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Green Energy, Climate Neutral, Water

Dedicated, Naturally.

Turkey: Bundled hydropower project at Kızılırmak River

Certification:
Gold Standard

Key Facts

Location:
Nevşehir Province, Turkey

Project type:
Renewable Energy - Hydropower

Total emission reductions:
»» 40,000t CO_2e p.a. ««

Project standard:
Gold Standard

Project start date:
Dec 2006

Background

Turkey has developed tremendously both economically and socially since 2000. The country's economy grew at 7% annually, making Turkey an upper-middle-income country. Turkey is among the world's leading producers of textiles, agricultural products, transportation equipment, construction materials, and electronics.

Energy demand in the country has also increased. Satisfying this demand through conventional energy sources has led to a significant increase in greenhouse gas emissions. According to the International Hydropower Association (IHA), electricity demand in Turkey is forecast to grow by more than 90 per cent over the next ten years. Since 2003, Turkey has liberalised its energy market and privatised existing assets to private sector investment.

Turkey is one of the leading markets for future hydropower development due to an abundance of water resources and a favourable policy framework. Policies targeted at scaling up hydropower include a 30 per cent target for renewables by 2023, a feed-in-tariff for projects completed by the end of 2015, VAT and customs exemptions, and licence fee exemptions for renewable projects (IHA).

The Project

This hydropower project is located on Kızılırmak River, within the boundaries of Avanos District of Nevşehir Province. It is a bundled, run-off-river type that is made up of three cascade projects, each having its own turbines and generators. The project aims to generate electricity by using the existing water without diverting the river. It consists 6.567 MW Cemel I HEPP, 7.055 MW Cemel II HEPP and 6 MW Cemel III HEPP2 on the mid-section of the Kızılırmak River basin, with a capacity of 21.6 MW and 20 MW. The project is expected to generate 73.95 GWh per year.

Sustainable Development

By supporting this project you'll contribute to the following Sustainable Development Goals:

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SUSTAINABLE DEVELOPMENT GOALS

While focusing on reducing greenhouse gas emissions, all our projects also generate multiple co-benefits. These are supportive of the United Nations Sustainable Development Goals.

Good health and well-being

Hydro electricity does not pollute water or the air, the project reduces the emission of other pollutants that are released by fossil fuels - such as sulphur dioxide, nitrous oxides and soot. This improves air quality and reduces the risk of respiratory diseases.

Affordable clean energy

Hydropower is critical for Turkey due to its numerous water bodies. It uses local and renewable resources to generate electricity which reduces Turkey's dependency on energy imports. Most of the crude oil imported in Turkey coes from Iran and Russia (currently,strained Russia-Turkey relations).

Decent work and economic growth

The project generates both direct and indirect employment opportunites in supply of materials, the construction and operation of the hydropower plant. This has had a significant effect on the local economy.

Climate action

Hydro electricity is a clean source of energy that does not emit carbon. The project avoids NOx, PM, SOx, CO_2 emissions. It avoids about 40,000 tCO_2e emission per year.

Life on land

The hydropower project does not divert water from the river; it has no impacts on the water volume or river flow. Secondly, it does not have a negative impact on water quality and biodiversity.

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Technology brief – how it works

Hydropower is one of the oldest means of using energy. The principle is simple: All it needs is water and a difference in vertical height. The kinetic energy of the water flow drives a turbine coupled to a generator and thus is transformed into electricity.

This project is of the run-of-river type. The plant uses the natural flow of the river and diverts only part of the stream to drive the turbines. The project uses a dam meaning that the power supply doesn't rely on weather or rainy seasons. This makes the power consistent and reliable year-round and thus reduces the need for back-up generators which are often powered by fossil fuels. Furthermore, it means that the power supply can be controlled so that in times when demand is lower, water can be held back rather than creating a surplus of energy.

Project Standard

Gold Standard
Climate Security & Sustainable Development

The Gold Standard is an award winning certification standard for results based project finance and is recognised internationally as the benchmark for quality and rigour in certifying environmental and socio-economic project outputs. Established in 2003 by the World Wide Fund For Nature (WWF), the Gold Standard today is trusted and endorsed by NGOs, governments and multinationals including United Nations agencies worldwide.

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For more information on other projects in our portfolio please visit our website:

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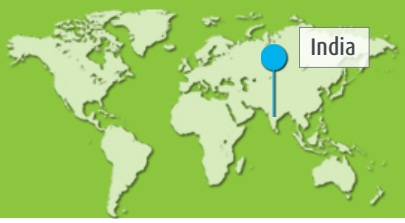
India:
Powered by Wind Energy

34MW wind farm in Khanapur generates clean electricity



Certification:

Gold Standard

Key Facts

TÜV NORD CERT GmbH
Verified Carbon Offsetting

Location:
Maharashtra, India

Project type:
Renewable Energy - Wind

Total emission reductions:
⋙ 66,000 tCO_2e p.a. ⋘

Project standard:
Gold Standard

Project start date:
July 2015

Background

In recent decades, India's economic and infrastructure development have been impressive. A major factor is the improved energy supply system. Over half a billion people have gained access to electricity since 2000. Subsequently, overall energy consumption has doubled since. However, the increasing demand is still predominantly met by using fossil fuels, especially coal, making India the third highest polluting country in the world.

India's economic growth shows no signs of slowing and is expected to be five times larger by 2040. To support this growth, however, the International Energy Agency recommends quadrupling the national power system. Based on current rising demand, this means an increase of at least 5% every year. In addition to this, reliability of the supply system is often poor and inefficient with 23% of all power produced being lost through transmission. It is vital that India increases its power supply as well as improves its grid system. Equally important is that these upgrades are achieved with sustainability in mind and in-line with the country's climate goals.

The Project

Based in the Sangli district of Maharashtra, the project involves the installation of 17 wind turbines, each with a generation capacity of 2MW. The wind farm spreads across five villages of Sangli district and has a total installed capacity of 34MW. Connected to the national NEWNE electricity grid, the project will annually deliver 67,133 MWh of clean electricity. Since wind-based power is GHG-free, the power stations will prevent future fossil fuel gas emissions. The project meets the sustainability development factors as stipulated by India's Ministry of Environment, Forest and Climate Change in the areas of social, economic, environmental and technological well-being.

Sustainable Development

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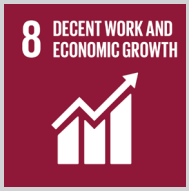
Good health and well-being

Urban air pollution poses a major threat to respiratory health of everyone living in India, predominantly due to the reliance on fossil fuels. Reducing this dependence through the increase of renewable alternatives will significantly improve air quality and thus respiratory health.

Affordable and clean energy

Wind energy is an emissions-free source of electricity. The construction and operation of the wind farm sustainably reduces the gap between supply and demand in India's power grid. This will help stabilize power supply.



Decent work and economic growth

The project helps to reduce poverty and generate employment through construction, maintenance and operation of the wind farm. This is important in rural India, where many jobs are vulnerable to climate issues and rely on agriculture. Substantial investments will be made in infrastructure and economic plans.

Industry, innovation and infrastructure

The construction of the project improves local infrastructure through the improvement of power supply and local transmission lines. Furthermore, roads will be constructed or improved around the project area.

Climate action

The project contributes to climate change mitigation by displacing electricity from fossil-fueled generation. It reduces roughly 66,000t of CO_2 emissions per annum.

Life on land

Apart from reducing greenhouse gas emissions, the project also avoids the burning of fossil fuels which further reduces air pollutants and helps fighting the causes of acid rain. These changes will benefit agriculture and livestock sectors as well.

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Technology brief – how it works

Driven by the kinetic energy of moving air, the mechanical energy created by a rotor is fed into an attached generator to produce electricity. Essentially, wind energy is converted to electrical energy. Output can vary depending on wind speed and this is ultimately determined by atmospheric conditions, therefore coastal areas are preferred as sites for wind farms. It is therefore important to determine technically feasible sites for wind farms carefully in order to maximize their potential. The Sangli district of Maharashtra is relatively close to the western coast of India.

Over the last two decades wind power technology has rapidly improved. As of 2021, India has the fourth largest wind capacity in operation, which has also lowered wind-powered energy tariffs. The size and power output have consistently increased while lowering the cost per electricity unit.

Project Standard

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