s gut tells me that by adding this mid-sized mind set to the others, we can avoid many of the dangers and expenses of operating primarily Real Big or Real Small.

A Third Leg

There is a third way that gets less attention amid all the trendy buzz; the middle of the scale or third leg: energy production at the town or community level. I consider the old power stations at Ratón and Algodónes to be excellent size examples. Use that model, only feed them renewables.

Besides optimizing the expenditure of money, materials, labor, transportation and acreage per kilowatt of delivered energy, there are other advantages to this mid-sized approach:

Environmental Justice: Dirty but supposedly essential industries are disproportionately located in poor and non-white neighborhoods, and the resulting outcry is rightfully growing. But what if a necessary industry is clean and non-polluting, like a modest-sized solar or wind power plant?

I believe that far from being an environmental justice problem, these things would be a desirable asset to most neighborhoods; especially the mixed-use, live-work communities now coming into their own again. Ugly? Hell, they look a lot prettier than most necessary structures we put up with all around us.

There’s also a *neighborly aspect* to this kind of distribution model; an aspect which promotes a sense of community and simplifies business transactions like billing problems and service calls. That billing manager or pole climber might be in your PTA or hang out at your favorite bar.

And to further turn “Not In My Back Yard” upside down, maybe our utility rates could be adjusted for distance from the plant, not unlike transit fare zones, and for analogous reasons. The further the power is sent, the more it should cost; subject of course to hardship, non-profit and essential-service exceptions.

Since the publication of this article, I realize that I have not addressed two problems associated with solar and wind generating plants; the killing of birds and the elimination of yet more open space. While these problems are much greater with fossil-fuel generation they are not small.

Siting these plants on already developed land, near the community served, although slightly less “efficient” in power yield, will go a long way toward abating these two and other problems cited above.

In this I tip my hat to Steve Belinda, who proposed something like this in an Albuquerque Journal Op Ed, although I and too-few others have thought of it too.



“Solar Panel Electric Truck is a great alternative to the trillions of tons of eGHG’s from the transportation industry.”

Argentina: Solar Villages Light Up the Andes



EcoAndina research centre in the Andean high plains of Argentina.

Credit: Courtesy of EcoAndina

by: Marcela Valente, Inter Press Service
Buenos Aires - The residents of the Puna, the dry Andean highlands in northern Argentina, are cut off from everything—except the sun. Living on arid land thousands of metres above sea level, they are on their way to becoming “solar villages.”

“In the north and northwest of Jujuy province, people are finding that solar energy, a clean and inexhaustible source, can replace firewood, which is increasingly scarce. The EcoAndina Foundation is showing the way through a series of projects.” The Puna, at altitudes of 2,700 to 4,600 metres above sea level, is part of the vast Andean Altiplano shared by Argentina, Bolivia, Chile and Peru.

EcoAndina’s goal is to improve living conditions for local residents by sustainably harnessing the abundant sunshine and wind, while maintaining the cultural and historic identity of local indigenous communities.

Since it began its efforts two decades ago, some 400 solar energy units—which power family and community kitchens, bread ovens, heaters and hot-water tanks—have been installed in 30 towns in the region.

In addition to cooking in solar stoves and ovens, which have proven as effective as gas stoves, the families now have heat and hot water in their homes. In the schools, solar panels warm the classrooms and photovoltaic panels produce electricity.

One of the projects involves developing technology to verify reductions of carbon dioxide emissions resulting from using solar ovens. Certification of emissions reductions will help gain access to carbon credits, which can be sold on the market, and the revenue would be invested in new sustainable energy devices in the Puna.

The stoves, which can be used inside or outside the home depending on the model, are manufactured in the region at low cost. The mostly widely used are the parabolic stoves, which are made with highly polished aluminium to concentrate the sun’s rays.

These techniques allow residents to replace other sources of energy, particularly firewood and fossil fuels, which release carbon dioxide and contribute to climate change.

In the high plains region of arid and semi-arid soils and fragile and scant vegetation, replacing firewood also helps fight desertification. The altitude and dry environment mean that plants grow very slowly, and people have to travel farther and farther from home to find firewood.

Studies by EcoAndina show that one solar oven reduces household firewood consumption by 50 to 70 percent.

Silvia Rojo, president of EcoAndina, explained to Tierramérica that the people of the Puna region have traditionally used three types of plants for firewood: the “tola” bush; “queñoa,” a high-altitude tree; and “yareta,” a cushion-shaped shrub. But collecting these sources has led to serious desertification, the loss of species and damage to watersheds.

The other choice besides firewood is propane gas, which is sold in 10-kg cylinders at high prices in this remote area. “The bottled gas costs 13 times more per cubic metre than the methane supplied by public networks in the cities,” said Rojo.

“Our work is focused on offering thermal energy alternatives to firewood and gas to about 30 villages,” she said.

Today the applications of solar energy “enjoy broad acceptance and high demand, which is why we are spreading the word on solar villages,” she said. To achieve that status, the communities receive training with the support of the United Nations Development Programme’s Global Environment Facility.

The first solar village is Lagunillas del Farallón. “It is a category that gives the community a higher standing and fills it with pride, because the residents are recognised for using clean technologies,” said Rojo.

The circuit is being completed with other towns, which in the coming years will be meeting their energy demands sustainably: Ciénaga de Paicote, Cabrería, Paicote, Cusi Cusi, San Juan y Oros, La Ciénaga, San Francisco, Casa Colorada and Misa Rumi.

The first location where EcoAndina began its work was Misa Rumi, where a house that is completely powered by solar and wind energy has been operating since 1997 as the headquarters for fieldwork and research.

The Puna is ideal for solar and wind energy. The high plain, part of the Andes mountain range, is very dry, and temperature swings are extreme and abrupt, Christoph Müller, a German expert who works with EcoAndina on technical questions, told Tierramérica.

In a single day in winter, the temperature can range from 20 degrees Celsius during the daytime to 25 below zero at night. The sky above the altiplano is completely clear during most of the winter.

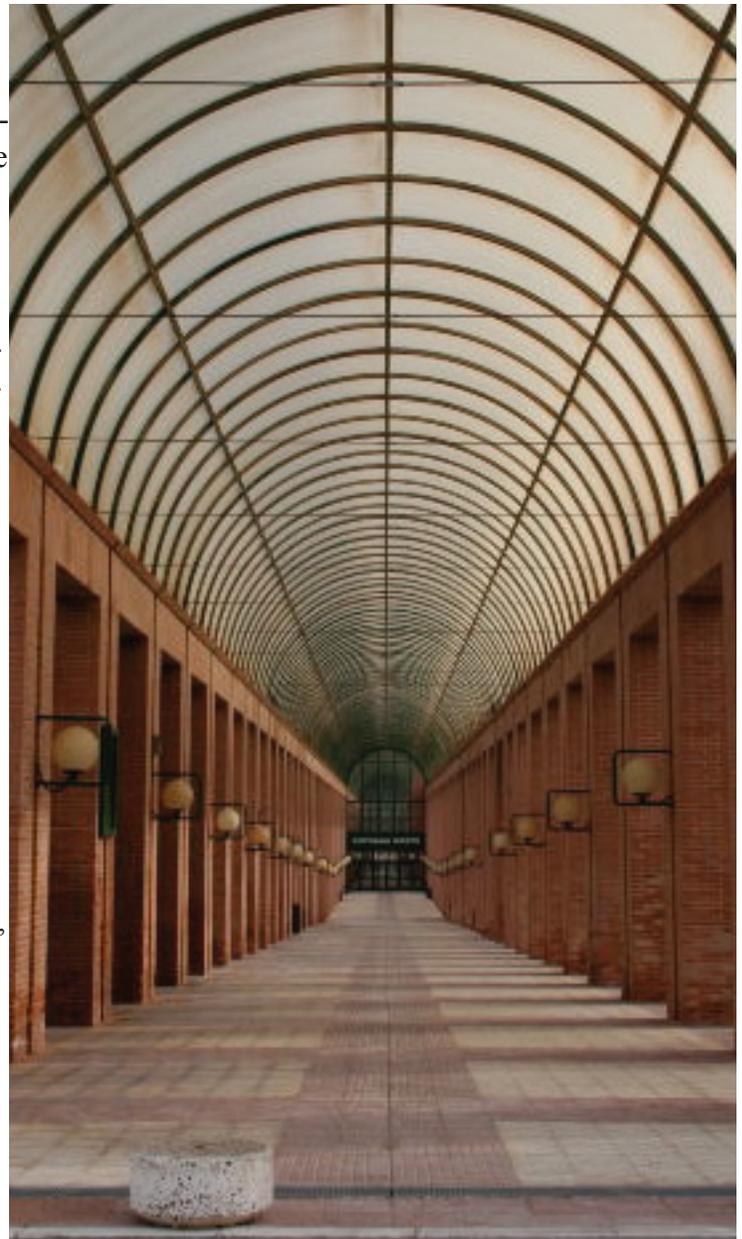
That makes the Puna one of the areas with the most sunshine in the world, along with the Bolivian Altiplano and the high plains of Tibet and Afghanistan—and an ideal site for exploring the potential of solar energy.

For now, the initiatives are limited to providing energy and heat to the homes, community centres and schools, but ambitions could go far beyond this.

Rojo said EcoAndina is promoting the idea of a solar generator to supply electricity to all of Jujuy province without producing greenhouse gas emissions or pollution, at nearly zero production cost. If it becomes reality, it would be the first in Latin America, though Brazil and Chile are also pursuing similar projects.

“It would not be able to cover all the tiny towns in the north of the province because they are so dispersed, but they already have community photovoltaic systems in each town,” Rojo said.

(*This story was originally published by Latin American newspapers that are part of the Tierramérica network. Tierramérica is a specialised news service produced by IPS with the backing of the United Nations Development Programme, United Nations Environment Programme and the World Bank.)



Passive Solar Gain, Tucson, Arizona



This is where climate change is seen everyday. No ice means no fresh water.

Climate Crisis Will Be the Challenge of New Decade

Irish Times - December 31, 2009

<http://www.irishtimes.com/newspaper/opinion/2009/1231/1224261476380.html>

What will the decade ahead hold for the environment? Mankind has yet to meet the stark challenges posed by global warming, which will not go away

This is not how it was supposed to end. Internationally, this decade was supposed to give us a comprehensive global treaty to contain climate change. In Ireland, some of us allowed ourselves hope that a soft-landing for the Celtic Tiger would herald a “post-materialist” era where environmental and social considerations were given as much weight as economic ones in policymaking. Instead, the Copenhagen climate talks ended in confusion and recrimination and in Ireland the economic crash has driven us back to very understandable materialist concerns about budget cuts and job losses.

The coming decade will see whether humanity is capable of overcoming a complex web of environmental problems that pose an existential threat to civilisation. Climate, the most urgent and most mainstream of these problems, epitomises the challenges.

Politicians and scientists agree we must limit global

warming to less than two degrees Celsius to prevent runaway climate change. Current pollution trends put us on a path to six degrees of warming this century, when four degrees or more would trigger the breakdown of civilisation as we know it. To be closer to two degrees than four we need to make global emissions start to decline before 2020.

That is the challenge of the decade. When we are writing our reviews of the 2010s there will be no more telling benchmark of human progress. Are global greenhouse gas emissions lower in 2019 than they are now? Put another way, will we choose survival? To answer this most basic question successfully humankind will have to answer two subsidiary questions, one evolutionary, one political.

As a species are we evolved to tackle a threat like climate change? It doesn't seem to trigger our fight-or-flight reflex in a meaningful way. For most of us it seems remote and abstract. The gases that cause it are invisible. And the ultimate source of the threat is not external—it is us, our current lifestyles, our historical choices and our future aspirations.

However unwittingly, we are the root of the problem, and therefore the solution. If an army were massing on our borders, if an asteroid were hurtling towards Earth, no one would question the need to act. But as we set

fire to the only home humanity has ever known, we struggle to perceive the threat and have so far failed to act decisively.

The second question is a practical, political one. Can an international system of 192 nation states solve a global problem? The lesson of Copenhagen is no, at least not if we cling to our traditional approach to interstate negotiating, where short-term national advantage trumps long-term public interest.

It is the tragedy of the commons writ large. For the vested interests in each state it makes sense for their country to keep polluting as much as possible and national negotiators act on that basis. Given the limited capacity of our common atmosphere to absorb that pollution, however, this approach will prove disastrous for humanity as a whole.

As the decade progresses there are three signs that would indicate we are moving beyond this “mutual assured destruction” approach to climate change. We need to see all three.

First, are any of the players acting unilaterally to cut their emissions, against their perceived short-term interests? The obvious candidate is the European Union, itself a unique political formation where national sovereignty is pooled and co-operation has replaced competition in crucial areas. The EU has made a unilateral commitment to action on climate change, but it is a weak one. When you account for the caveats and the loopholes it adds up to less than half our fair share. So, will we see EU climate policy start to reflect the union’s pioneering nature? Will the EU move to cut its emissions by 40 per cent by 2020, in line with the science?

The union could act on the courage of its convictions. Those advocating the abolition of slavery did not say they would only free half their slaves until their competitors freed theirs. The EU could also act based on its long-term economic interest. A low-carbon economy will build energy security, resilience and sustainable jobs for the rest of the century.

China is acting to limit its future emissions, despite its determination not to be legally bound to do so.

And the US is moving too, faster at state and company level than federal level. If the early years of this decade see these players significantly limit their emissions it will be both a sign of hope and an international confidence-building measure.

Second, will the emerging transnational forces gain the strength and focus to push nation states towards a global deal? The run-in to Copenhagen saw supranational civil society coalition-building reach new heights, with the likes of 350.org, Avaaz and the tcktcktck campaign mobilising hundreds of thousands of people across the world. Friends of the Earth alone had 500 activists in Copenhagen, representing our two million supporters across 77 countries. On the business side, lobbyists for polluting interests still hold the upper hand - but this time more than 500 transnational corporations signed a Copenhagen communique most of which could just as easily have been written by non-governmental organisation campaigners.

Third, will our governments manage to agree to a new treaty that provides a global framework for action and “mutual assured survival” rather than destruction? This is the key test. Can we lift our eyes to the horizon long enough to put aside short-term national advantage? This past decade there has been much talk of the G8, the G20 and now the G2, China and the US. But the new treaty must institutionalise the G1: humanity, and our common cause to protect the only ecosystem that supports our existence.

The coming decade will require you to decide where you stand, and soon.

[Ois’N Coghlan is director of Friends of the Earth.

Tell the World Bank to cut the coal!

The World Bank is considering a \$3.75 billion loan to South African electric company Eskom that would help finance one of the largest dirty coal plants in the world. Find out more and express your opposition to the

project by joining the Friends of the Earth US photo petition.

www.foei.org



