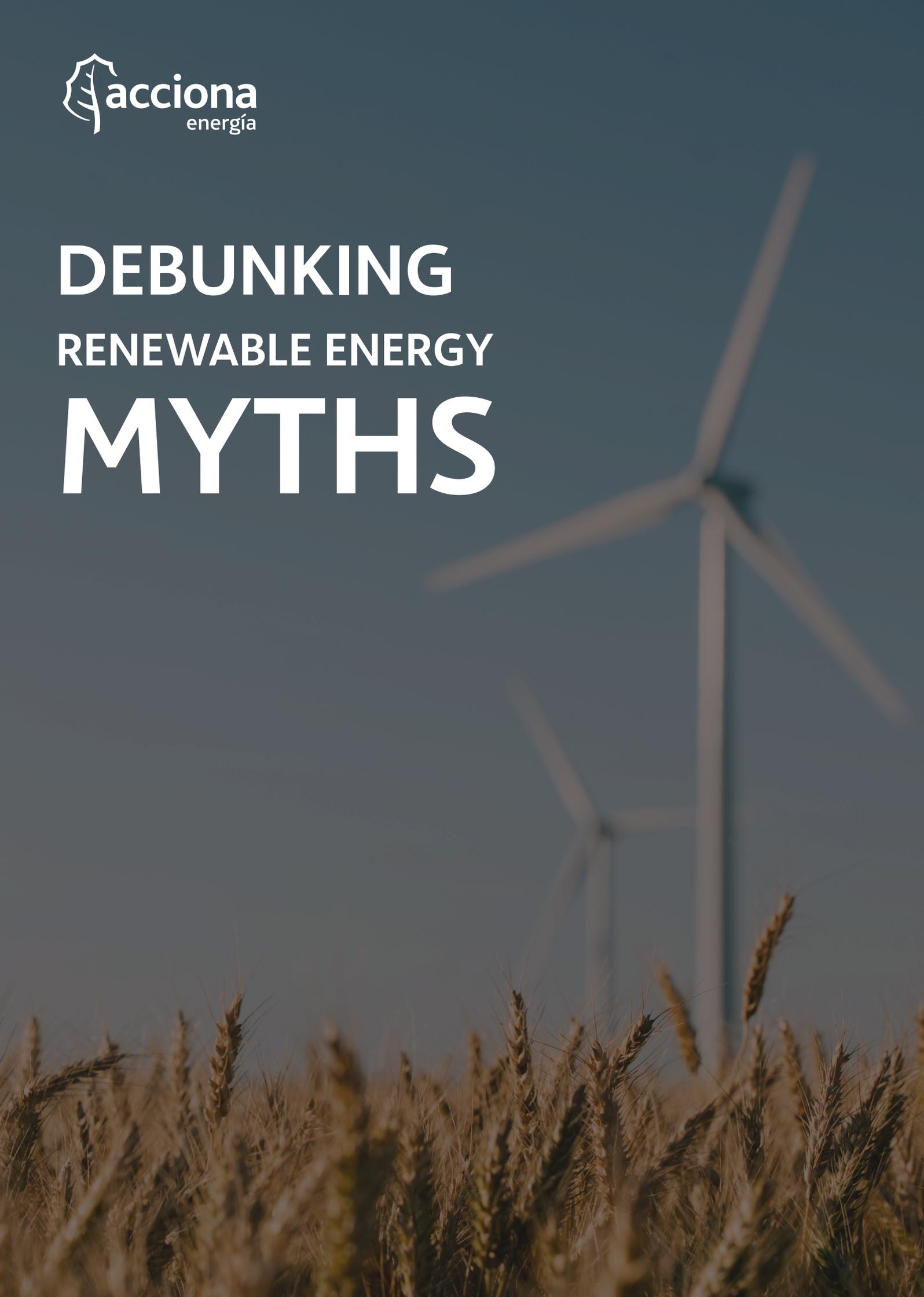




DEBUNKING RENEWABLE ENERGY MYTHS



Myth – More energy and CO2 emissions go into building a wind turbine than the clean energy it produces.

A wind turbine offsets the energy consumed in its manufacture in less than a year (about 11 months) and it can operate for more than 30 years. Each wind turbine produces enough clean energy to cover the electricity demand by some 4,000 homes each year.

(Calculated for 2,500 production hours equivalent per year and 4,000 kWh/year of average consumption per home)

It is also completely false that manufacturing a wind turbine generator causes more CO2 emissions than the turbine avoids emitting during its operating life.

The emissions produced by the manufacturing and decommissioning of a wind turbine generator represent around 1% of the emissions it will avoid during its useful life. This occurs because it replaces the production from coal, gas and fuel oil thermal power stations into the grid. This is without counting the CO2 emitted during the construction of these non-renewable energy sources including extraction and transport.

Calculations:

- Emissions of 8 grams/kWh, based on Life Cycle Assessment (LCA) results for our Mt Gellibrand Wind Farm in Victoria, publicly available from the Environdec website)
- Thermal emissions according to the mix in Queensland: 930 grams CO2 eq/kWh (National Greenhouse Accounts Factors 2020)
- Wind energy production calculated for a turbine on the MacIntyre Wind Farm of 5.7 MW provides enough electricity for nearly 4,000 homes. For the total 180 turbines it will power approximately 700,000 homes

Myth – Noise from turbines greatly disturbs communities living around wind farms.

The noise produced by the wind turbines is no greater at 500 meters than that from an electro-domestic appliance such as a refrigerator or microwave oven. It is very rare houses are situated at fewer than 500 meters from a wind farm, but even at this distance the sound when the turbine is operating is practically nil and hidden behind the wind itself. Obviously, no noise is produced when the wind is still, and the turbines are stationary.

Wind farms comply with the applicable rules in each area for noise levels during the day and night and cannot exceed established regulatory limits.

Myth – They take up a lot of space that should otherwise be occupied by livestock and agriculture.

False. The surface area for wind turbines is minimal and their operation is perfectly compatible with agricultural and livestock activities carried out in the area around the site.

Myth – They kill millions of birds and bats.

Deaths of birds and bats through collision with wind turbines are much less – fewer than 1/30,000 that cross a wind farm, according to studies – than that produced by other human activities such as roads, railways, buildings or domestic cats, or those caused by the air pollution that wind energy helps to avoid. The risk of collision depends very much on where the wind farm is located. Each construction project must be accompanied by an environmental impact study which has to be approved by the competent authorities, who determine whether the siting is compatible with surrounding nature – and birdlife in particular – and it is necessary to adopt corrective measures to minimize any harm. The wind power sector probably carries out more measures to avoid or reduce this problem than any other. These include monitoring by specialist teams, shutting down turbines in high-risk situations, and the development of various technological solutions such as ultrasonic, sonic and light deterrents, and detection and shutdown systems. Other infrastructures cause many more incidents, but figures for these are unavailable because they are monitoring less.

Myth - They harm the health of people.

False. This has been one of the lies most persistently peddled by some campaigners against wind energy, especially minority associations in Canada and Australia, without any foundation. This argument has not been raised in any other country in a world where there are more than 300,000 wind turbine generators in operation. In several countries - including the two mentioned - independent public and private studies have reached the same conclusion: there is no direct connection between wind farms and reported illnesses such as fainting or headaches.

Myth - Renewable energies are expensive.

Renewable energy is the cheapest energy source, and this will increasingly be the case. Both wind and solar power - (hydro has been competitive for many years) - have advanced enormously from a technological viewpoint and their installation costs have lowered markedly. Over the past decade, the cost of photovoltaic modules has fallen by 94%; onshore wind turbines by 37%; and lithium batteries for storing electricity by 85%. Today, these two renewable energy sources are cheaper than conventional sources in most parts of the world.

Myth - Renewable energies cannot cover all the demand.

Electricity storage systems have come on leaps and bounds, and the technology could support a 100% renewable electricity grid.

The challenge lies in governments and authorities being able to step to bring about the energy transition. According to studies, midway through this century, two-thirds of electricity worldwide will be produced by renewable energy. 40% of global end-user demand for energy will be covered by electricity (compared to 19% in 2017). 63% of which will be generated by solar photovoltaic and wind.

Renewable energy produces one out of every four kilowatts of electricity on the planet, and by mid this century they will generate two out of every three. While electricity only represents 20% of the energy the world consumes today, increasing electrification will certainly see it reach 40% by 2050.

Myth - Once the wind farm has reached end of life, the turbines will be left to decompose on the land and become an eyesore.

As the permit holder of the wind farm it is ACCIONA Energía's responsibility for decommissioning. Technology is constantly evolving, which increases the life of the projects and the longevity of the turbines. ACCIONA Energía is actively looking at ways to recycle fiberglass blades and has several research projects examining this. Therefore, we are confident that when the time comes for the decommissioning of our wind farms we will be able to recycle all turbine components.

ACCIONA Energía turbine recycling initiatives:

ACCIONA Energía is currently investigating the use of out of commission wind turbine blades for energy recovery in the furnaces of cement plants. We are investigating how the resulting ash can be used as a raw material in the cement manufacturing process. We are currently in contact with several cement companies in Spain to test and validate the process.

Acciona is also developing a project to replace parts of the structures that support the solar panels, with pieces made from fiberglass from the blades.

Myth - Turbines are not efficient because they aren't always spinning.

Turbine blades are heavy and need a minimum wind speed to maintain efficiency. Most turbines will only start to rotate and generate power when wind speeds are above 6m/s, but they'll stop when wind speeds fall below 4m/s. This is to prevent turbines stopping and starting in a light breeze. Instead the turbines are programmed to wait for the wind speed to pick to a reliable speed making generation efficient. We factor this into our modelling when selecting a site for a wind farm to ensure that the location is where wind speeds are reliably above what the turbines need to turn on. Similarly the same goes for areas where the wind speeds are too high. In unusual weather, turbines will slow and stop when the wind is too fast to avoid damage to the turbine. These preferred wind speed operating ranges are all considered when we evaluate our project locations.

Sources:

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