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Climate Neutral & Water Services

DEDICATED, NATURALLY.

GENERATING CLEAN ELECTRICITY FROM THE POWER OF THE RIVER

350M OF DRINKING WATER PIPELINE IN KUMKUYU

2KM DRINKING AND IRRIGATION WATER PIPELINES IN BATISANDAL

Turkey's importance in the energy market is growing, both as a regional energy supply hub and as a consumer. In 2010 and 2011 Turkey saw the fastest growth in energy demand among all countries of the OECD with most of its needs met by oil and natural gas. However, Turkey is heavily dependent on imports. According to the International Energy Agency (IEA), the country imported more than 90% of all the total liquid fuels that it consumed in 2011, and imports are projected to double over the next decade. Building new, conventional fossil fuel fired power stations to meet this demand will only lead to a drastic increase in greenhouse gas emissions. Investments in renewable energy sources are vital in order to increase Turkey's energy security and make it a more sustainable one.

This project includes the installation of a 37.3 megawatt run-of-river hydropower plant in Turkey's Mersin region. It consists of two plants, named Lamas III and Lamas IV, with 15.4 megawatts and 21.9 meagwatts installed capacity respectively. The Lamas River provides the two plants with water, which is redirected to 8 power generators through a conveyance tunnel 5km long before tail water reconnects with the river. The two power house units are connected to each other with a water transmission canal and a penstock of 760m. Altogether, the project feeds more than 150.000 megawatt hours of electricity into the regional grid every year. Taking into account that in 2011 an average Turkish household consumed 2.952 kilowatt hours of electricity, this generates enough energy to supply more than 50.000 households with clean and sustainable electricity every year.

SUSTAINABILITY BENEFITS

The project supports the local economy in several ways; 92 employment positions were generated during the construction and operation of the plants. Moreover, it procures available construction materials and equipment through local resources and fully extends the road network leading to the plant thus facilitating crop transportation for farmers.

The project significantly improves living conditions for the local population; it has fully replaced major drinking water and irrigation pipelines in two villages within the construction zones of the plants from PVC to steel, namely the 350m drinking water pipeline in Kumkuyu and the 2km drinking and irrigation water pipelines in Batisandal. This prevents leakages and improves public health.

The area is known for its lemon ranches. Therefore, the project used a proper conveyance tunnel to minimize the effect on lemon production and replaced the irrigation pipes prior to the irrigation season so that the yield remained unharmed.

By displacing electricity from fossil fuel-based power plants, the project improves local air quality by reducing other air pollutants associated with the combustion of fossil fuels, such as sulphur dioxide, soot, nitrogen oxides and particulates.

The project also increases the regional and national energy supplies, reduces import dependency on fossil fuels and diversifies Turkey's energy mix.

KEY FACTS

Location:
Mersin province, Turkey

Project type:
Renewable Energy – Hydro

Project standard:
VCS

Total emission reductions:
>> 96.000 t CO_2 e p.a. <<

Project start date:
April 2009

Project partner:
TGT Enerji Üretim ve Tic. A.S.

Validator:
Bureau Veritas

Verifier:
Bureau Veritas

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TECHNOLOGY BRIEF - HOW IT WORKS

Hydro power is one of the oldest means of producing energy. The principle is simple: it only requires water and a difference in height. The kinetic energy of the water drives a turbine coupled to a generator and is thus 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 use an artificial water reservoir or dam, there are no significant negative impacts on the river discharge or the river banks. The project does not require flooding of previously dry land or the resettlement of people. Run-of-river hydro power plants use a naturally available energy potential and have low environmental and social impacts.

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