

**KREATYWNY ENERGY POLSKA**

# Carbon emissions per unit of wind power generation



 **TAX FREE**

**1-3MWh**  
**BESS**



## Overview

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In reality, wind power is one of the cleanest energy sources, emitting significantly less CO<sub>2</sub> per kilowatt-hour (kWh) of energy generated than fossil fuels. (1) Wind turbines, whether onshore or offshore, emit an average of approximately 13 grams of CO<sub>2</sub> equivalent per kWh (g). Since the National Renewable Energy Laboratory (NREL) published original results from the Life Cycle Assessment Harmonization Project (Heath and Mann 2012), it has updated estimates of electricity generation GHG emissions factors as part of several recent studies. This fact sheet updates an earlier. Wind energy displaces fuel consumed in other power plants and thereby emissions from electricity generation will be reduced. Emissions are estimated on a lifecycle basis, including upstream, supply chain and manufacturing stages, and cover all greenhouse gases.

## Carbon emissions per unit of wind power generation

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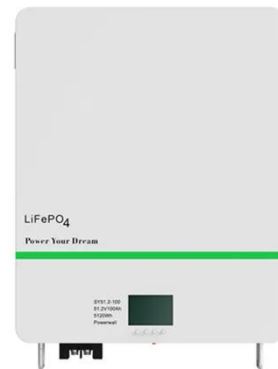


### Windtech International

For power generation carbon footprint is measured in units of CO<sub>2</sub> equivalent (CO<sub>2</sub> e) mass per kWh of energy. This is for the total lifespan of a power-generating unit.

### Life cycle assessment of wind turbine systems: A statistical synthesis

Life Cycle Assessments of wind power typically utilize a modest unit of 1 kWh of electricity to evaluate environmental impacts, concentrating on fossil fuel emissions, and often employ the ...



### Wind power emits significantly less CO<sub>2</sub> per unit energy than fossil

The claim that wind turbines consume more energy in their manufacture, installation, maintenance, and backup than they will ever produce, resulting in higher CO<sub>2</sub> emissions than fossil fuels, is incorrect.

What's the carbon footprint of a

## wind turbine?

The carbon footprint of wind turbines  
This chart shows how much carbon dioxide, per kilowatt-hour of electricity generated, can be attributed to a wind turbine during its life from cradle to ...



## How Much Carbon Emission Comes From Wind Farms?

Wind turbines produce significantly lower carbon emissions compared to fossil fuels. The total emissions associated with wind energy amount to about 6 grams of CO<sub>2</sub> per kilowatt-hour ...

## Measuring carbon footprint of wind turbines , Business Norway

Explore the carbon footprint of wind turbines, from life cycle assessment to offset time, and innovations that reduce emissions across their lifespan.



## EMISSION IMPACTS OF WIND POWER

Examples of wind power impact on emission reductions, as grams of CO<sub>2</sub> per kWh wind power generated. The green ones are from power systems

where wind power replaced mostly gas-fired ...



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### **Lifecycle carbon intensity of electricity, 2025**

Measured in grams of carbon dioxide-equivalents emitted per kilowatt-hour of electricity generated. Emissions are estimated on a lifecycle basis, including upstream, supply chain and ...



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### **Life Cycle Greenhouse Gas Emissions from Electricity Generation ...**

Life cycle GHG emissions from renewable electricity generation technologies are generally less than from those from fossil fuel-based technologies, according to evidence assembled from the LCA ...



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### **Life cycle greenhouse gas emission from wind farms in reference to**

This paper characterized the life cycle GHG emission of wind energy by

considering three different wind farm configurations: single wind machine, inland wind farms and offshore wind ...



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