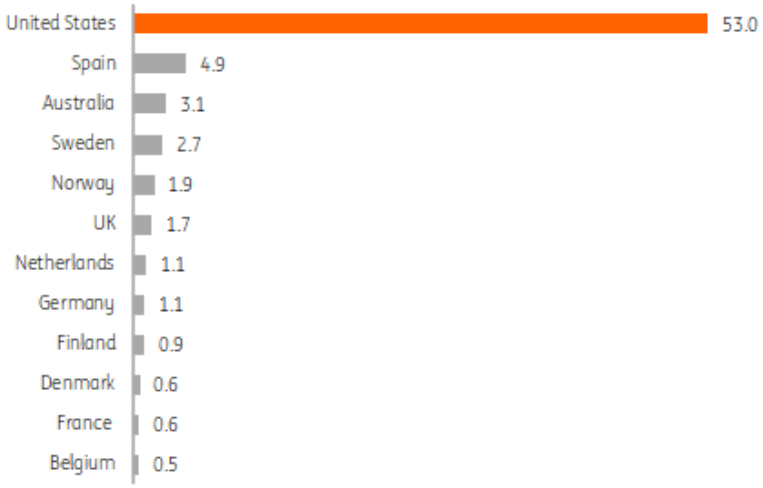
American big tech goes green, driving PPA market

US based companies dominate the PPA market, with 53 GW of PPAs procured globally since 2008. American big tech companies lead the way with Amazon, Google, Facebook, Microsoft and Apple holding a top 10 position. Volumes from European companies are smaller, but they are catching up and the top players come from different sectors

This article compares the activity of US based companies, both corporates and utilities, versus European companies in the global PPA market. A Purchasing Power Agreement (PPA) is a contract between the corporate buyer (off-taker) and the power producer (developer, independent power producer, investor) to purchase electricity.

US based companies lead the way in the PPA market

Global amount of PPAs outstanding from companies* based in the countries stated, in GW as of May 2021



*Both corporate PPAs and PPAs from utilities.

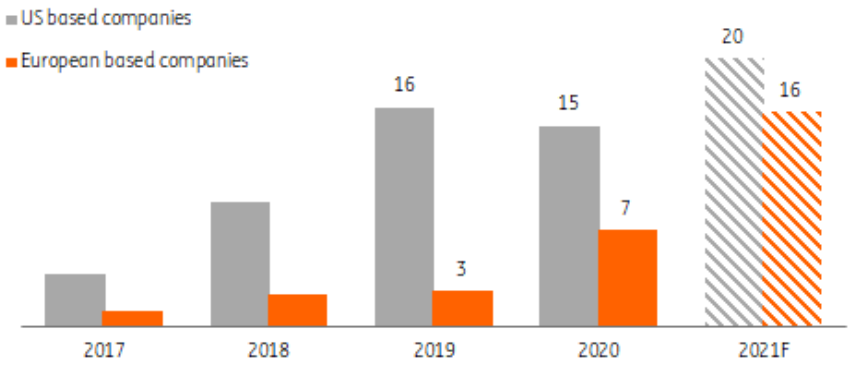
Source: ING Research based on BNEF

...but European companies are catching up

The PPA market has a long history in the US. Hence US based companies have been most active, both in the US and abroad. PPAs in renewables are a newer phenomenon for European based companies mostly as many European countries offered regulatory support. In recent years activity from European companies is catching up towards levels from US based companies. For 2021 we expect the gap to narrow further with 20 GW of new PPAs from US based companies and 16 GW from European companies.

European companies are closing the gap with US based companies

Newly closed PPAs in GW



*Signing year is often 2-3 years in advance of project completion.
Numbers include PPAs from corporates and utilities.

Source: ING Research based on BNEF

US bigtech companies dominate PPA rankings...

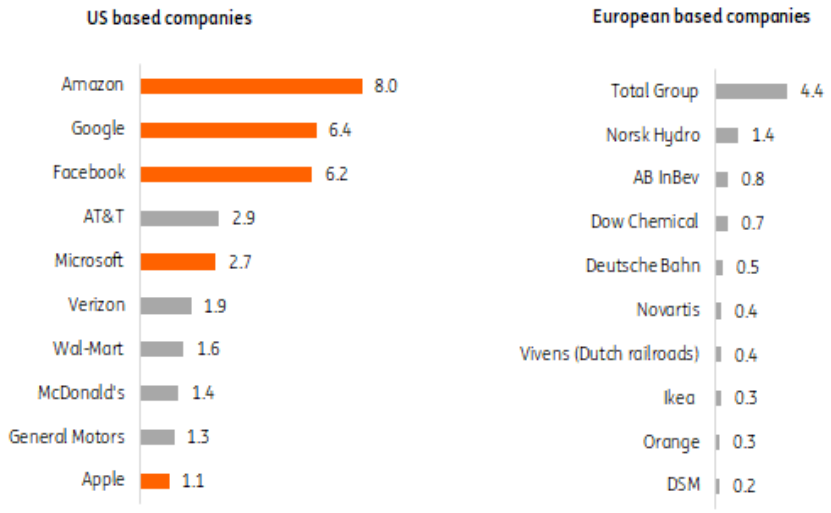
Bigtech dominates the PPA market among US based companies. Amazon, Google, Facebook, Microsoft and Apple together have 25 GW of PPAs outstanding. The majority is related to wind and solar projects in the US, although they now also source renewable electricity in Europe through PPAs. Amazon, for example, recently bought half of the power from Shell's offshore wind farm near the Dutch coast to green the power in their European warehouses (see table below).

...while interest from European companies comes from a wide range of sectors

Activity from European companies is catching up but activity is not dominated by bigtech companies. The five European companies most active with PPAs come from different sectors, like energy (Total), manufacturing (Norsk Hydro), food & beverages (AB InBev), chemicals (Dow) and transportation (Deutsche Bahn). Unlike Total and Norsk Hydro, the top 10 players so far have sourced less than 1 GW of green power through PPAs.

Bigtech dominates top 10 ranking of US based companies active in the global PPA market, but not so for European based companies

Total amount of PPAs outstanding* by top 10 companies out of US and Europe in GW



*Global activity, so US based companies can buy or sell PPAs in Europe and European companies in the US. Companies include both corporates and utilities.

Source: ING Research based on BNEF

Green power generation becomes steadier when wind and solar are combined...

Some of the large players in the global PPA market source their power from both wind and solar projects. In doing so, they benefit from the different solar and wind generation profiles. The diversification effects of wind and solar and a portfolio of multiple projects at different weather locations allow off-takers to create more stable renewable power production during the day and week.

..., but mind the gap on cloudy days with little wind

However, wind and solar diversification is often far from perfect. On days or hours when the wind and solar assets of the PPA produce little power, the company still needs electricity, which it gets through the grid. PPAs are a good way to procure a companies' annual power demand in a sustainable way, but not on a daily or hourly or on a minute-to-minute basis.

PPAs in practice

Some examples of PPAs

Buyer	Seller	Country	Size		Description
Amazon	Shell	Netherlands 2021	380 MW		• Amazon aims to be net zero carbon emissions across its businesses by 2040. Part of that commitment is to use 100% renewable power. • Amazon buys half of the power production from offshore wind farm 'Hollandse Kust Noord' to green the power demand in their European data centers and warehouses • The contract was signed in 2021, and the project will be completed in 2023.
ASML	RWE Innogy	Netherlands 2021	250 MW		• ASML buys 250 GW of renewable power per year from a portfolio of diverse renewable energy sources including two Dutch RWE onshore wind farms, one Belgium onshore wind farm and a Dutch solar farm • The PPA starts in 2021 and has a tenure of 10 years
Kellogg's, Uber	Enel green power	US, Texas 2021	110 MW		• Enel green power has sold power from its Azure Sky wind and storage project in Texas • Kellogg's buys 100 MW, Uber 10 MW. Power from the Azure project is also sold to Akamai, Synopsys and MilliporeSigma (hybrid PPA with multiple buyers).
Orange	Engie	France 2021	51 MW		• Orange aims to reduce its direct carbon emissions by 30% in 2025 compared to 2015 and reach an electricity mix of 50% renewables. • It has signed a 15-year PPA with Engie to buy all the powe from two solar plants in the Hautes-Alpes region: 38 MWp from the L'Epine solar farm and 13 MWp from the Ribeyre solar farm. Both facilities will be operational in 2022
Nestle	Orsted	UK 2020	31 MW		• The world's largest food and beverage company, Nestlé, signed a 15-year indexed fixed price agreement with Orsted to by 31 MW of green power from Orsted's Race Bank Offshore Wind Farm • The deal is part of Nestlé UK's strategy to cover 100% of it electricity from wind power
Heineken, Nouryon, Philips, Signify	Neoen	Finland 2020	126 MW		• Heineken, Nouryon, Philips and Signify joined forces to support the development of 35 wind turbines in the Mutkalampi municipality in Finland, which is scheduled for completion in 2023. • The consortium will buy the renewable electricity for the first 10 years. The electricity will be physically delivered to the Finnish grid while the four consortium partners benefi from the Guarantees of Origin, which demonstrate the greenness of their power.
Nike	Iberdrola	Spain 2019	200 MW		• Sports brand Nike has signed multiple PPAs with Spanish energy company Iberdrola to supply clean power to its facilities. • The latest PPA dates from 2019 and involves 40 MW of power from the Cavar wind complex in Navarra, northern Spain. In 2016 Nike signed three PPAs with Ibedrola involving project in the US. • Nike sources all its power from renewable sources in the US since 2018 and in Europe since 2020.
AkzoNobel, Google, DSM, Philips	Delta Wind en Zeeuwind	Netherlands 2016	100 MW		• Windfarm Krammer is an onshore windfarm developed by Delta Wind and Zeeuwind as a result of a citizen's initiative. The local community was actively involved in the development and members of Delta Wind and Zeeuwind participate financially. • Deltawind and Zeeuwind sell over 95% of the power to AkzoNobel, DSM, Google and Philips.

Source: ING Research based on BNEF and company websites

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