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By: Keith Brower Brown

On Brazil's northeastern shore, the winds come in heavy and constant. Wind sculpts the land into vast marshes and mountainous sand dunes, and blows fast through the small subsistence fishing towns that line the beaches. Now, the uniquely constant winds have drawn in a novel storm, a rush of international developers and their government boosters, eager to line the coast with industrial wind farms. Wind energy development in northeastern Brazil now outpaces the rest of Latin America combined, and is the fastest anywhere in the global South, outside of India and China.¹ Northeastern Brazil has become a critical early experiment for a behemoth idea in global climate politics: the hope that industrial-scale renewable energy can provide a sustainable path to economic development in the global South.

The World Bank, EU, and many multi-lateral development banks have established funds for renewable energy adoption.² The Brazilian wind industry is the foremost experiment of this internationally financed thesis, and its results pose a foreboding challenge to the grand plan. In the shadow of this nascent wind gold rush, the residents of intensely poor villages tell countless stories that run starkly against the high-minded thesis of clean development and rural poverty alleviation. In the eyes of many rural subsistence fishers living beneath the new wind turbines, the new wind industry in northeastern Brazil looks more like a roadblock, rather than a clear path to sustainable and equitable development.³



Residents of Cumbe, Ceará form a roadblock to stop the construction of the largest wind farm in state history. Signs include, "Clean energy, dirty installation", "Keep your promises!", and "We are not for sale!".

Photo: Local community member to remain anonymous

WIND'S RAPID GROWTH ON BRAZIL'S MARGINS

Ceará state is at the center of Brazil's wind industry. With over 550 MW of wind capacity and located in the far northeast corner of the country, the state has more wind energy installed than any other in Brazil.⁴ The state also carries the dubious distinction of being the fifth poorest in Brazil, of twenty six states, by many human development indicators.⁵ The approximately 500 km of coastline in Ceará is nestled with a few large cities, and hundreds of small fishing towns. In these communities, public infrastructure usually consists of a primary school, electricity, limited piped water access, and a gravel road leading inland to a nearby city or highway. Most residents subsist by fishing, shellfish catching, and tending to small fruit orchards.

Over the past five years, wind developers and manufacturers from Argentina, India, Germany, China and Brazil have collaborated to erect large wind farms on the Ceará coast. The wind farms use the same advanced towers and turbines used in US or European wind installations, although the average project size in Ceará has about a quarter of the capacity of most farms in the US. The Brazilian federal and regional development banks have provided capital for most of these projects, while the Inter-American Development Bank and the private banks Santander and Citigroup have invested in a smaller number of projects. Three operating Ceará wind farms are currently pursuing applications for UN Clean Development Mechanism certification, but none have yet been approved.⁶

Ceará state government has actively supported wind development with state tax exemptions and lax enforcement of environmental regulations. State government officials provide this aggressive support for wind projects based on the claims that wind development mitigates climate change, develops energy independence from unpredictable hydroelectric and fossil fuel market cycles, and creates jobs.⁷ State officials' aggressive support for wind energy may have a more straightforward motive: multiple government officials interviewed also own stakes in start-up wind energy companies.

THE LOCAL BURDENS OF WIND DEVELOPMENT

When wind developers first arrived at remote fishing villages, most local residents welcomed them. The companies promised hundreds of local jobs, modernization of local infrastructure, and support for local schools and health care. Wind companies were required by state law to conduct public forums to discuss their wind farm proposals with the residents of neighboring vil-

lages. In the first villages to receive wind farm proposals, residents were initially enticed by company pledges of local economic aid, and were widely supportive. However, many residents saw red flags raised by the top-down process at public forums, where the companies made few visible attempts to collect local concerns or preferences for wind farm plans, but made presentations that some residents refer to as "advertising".



An organizer from the Movimento Sem Terra (Landless Workers Movement) attends a rally during a roadblock against wind farm construction in Cumbé, Ceará. The sign reads, "Clean energy, dirty installation".

Photo: Local community member to remain anonymous



Wind turbines in Volta do Rio, Ceará are constructed on sandbars as close to the ocean as possible. This construction pattern is common in northeastern Brazil and, combined with restrictions on local access to land around the turbines, often provides a barrier between local fishers and previously used fishing areas.

Photo: Keith Brower Brown

As the construction of wind farms got underway, these neighboring fisher communities increasingly felt the burden of environmental and economic damages. At multiple wind projects, transport of heavy construction equipment led to collisions with dozens of homes, local power lines and water pipes. During the 10-month dry season, heavy equipment transportation on dirt roads kicks up serious dust pollution, leading to dozens of claims of respiratory problems among children and the elderly in multiple towns. During the two-month wet season, heavy equipment turned dirt roads into impassable rivers of mud, and sets off the flooding of dozens of homes on the margins of roads. In constructing transmission lines for wind projects, developers repeatedly used threats of legal action to convince residents to chop down swaths of backyard fruit orchards to make way for cables, in exchange for a roughly US\$30 per year, 20-year-long payment contract. During this construction period, significant numbers of local residents gradually turned against the projects.

Wind projects in Ceará have often blocked access between local towns, the ocean, and beaches, imperiling local food and economic security. At all wind farms visited, turbines were erected in a long line on the beach, parallel to the ocean, to maximize wind access. Some wind projects formed a line more than five kilometers long. At many wind projects immediately next to a small town, local access through the wind farm was prohibited and policed with security guards on all-terrain vehicles. At other projects, access was severely limited, with prohibitions on crossing while carrying knives or other important fishing equipment, or entering without a specific pre-arrangement with the company. For many fishing communities, these beach and ocean areas were an important commons for fish and shellfish harvesting. Fishers in these communities claimed that they had been shut out of these commons, and were forced to travel many kilometers by foot to get around the wind farms and access the ocean. Many fishers say their food security and incomes had suffered as a result.

A wind turbine in
Volta do Rio, Ceará,
constructed between
local homes and the
ocean.

Photo:
Keith Brower Brown



Further angering neighboring communities, wind developer promises for local aid and jobs were effectively shirked, according to a large majority of local residents interviewed. "Broken promises" was a common allegation heard in the towns neighboring two of the wind farms. At all the complete wind projects visited, local residents said that only temporary, low-skill construction jobs were created for local workers, while operations labor had been fulfilled by engineers from outside the area. Except for some small token projects, such as new computers and windows at a local primary school, the communities neighboring wind projects had not received ongoing economic contributions from the wind companies. Local roads were left as dirt and gravel, and many were further degraded by construction equipment traffic. Residents were incensed to see wind project transmission lines bypass their towns, en route to serve major urban industries with subsidized electricity. Pointing to the high-voltage power lines passing by their town, one resident said flatly, "Look, it's going to the factories."

LOCAL RESISTANCE TO WIND DEVELOPMENT

The serious local economic and environmental impacts of Ceará wind projects have ignited a loud and growing protest movement among fisher communities. Brazil is well known for its powerful social movements, and many of them, such as the Landless Workers Movement (MST) and the Forum in Defense of the Ceará Coastal Zone, have rallied to coordinate opposition to wind projects. Local activists and social movement organizers describe the wind projects as the same kind of industrial, extractive developments that have long preyed on poor Brazilian communities, such as major dams, shrimp farms, and agribusinesses. Many local residents and national activists alike call the wind plants "the same thing" as those notorious industries. In many towns neighboring one major wind developments, an informal survey of fifty residents from various backgrounds identified about 50% of residents as actively opposed to the wind projects. The remaining 50% of residents either described a lukewarm support or indifference. Though these less concerned residents largely concurred that the

wind projects had brought few local benefits, but most of them expressed a hope that the wind farms would gradually draw further modern infrastructure and employers to the area.

Local opposition to wind projects has gone beyond token protests, with roadblock and litigation actions laying a direct obstacle to wind farm construction. In the town neighboring the largest wind farm in Ceará, local residents staged a major roadblock on the main town road, and put a total halt to construction for 21 days. According to the wind company, the protests delays led to displeasure from the state bank that was financing the project, though ultimately the protest was ended before any credit ratings or contract terms were adjusted. According to the wind developer, the protest cost the company over US\$140,000 per day in delays, and eventually won reparations for damages to homes and the local church. Wind activists in some towns have sought to initiate litigation from public prosecutors as a method to fight wind projects. Sometimes as a result of these local requests, federal prosecutors have pursued multiple cases against Ceará state and local governments for negligent environmental oversight on wind projects. These prosecutors have won injunctions halting wind construction for multiple months, along with court orders for wind companies to perform more detailed environmental reviews and to pay for careful removal and storage of archaeological artifacts at wind power sites.

In response to their opposition to wind projects, some local activists claimed that they were seriously harassed and intimidated. In multiple towns, organizers of the local wind opposition claimed they received anonymous phone calls threatening physical harm and kidnapping, if they didn't cease their protest campaigns. One particularly prominent local wind activist alleged that the regional government attempted to relocate his elementary school teaching position to a town 80 km away, as a result of his organizing against the wind farms. These claims were not evidenced beyond these verbal allegations. However, intimidation and persecution of community activists is historically all too frequent in other rural regions of Brazil.

Despite any intimidation, opposition to wind farms is now spreading to Ceará towns where the projects have only been proposed. This dissent has been carried along the coast by regional social movements and the seasonal migrations of fishers. In two towns visited with proposed wind farms, dozens of local residents were actively organizing their neighbors to oppose the development, and holding local forums to educate neighbors and strategize for protests. The residents said they have heard and witnessed how wind farms restrict ocean access and generate health and infrastructure problems, while giving little back to the local community. Many wind opponents are outraged at Brazil's infamous economic inequity, and see the intrusion of the wind turbines as rooted in that inequity. In the words of a local wind opponent, "They don't build these at Copacabana. This is our Copacabana."

The largest wind farm in Ceará, near the cities of Aracati and Cumbe, has built 67 wind turbines on an expanse of sand dunes between local towns and the ocean.

Photo: Keith Brower Brown





CLEAN ENERGY' DIRTY INSTALLATION

Industrial-scale renewable energy in the global South has not yet been proven to be a path to poverty alleviation. Instead, the conflict-ridden experience of industrial wind projects in northeastern Brazil should sound a warning alarm. It is possible for wind farms to threaten the economic security of local communities, return little in economic benefits, and ignite a dedicated opposition.

However, these severe impacts of wind developments are not a built-in feature of the technology, like the pollution of a coal plant or the flooding of a hydroelectric dam. The negative local impacts and perceived injustices are not a direct product of the technology itself, but instead a product of large-scale industrial projects coupled with longstanding political and economic inequality. In one of the most remote, impoverished regions of Brazil, an elite collusion of state and industrial interests has left small fishing communities burdened by its worst impacts.

This tale of inequitable, unshared benefits of development is an old story in northeastern Brazil. Many local activists and some local academics cast wind power as just the latest in a string of grand industrial plans, engineered by government and private sector partnerships, which enrich an elite few in the name of regional economic "development". This pattern indicates that diagnosis of the serious failures of wind energy to bring economic gains should not begin with a condemnation of the wind energy itself. Instead, the northeastern Brazilian wind power story shows how any technology, including large-scale "clean" energy technologies, can be used in a longstanding broken development model that devalues and undermines subsistence communities.

The injustices of wind development in northeastern Brazil have their roots in a rift between urban elite and rural poor populations on the meaning of "sustainable development". The institutional and private financiers of industrial clean energy in the global South are funding a vision of "development" held mainly by national and regional elites. The elite vision of development seeks to find comparative advantage for their industries in international exchange, and to bring their populations into wage labor and consumer roles. The vision of development held by fisher communities in Brazil sounds like a world apart; as one woman in a fishing town said plainly, "The people here want to live in peace, only that." Local fisher activists, at a regional conference on climate justice and development, spoke of wanting better schools, roads, and health care access for their communities – but their consensus vision of just sustainable development centered on "reaffirmation" of their "traditional rights and way of life".

CONCLUSIONS

Despite this rift in visions of development, there is a great range of potential improvements that could help wind farms deliver better benefits to rural populations. However, models that do not provide meaningful community control should be viewed with caution. At the very least, wind project planning could change from a closed process, to one where local residents have ongoing binding input and votes on site placement and local infrastructure usage. Better still, the strongest guarantee of local input would come through shared ownership. Local residents could be granted a collective ownership stake in privately-developed wind projects, guaranteeing direct local control and lasting local dividends.

Even further, wind projects could be publicly built and operated, with a significant management and ownership role provided to local community trusts. Public agencies and majority state-owned companies have played the principal role in hydroelectric and petroleum development in Brazil. Despite the nominally public stake in these developments, without any significant local control or shared ownership, many Brazilians claim the benefits of these resources have largely gone to urban industries rather than to rural, working-class citizens. Changes in the ownership model could establish the most lasting empowerment of local rural populations. Clean development cannot be achieved just by using clean technologies; in Brazil, it will require a shift to an economic model that serves and integrates marginalized populations.

With such efforts, it is possible that wind projects could be a contributor to sustainable development, in a way coal plants and big dams will never be. Local activists acknowledge this reality, with signs saying "The energy is clean, No dirty installation". Simultaneous with the development of wind power, Ceará state government is seeking to develop nearly 3 GW of capacity in coal power plants, compared to the roughly 550 MW of wind capacity so far built. If completed, these coal power plants are guaranteed to levy huge environmental and human costs. This looming dirty energy boom sharply raises the stakes for both wind advocates and rural activists to find a sustainable formula for wind energy.



During a roadblock in Curbe, Ceará, a long line of construction trucks demonstrates the heavy traffic which wind farm installation introduced to the central road of the town.

Photo: Local community member to remain anonymous

Keith Brower Brown is a class of 2010 Parsons Field Scholar at UC Berkeley and a guest columnist for Carbon Trade Watch. If you would like to contribute an article to Carbon Trade Watch please write to carbontradewatch@gmail.com with "Guest Columnist" in the subject line.

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Endnotes

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3. During 2010, extensive field research on the impacts of wind development in Brazil's northeast was conducted over the course of two months in Ceará state. The research consists of over 120 interviews with stakeholders from industry, government, NGOs, and the residents of the coastal villages. Six major wind farms were visited and their neighboring towns, as well as two conferences for the regional wind industry and fishers' social movements. (Brown, K. B., 2011. Wind power in northeastern Brazil: Local burdens, regional benefits and growing opposition. *Climate and Development*, DOI:10.1080/17565529.2011.628120. October 2011) This briefing is based on this field research.
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