

## India: RE generation at Kinnaur hydropower project



Certification:  
**VCS** | VERIFIED  
CARBON  
STANDARD  
A Global Benchmark for Carbon

### Key Facts



## Background

Fast economic growth and a rapidly growing population are putting a tremendous strain on India's environment, infrastructure, and natural resources. At a rate of about 7% per year, India is one of the world's fastest-growing economies. Most of India's energy needs are met by carbon-intensive fossil fuels, at the cost of increased risk to public health and environmental degradation. With energy demand expected to double by 2025, India is facing a dilemma which can be solved by improved energy generation processes.

Over 40 per cent of the population, living mostly in rural areas, does not have access to electricity. One-third of businesses cite expensive and unreliable power as one of the main business constraints (World Bank 2012). Currently, India's top priority is to improve access by diversifying its energy mix. India has vast untapped solar, wind and hydro energy resources.



## The Project

Located on the Satluj River between the communities of Karcham and Wangtoo in Kinnaur District, the project constitutes a run-of-river hydropower plant. It will use the natural flow of Satluj to generate electricity with a total installed capacity of 1.000 MW. The plant involves an underground power station at Wangtoo, where the water drives two Francis turbines before being discharged back to the Satluj River. The electricity generated will be exported to the Northern Regional Grid. In the absence of the project, the electricity would have been generated by fossil-fueled power plants. Thus, the project contributes to a cleaner energy supply in a region which is dominated by coal-fired plants.

### Location:

Himachal Pradesh, India

### Project type:

Renewable Energy – Hydropower

### Total emission reductions:

»» 3,542,000t CO<sub>2</sub>e p.a. ««

### Project standard:

Verified Carbon Standard

### Project start date:

May 2011

## Sustainable Development

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



## 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.



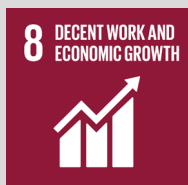
### Good health and well-being

Air pollution is a big problem in India. The country has 11 out of 20 of the world's most polluted cities. Reducing dependency on fossil fuels will ease this problem. In addition, the project will invest in public health care by constructing a hospital.



### Affordable and clean energy

Hydropower is an emission-free source of energy. By producing hydroelectricity, the project will increase the share of renewable energy India. It will also help to bridge the mismatch between energy demand and supply.



### Decent work and economic growth

The project will provide jobs for the locals during the construction and operation phases which contributes to economic wellbeing in the region.



### Industry, innovation and infrastructure

The project will install high-efficiency turbines and generators to minimize losses during generation and transmission. Furthermore, the project will improve infrastructures such as roads and bridges.



### Climate action

Hydropower reduces the emission of greenhouse gases (GHG) and contributes to the mitigation of global warming. The project avoids 3,542,000t CO<sub>2</sub> per year.



### Life on land

The hydropower plant reduces air pollution by displacing electricity from coal-fired power plants and thereby helps to fight the causes of acid rain.





## 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 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. Since it does not utilize a water reservoir impounded by a dam to artificially create a vertical height difference, there are no significant effects on the river discharge or the river banks. The project does not lead to flooding or the resettlement of people. Run-of-river hydro power plants illustrate a great balance between utilizing a natural potential and low environmental and social impact.



## Project Standard



The Verified Carbon Standard (VCS) is a global standard for the validation and verification of voluntary carbon emission reductions. Emissions reductions from VCS projects have to be real, measurable, permanent, additional, unique, transparent, and third-party verified. Assessed against the background of the total volume of emission reductions, VCS is the globally leading standard for voluntary carbon offsets.

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