

Uruguay makes dramatic shift to nearly 95% electricity from clean energy

In less than 10 years the country has slashed its carbon footprint and lowered electricity costs, without government subsidies. Delegates at the Paris summit can learn much from its success

THE GUARDIAN 04.12.2015

[Jonathan Watts](#) in Montevideo

As the [world gathers in Paris](#) for the daunting task of switching from fossil fuels to renewable energy, one small country on the other side of the Atlantic is making that transition look childishly simple and affordable.

In less than 10 years, [Uruguay](#) has slashed its carbon footprint without government subsidies or higher consumer costs, according to the country's head of climate change policy, Ramón Méndez.

In fact, he says that now that renewables provide 94.5% of the country's electricity, prices are lower than in the past relative to inflation. There are also fewer power cuts because a diverse energy mix means greater resilience to droughts.

It was a very different story just 15 years ago. Back at the turn of the century oil accounted for 27% of Uruguay's imports and a new pipeline was just about to begin supplying gas from Argentina.

Now the biggest item on import balance sheet is wind turbines, which fill the country's ports on their way to installation.

Biomass and solar power have also been ramped up. Adding to existing hydropower, this means that renewables now account for 55% of the country's overall energy mix (including transport fuel) compared with a global average share of 12%.

Despite its relatively small population of just 3.4 million, Uruguay has earned a remarkable amount of global kudos in recent years. It [enacted groundbreaking marijuana legalisation](#), pioneered stringent tobacco control, and introduced some of the most liberal policies in Latin America on abortion and same-sex marriage.

Now, it is being recognised for progress on decarbonising its economy. It has been praised by the World Bank and the Economic commission for Latin America and the Caribbean, and the WWF last year named Uruguay among its ["Green Energy Leaders"](#), proclaiming: "The country is defining global trends in renewable energy investment."

Cementing that reputation, Méndez – formerly the country's national director of energy – has gone to this week's UN talks with one of the world's most ambitious national pledges: an 88% cut in carbon emissions by 2017 compared with the average for 2009-13.

There are no technological miracles involved, nuclear power is entirely absent from the mix, and no new hydroelectric power has been added for more than two decades. Instead, he says, the key to success is rather dull but encouragingly replicable: clear decision-making, a supportive regulatory environment and a strong partnership between the public and private sector.

As a result, energy investment – mostly for renewables, but also liquid gas – in Uruguay over the past five years has surged to \$7bn, or 15% of the country's annual GDP. That is five times the average in Latin America and three times the global share recommended by climate economist Nicholas Stern.

"What we've learned is that renewables is just a financial business," Méndez says. "The construction and maintenance costs are low, so as long as you give investors a secure environment, it is a very attractive."

The effects are apparent on Route 5 from Montevideo to the north. In less than 200 miles, you pass three agroindustrial plants running on biofuel and three windfarms. The biggest of them is the 115MW Peralta plant built and run by the German company, Enercon.

Its huge turbines – each 108 metres tall – tower over grasslands full of cattle and rhea birds.

Along with reliable wind – at an average of about 8mph – the main attraction for foreign investors like Enercon is a fixed price for 20 years that is guaranteed by the state utility. Because maintenance

As a result, foreign firms are lining up to secure windfarm contracts. The competition is pushing down bids, cutting electricity generating costs by more than 30% over the past three years. Christian Schaefer, supervising technician at Enercon said his company was hoping to expand and another German company Nordex is already building an even bigger plant further north along route five. Trucks carrying turbines, towers and blades are now a common sight on the country's roads.

Compared to most other small countries with high proportions of renewables, the mix is diverse. While Paraguay, Bhutan and Lesotho rely almost solely on hydro and Iceland on geothermal, Uruguay has a spread that makes it more resilient to changes in the climate.

Windfarms such as [Peralta](#) now feed into hydro power plants so that dams can maintain their reservoirs longer after rainy seasons. According to Méndez, this has reduced vulnerability to drought by 70% – no small benefit considering a dry year used to cost the country nearly 2% of GDP.

This is not the only benefit for the economy. “For three years we haven't imported a single kilowatt hour,” Méndez says. “We used to be reliant on electricity imports from Argentina, but now we export to them. Last summer, we sold a third of our power generation to them.”

There is still a lot to do. The transport sector still depends on oil (which accounts for 45% of the total energy mix). But industry – mostly agricultural processing – is now powered predominantly by biomass cogeneration plants.

Méndez attributed Uruguay's success to three key factors: credibility (a stable democracy that has never defaulted on its debts so it is attractive for long-term investments); helpful natural conditions (good wind, decent solar radiation and lots of biomass from agriculture); and strong public companies (which are a reliable partner for private firms and can work with the state to create an attractive operating environment).

While not every country in the world can replicate this model, he said Uruguay had proved that renewables can reduce generation costs, can meet well over 90% of electricity demand without the back-up of coal or nuclear power plants, and the public and private sectors can work together effectively in this field.

But, perhaps, the biggest lesson that Uruguay can provide to the [delegates in Paris](#) is the importance of strong decision-making. As has been the case at countless UN climate conferences, Uruguay was once paralysed by a seemingly endless and rancorous debate about energy policy.

All that changed when the government finally agreed on a long-term plan that drew cross-party support.

“We had to go through a crisis to reach this point. We spent 15 years in a bad place,” Méndez said. “But in 2008, we launched a long-term energy policy that covered everything ... Finally we had clarity.”

That new direction made possible the rapid transition that is now reaping rewards.

Small nations, renewable giants

Uruguay gets 94.5% of its electricity from renewables. In addition to old hydropower plants, a hefty investment in wind, biomass and solar in recent years has raised the share of these sources in the total energy mix to 55%, compared with a global average of 12%, and about 20% in Europe.

Costa Rica went a [record 94 consecutive days](#) earlier this year without using fossil fuel for electricity, thanks to a mix of about 78% hydropower, 12% geothermal and 10% wind. The government has set a target of 100% renewable energy by 2021. But transport remains dirty.

Iceland has the advantage of being a nation of volcanoes, which has allowed it to tap geothermal sources of 85% of its heating and – with the assistance of hydropower – 100% of its electricity. This has made it the world's largest green energy producer per capita.

Paraguay has one huge hydropower dam at Itaipu, which supplies 90% of the country's electricity.

Lesotho gets 100% of its electricity from a cascade of dams that have enough spare capacity to export power to South Africa.

Bhutan's abundant hydropower resources generate a surplus of electricity that accounts for more than 40% of the country's export earnings. But over-reliance on one source can be a problem. In the dry season, it has to import power from India.

- This article was amended on 4 December 2015. An earlier version described Ramón Méndez as Uruguay's national director of energy; he was formerly, but Olga Otegui now holds that post.