

Interview: Google's Francois Sterin

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In December 2016, Google committed to powering its data centre and office operations entirely by renewable energy by the end of 2017. The move should mean a busy year of procurement for the internet behemoth: at the tail end of last year, around 44% of its power was renewables-sourced, which is still enough to make the company the world's biggest corporate buyer of renewable power.

Green economics

In early February 2017, *IJGlobal* met with Google's global infrastructure director Francois Sterin at the company's Paris HQ. The campus-like space in which staffers work, eat and hold meetings shows signs of the company's commitment to minimising its waste and energy output: Google's canteens serve cut-price 'wonky' fruit and vegetables and in one corner, smart meters measure the different types of waste the company is producing across a rainbow of different-coloured bins.

Sterin says the move to green power and sustainable business practices is one based on economics. "We are making sure we're cost effective. It has to make business sense."

Being canny with its electricity purchases is essential, as it is an area of the business that has significant cost implications. Its data centres, dotted across the globe, use the bulk of its electricity. Much is now off-the-grid renewables power: as of early 2017, Google had procured some 2.6GW of renewables capacity. Of this, 2GW is in the U.S, with the remainder in Europe. Key principles driving Google in its renewable projects are cost, proximity to load and additionality.

Powering up

Back around 2010, Google was weighing up whether to own renewable assets or just buy electricity from other producers. "We did a build-versus-buy analysis for renewables projects. We found the payback period was relatively long, much longer than 10 years. If the payback period is too long, we prefer to buy the electricity instead," Sterin says.

It has bought infrastructure assets, for example, in the telecoms sector: Google and Facebook are equity investors in the 8,000-mile Pacific Light Cable Network subsea cable between Los Angeles and Hong Kong, which is due to come online next year.

But for the energy sector, Google has so far been focused on agreeing power purchase agreements (PPAs) with individual, in-development projects rather than developing plants itself. "We don't have a religion, but for now, it's PPAs for us. In the U.S. in particular, without a feed-in tariff system, PPAs are important. When you buy the power, you guarantee a revenue stream and thus the bankability of a project."

In Europe, Sterin says Google typically searches for upcoming renewables projects with a 50-160MW scale. In the U.S,

they're typically 200MW, as the company has a bigger power load there. It has stuck to onshore wind and solar; the firm has not yet dipped its toes into offshore wind. "The projects' capacities were too big for us initially," Sterin says. "Maybe in the future, with other corporates working together, we could tackle it."

Clubbing together

Which leads Sterin on to a prediction for the future of its energy buying practices: entering into power sharing agreement with other corporations. It made a foray into this model with its Windpark Krammer project in the Netherlands with Akzo, DSM and Philips in 2016. "We'll see how the market develops, but I see room in the market for an aggregator model, with a company, such as a utility or a new business entirely, that could act as the man in the middle." Sterin points out that 60% of the Fortune 100 companies now have clear carbon reduction goals in place. "That's a strong underlying foundation for doing business together. Having more counter-parties means more complex transactions, but higher credit security. We can share best practice," he says.

User demand for data is still growing. The number of hours of YouTube video uploaded grows each day, and 20% of all web searches are new searches, requiring more power. Sterin says that as Google buys more power, it is also focusing on using less of it. The company is looking constantly at computer efficiency. For every watt of energy used, Google got 3.5X more compute power in 2015 compared to 2010.

In its data centres in particular, it is using machine learning AI to optimise energy efficiency. It bought British AI company DeepMind in 2014 and uses the company's technology to predict and reduce its data centres' power consumption, a practice Sterin says needs to expand. "To balance the grid, software technology and automation will be important and I don't think the energy world has integrated that yet," he says. Doing so "might reduce the demand for energy storage and push back the need for it," something he notes "is still expensive, [but] Maybe storage will have the same cost curve that onshore wind and solar have had."

Levelling out fluctuations in renewables supply is another priority for the company. "We would love to have a technology that's more baseload," Sterin says. "Not existing hydro, but new run-of-river hydro and possibly biomass are all possibilities."

For developers hoping to become one of Google's clean sources of power, being located close to one of its data centres will be a bonus. "Proximity will be more important in the future. We want to buy more localised power."

In Europe, the company is exploring new deals and Sterin says it wants to diversify beyond the Nordics, where it has bought the bulk of its European power. "Everywhere we have a data centre is of interest," he says. Further afield, "it's less mature as a renewable energy market, but we're keen to see if there is anything we can do in Asia."

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