



2016 Top Markets Report **Renewable Energy** Country Case Study

Brazil

Type: Large Market; Small Market Share

Brazil is Latin America’s largest renewable energy market. Despite Brazil’s stagnant economic growth, ITA expects continued investment in wind, solar, and hydropower capacity growth into the future. However, substantial import barriers often make the market complicated and frustrating for American exporters. Exporters are expected to face strong headwinds from local content restrictions, but may find niche opportunities providing technologies not already manufactured locally.

Sector Rankings

Geothermal N/A	Hydropower 4
Solar 8	Wind 2

Overall Ranking



With the reelection of President Dilma Rousseff, Brazil appeared to be on the upward trajectory when it came to its renewable energy policy environment. However, Brazil has been mired in an economic downturn, with high interest rates and a weak currency, as well as uncertainty surrounding ongoing corruption scandals. Despite these challenges, Brazil continues to chart a favorable course for its renewable energy sector, with capacity and growth expected to rise in 2016-2017. While wind and hydropower have been the source of Brazil’s renewable energy expansion to date, ITA expects new solar development to begin in earnest, eventually rivaling new investment in wind power.

U.S. exporters have a smaller market share in Brazil (3.8 percent) compared to other markets in the region (around 20 percent or higher in Mexico, Uruguay, Honduras, and El Salvador, all markets that have substantially lower projected imports of renewable energy equipment than Brazil). This demonstrates how a small slice of a large market can still generate significant exports. The factors which

limit the U.S. market share of Brazil’s renewable energy imports are outlined below.

In 2014, renewable energy investment was catalyzed by one of the worst droughts in Brazilian history, which reduced power generation at some of its most important hydroelectric facilities and even stoked talk of power rationing and electricity rate hikes.¹ Higher prices would weaken economic growth in Brazil further, as consumer buying power is eroded.

The ongoing drought in Brazil has increased the awareness in the Brazilian energy sector (private and public) of the need to diminish Brazil’s dependence on hydropower and further diversify its renewable energy sources to non-hydro sources. This could create a market opportunity for non-hydro distributed renewable energy providers, particularly roof-mounted solar PV. Brazilian government’s support towards energy diversification may shift even further with the continuing low oil prices, which make investments in oil and gas reserves, already difficult to access, less likely.

Overview of the Renewable Energy Market

The Brazilian Ministry of Mines and Energy releases an annual 10-year plan for energy policy (Plano Decenal de Expansão de Energia), which describes the country's renewable energy targets. According to the latest plan of September 2015, Brazil wants to increase capacity by 24 GW of wind power, 7GW of solar power, and 27GW of hydropower. In addition, at the Paris 2015 climate summit, Brazil confirmed that it wants to increase the share of non-hydropower renewables in its electricity mix to 28-33percent by 2030. Under the plan, Brazil will maintain a significant hydropower industry, but it will decrease from 67.7 percent of the power mix in 2014 to 56.7 percent by 2024. The largest growth targets are in solar energy (from 0.2 percent in 2014 to 3.3 percent in 2024) and wind power (from 3.7 percent in 2014 to 11.6 percent in 2024).

In 2009, Brazil began a series of successful reverse auctions to govern and facilitate the deployment of renewable energy technologies. Through the reverse auction system, which has since been duplicated in other markets around the world, developers seeking to build renewable energy projects compete against proposed conventional energy projects in regular tenders. The auctions thus reduce the price paid by Brazilian consumers for renewable energy, as developers are incentivized to offer the lowest possible cost.

The focus on price competition traditionally limited opportunities for solar or other higher priced technologies, but in October 2014, Brazil tendered 889.6 MW of solar capacity through the reverse auction system for the first time. These projects are expected to come online in 2017.² Since the first solar auction, there have been a couple of other solar-specific auctions, and solar has been able to compete successfully alongside wind at other energy auctions. As the cost of installing solar energy technologies continues to decline, future auctions will likely see more solar projects submitted.

For technology suppliers, the reverse auction system provides a long pipeline of planned and approved projects. Two paths may lead to export opportunities: partnering with developers of projects who intend to bid in the auctions, or seeking out the winners afterwards for potential equipment demand, whether for the main components or secondary equipment of the project.

Challenges and Barriers to Renewable Energy Exports

Exporters should compete well in Brazil given its proximity to the United States, but a multitude of challenges – such as local content requirements for financing, a complex and burdensome tax system, an underdeveloped grid network, and inconsistent state and federal regulations -- have restricted market access and catalyzed investment in local manufacturing. As a result, Brazil remains one of the most frustrating and complicated markets in which U.S. renewable energy exporters compete, despite the government's efforts to develop its renewable energy sector.

The ability of local suppliers to underbid U.S. exporters is particularly bolstered by the financing terms offered by Brazil's national development bank, Banco Nacional de Desenvolvimento Econômico e Social (BNDES). For most renewable technologies, project developers can technically use non-locally sourced equipment, but BNDES frequently limits its financing to companies that meet local content requirements (LCRs). When combined with often significant import tariffs, the lack of BNDES financing leaves U.S. companies at a strong competitive disadvantage in Brazil.

BNDES amended its LCRs for wind projects in 2012, announcing its intention to have all wind turbine components manufactured in Brazil by 2016. In August 2014, BNDES announced similar plans for the solar industry. For crystalline silicon PV panels, the roadmap includes three phases and ends with all cell produced locally by 2020. For thin-film, the plan has only two phases that end in 2018 with all module assembly and cell definition done in Brazil.

It is still unclear whether BNDES policies will result in attracting foreign solar manufacturers to Brazil. According to industry sources, 500 MW of capacity must be contracted annually via Brazil's reverse auction system to justify investments in new manufacturing facilities; 880 MW was announced in the first-ever auction that included solar with larger capacity installations likely in the future.³ In August 2014, a major Chinese solar supplier announced that it would establish a manufacturing plant for PV panels in the State of São Paulo. If others follow suit, this could limit export opportunities in the medium-term to component parts and materials, particularly for those manufacturers that have deep supply chains in the

United States. In other instances, Brazilian firms may seek to license U.S. technology directly.

Historically, almost all projects relied on BNDES and thus were subjected to LCRs. However, as the Bank has been facing closer scrutiny on its transactions, disbursement levels have been decreasing and other sources of financing have been sought out by local project developers. Capital markets might therefore need to play a larger role in the Brazilian market, potentially creating more opportunity for U.S. exporters to sell to projects not supported by BNDES and thus without such restrictions.

Opportunities for U.S. Companies

For the foreseeable future, ITA expects exports to Brazil to be largely a circumstance of its sheer market volume and geographic proximity, as opposed to distinct U.S. competitiveness. Nevertheless, exporters should be able to find niche opportunities, particularly with the help of U.S. export promotion professionals.

Solar

Today, Brazil has almost no solar capacity installed, although exponential growth is anticipated in 2017 and beyond. By 2024, Brazil expects to have 7 GW of solar capacity online. According to BNDES's investment plan, it will invest \$2.5 billion in solar development through 2018.

For U.S. exporters, the opportunity is now – and will likely diminish over time. Through 2017, BNDES's LCRs mandate that solar modules be assembled in Brazil, but cells and other equipment can be imported.⁴ While this will change as LCR mandates intensify, U.S. exports should find some opportunities in the short-term. As Brazil does not currently have a completed solar supply chain in-country, imports will be required.⁵ There are additional opportunities for U.S. companies offering technical services to the solar energy sector, as Brazil lacks expertise in this area.

Polysilicon producers, wafer manufacturing, and solar cell providers should all find opportunities. Solar project developers and other service providers may find more lasting opportunities, as the market expands over the remainder of the decade.

Wind

Wind capacity in Brazil – already the largest in Latin America – should continue to bolster renewable energy growth for the foreseeable future, as much of the country's wind potential remains underutilized. Brazil enjoys one of the world's strongest wind resource bases; and with wind energy expected to reach grid parity in the near future, even more investment is all-but-certain. According to the Brazilian Government's Energy Research Agency, the wind industry will need to install 19 GW of new wind capacity over the next decade to meet the country's target of 24 GW of capacity by 2024.⁶

Historically U.S. wind turbine suppliers have enjoyed a good market share in Brazil, but consistent with the BNDES rules, the overall imports of these components have gradually decreased since 2011 – and the U.S. share of those shrinking exports dropped dramatically in 2015. Wind service providers such as resource mapping, turbine design, environmental impact assessments, and other types of consultancy are likely to still be in high demand and should offer opportunities for U.S. companies.

Hydropower

Despite the emphasis on wind and solar by Brazilian policymakers, they have not completely abandoned large hydro, which currently generates about two-thirds of the country's electricity. According to the Ministry of Mines and Energy, Brazil will attempt to increase hydropower's capacity by 27 GW by 2024. In the meantime, due to the ongoing drought, the expertise of engineering firms that can increase hydro capacity through technological services is desperately sought. Small hydropower, an area where U.S. technology is often highly competitive, has also been steadily increasing in Brazil, including over 1,000MW of additional capacity between 2014 and 2015 alone.⁷

¹ BNEF, "Tractebel sees Brazil Power Rationing in 2015 if no Rain," 28 October 2014

² Business Monitor International, "Brazil Renewables Report"

³ Bloomberg New Energy Finance, "In run-up to solar auction, Brazil sets content rules," 14 August 2014

⁴ Bloomberg New Energy Finance, "In run-up to solar auction, Brazil sets content rules," 14 August 2014

⁵ Bloomberg New Energy Finance, "Climatescope 2014"

⁶ Bloomberg New Energy Finance, "Brazil will boost wind energy as drought undermines hydro," 11 September 2014

⁷ Bloomberg New Energy Finance, Market Size database.