



Carbon Market Mechanism & Sustainable Development



CEZ GROUP

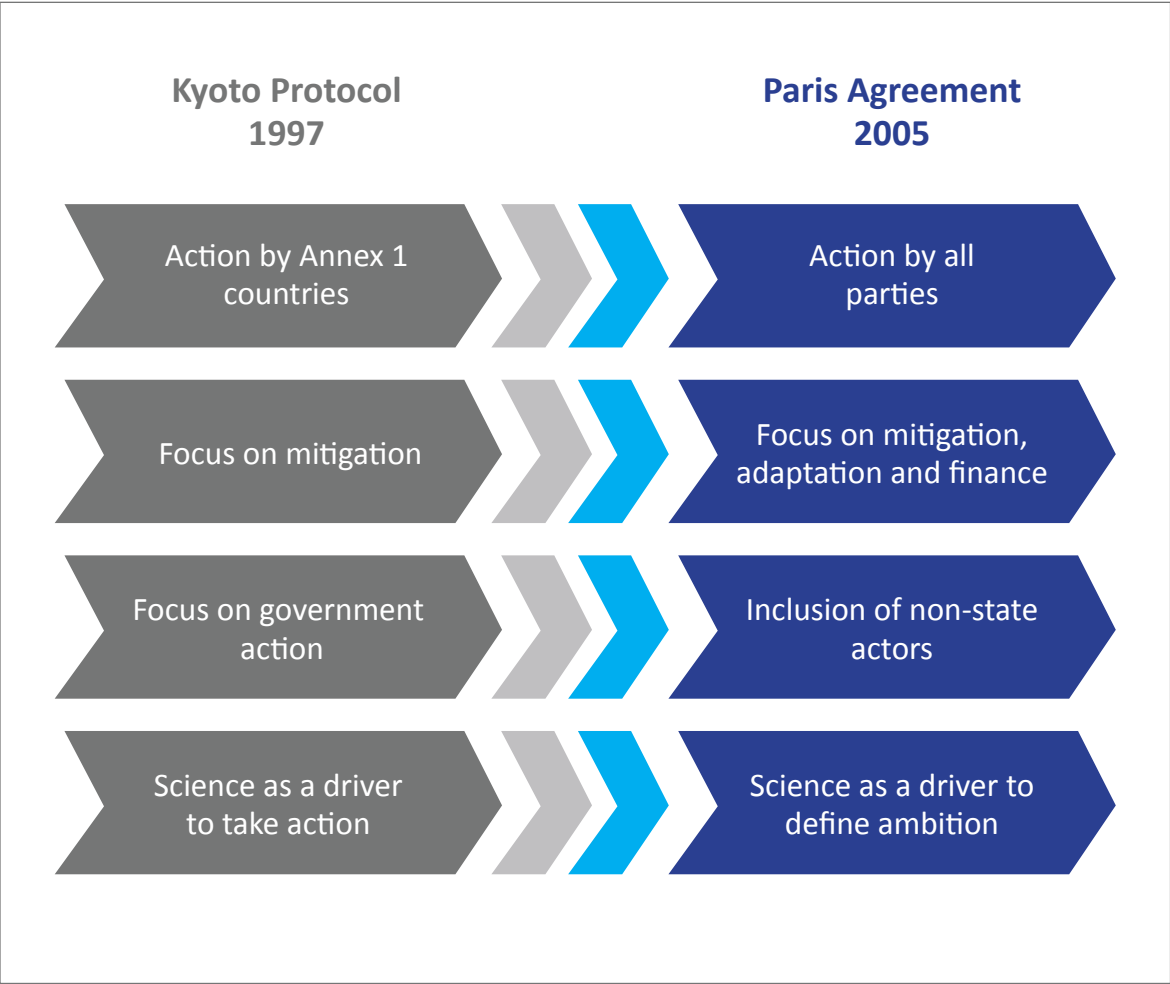
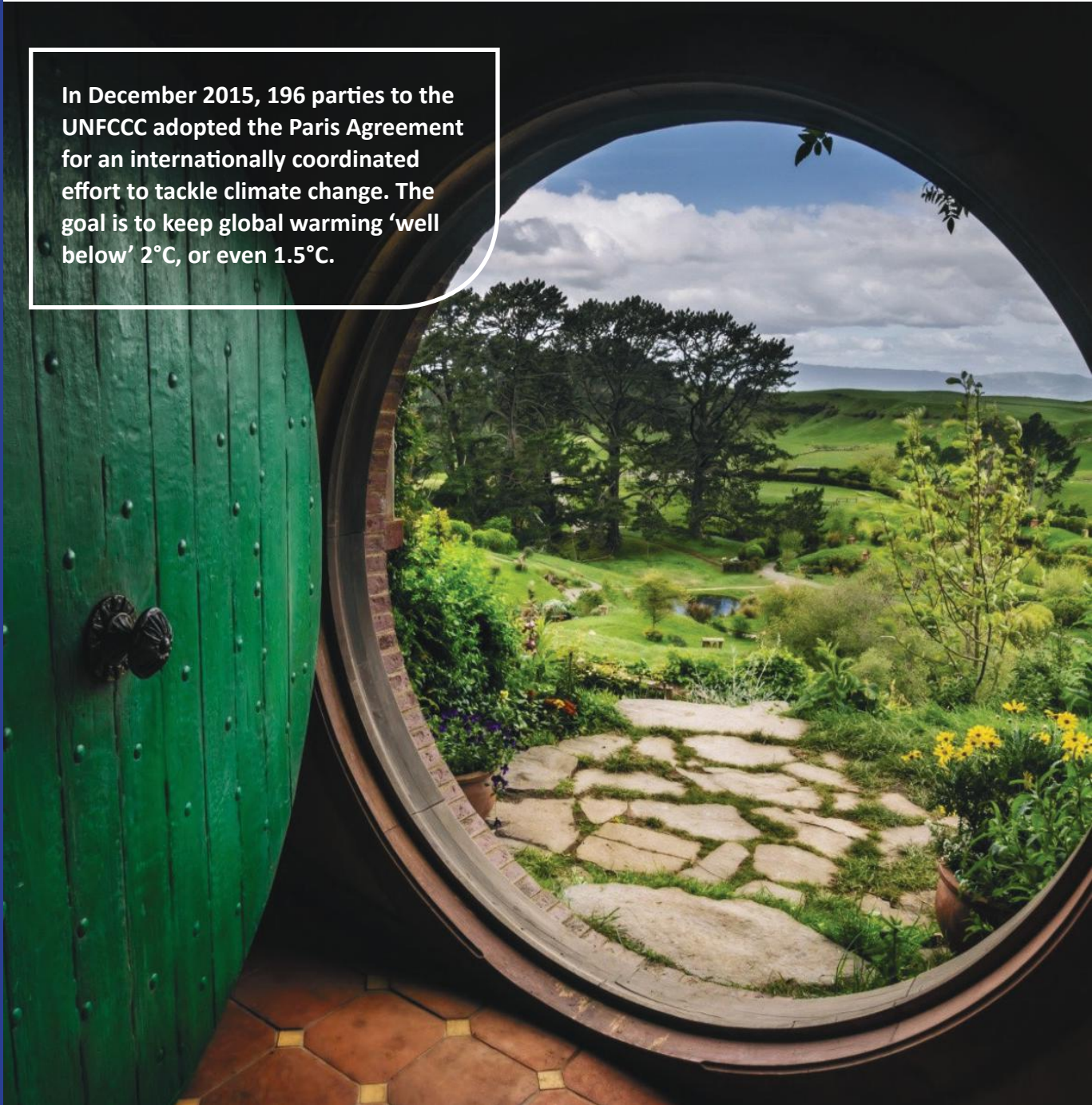


AGENDA

- 1- Introduction to Carbon Markets
- 2- Company Profile
- 3- Carbon Reduction Projects of Akenerji



In December 2015, 196 parties to the UNFCCC adopted the Paris Agreement for an internationally coordinated effort to tackle climate change. The goal is to keep global warming ‘well below’ 2°C, or even 1.5°C.



Paris Climate Agreement

A landmark moment in the global effort to address the drivers of climate change.

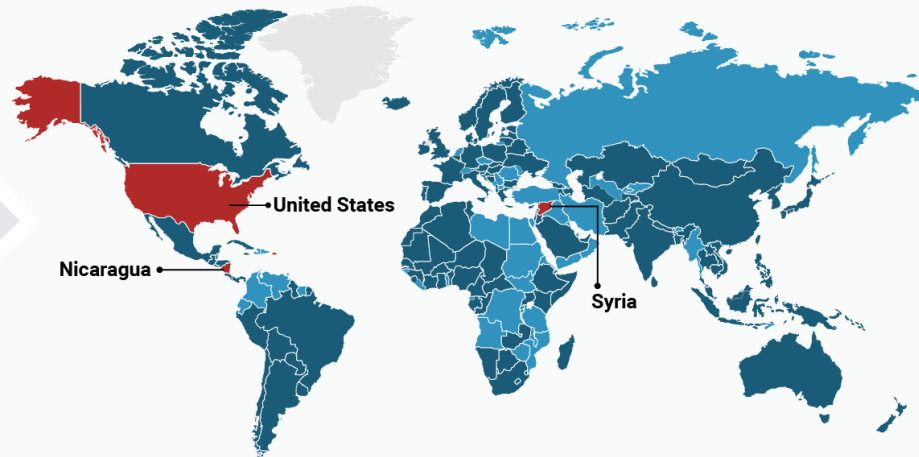
OBJECTIVES

- Strengthen the global response for the threat of climate change
- Increasing the ability to adapt to the adverse impacts of climate change and foster low greenhouse gas emissions development
- Making finance flows consistent towards climate resilient development



COUNTRIES THAT JOINED THE PARIS CLIMATE AGREEMENT

■ Ratified (146) ■ Signed (48) ■ Not signed/Withdrawing (3)



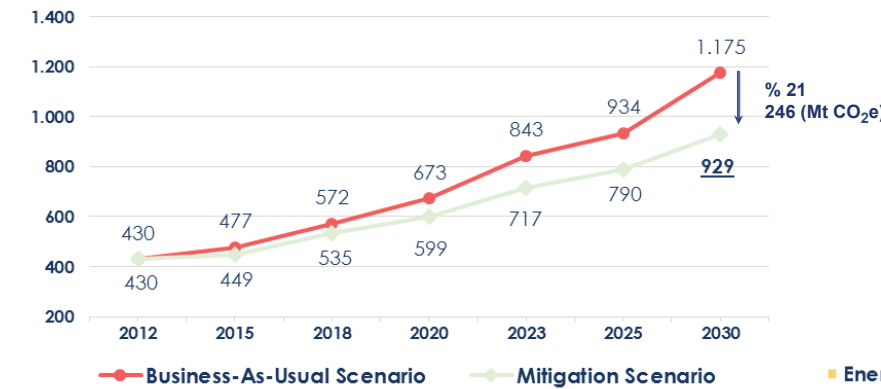
Nearly every country in the world agreed to limit its national greenhouse gas emissions

Turkey's INDC (Intended Nationally Determined Contribution)

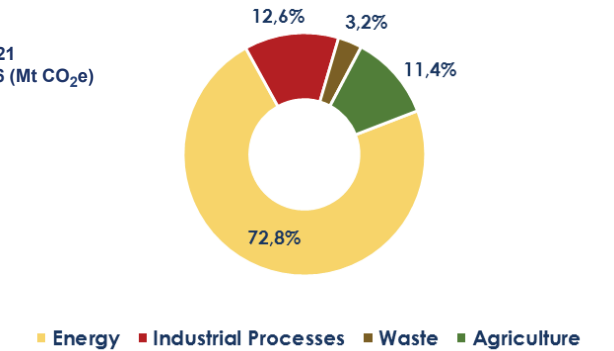
Turkey's plans and policies to be implemented according to its INDC:

- Increasing capacity of production from solar & wind power until 2030
- Tapping the full hydroelectric potential
- Rehabilitation of public electricity generation power plants
- Implementation of National Strategy and Action Plan on Energy Efficiency
- Promoting alternative fuels and clean energy vehicles
- Enhancing combined transport
- Controlling the use of fertilizers and implementing modern agricultural practices
- Solid waste management
- Recovery of methane gas from landfill gas
- Forestry rehabilitation and afforestation campaigns

Turkey's Total GHG Emissions (Million tonnes CO₂e)



Total Turkey GHG Emissions by Economic Sector 2016

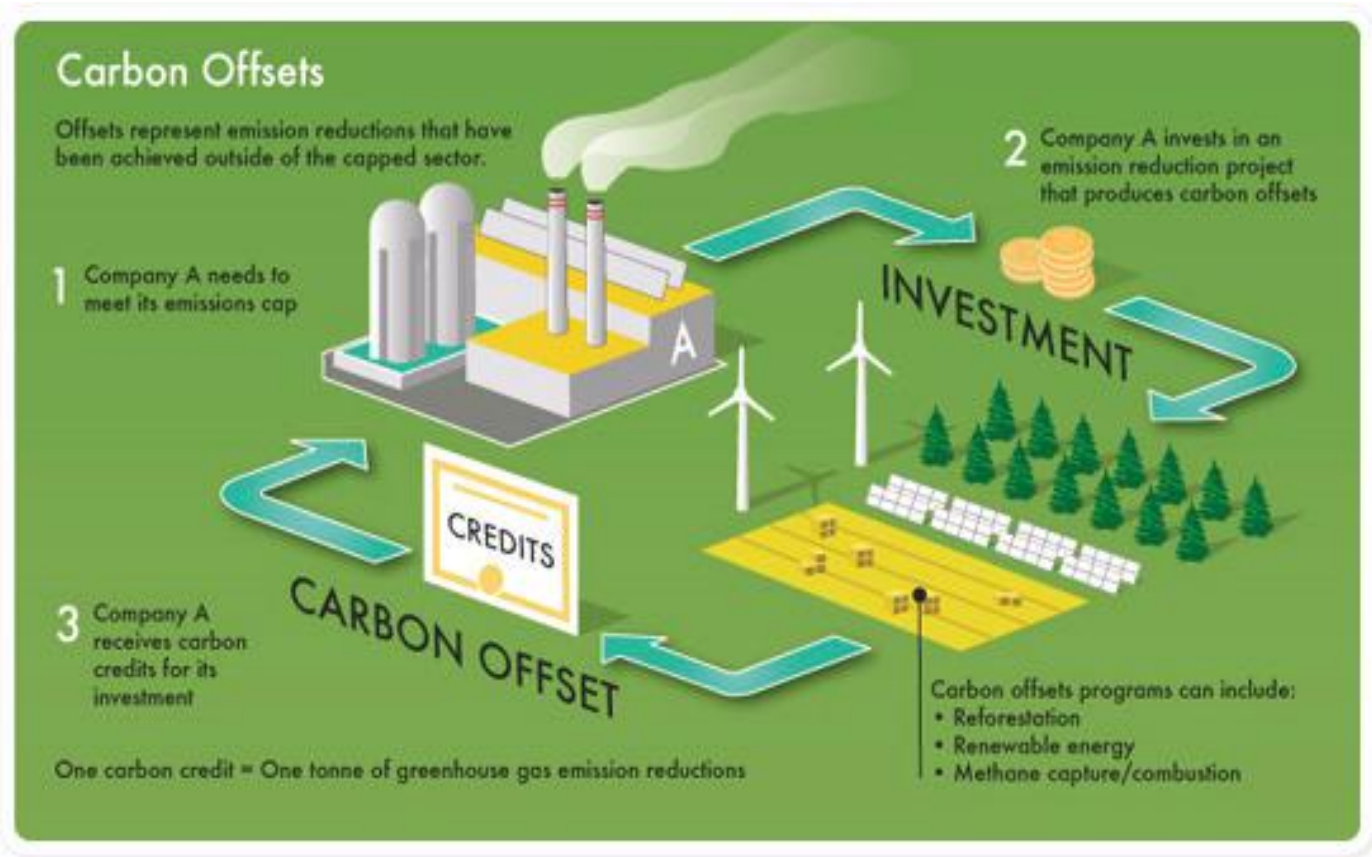


Carbon Offset Program

- **Carbon offsets** are **measurable, quantifiable and trackable** units of greenhouse gas (GHG) emissions reductions.
- **Carbon offset projects** reduce or avoid emissions by carrying out certain activities, from installing renewable energy infrastructure like wind turbines or solar panels to planting trees that remove and store carbon from atmosphere that results in quantifiable emissions reduction.
- **Project developers** certify their offsets under a third-party standard through a list of approved methodologies.
- **Voluntary end buyers** purchase offsets from project developers to meet their own carbon neutrality or other environmentally friendly goals.



The Offset Cycle



- Carbon Offsets can be created by a broad array of project types:
 - Energy efficiency
 - Landfill methane
 - Run-of-river or reservoir hydropower
 - Clean cookstoves
 - Windpower
 - Fuel-switching
 - Transportation projects
 - Forestry-based projects

Carbon Standards

- Standards differ by which project types they certify and the process for achieving certification
- Project requirements to get standards
 - Emission reduction
 - Employment for local populations
 - Biodiversity protection
- Major Standard types
 - Verified Carbon Standard (VCS)
 - The Gold Standard
 - Social Carbon
 - Climate Action Reserve (CAR)



A standard is a set of project design, monitoring and reporting criteria against which carbon offsetting activities and/or projects' environmental and social co-benefits can be certified or verified



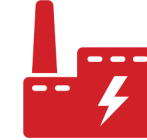
Established in 2003 by World Wildlife Fund and other international Non-governmental organizations as a best practice standard to ensure projects that reduced carbon emissions under the UN's Clean Development Mechanism (CDM) also delivered on the dual mandate to foster sustainable development.
www.goldstandard.org

The VCS Program is the world's most widely used voluntary GHG program. More than 1300 certified VCS projects have collectively reduced or removed more than 200 million tonnes of carbon and other GHG emissions from the atmosphere.
www.terra.org

Socialcarbon is a Standard developed by the Ecologica Institute that certifies carbon reduction projects for their contributions to sustainable development. Six aspects of project sustainability are individually measured using the Socialcarbon hexagon: carbon and biodiversity as well as social, financial, human and natural components.
www.socialcarbon.org

Benefits of Carbon Offsetting

- Since 2005, carbon projects have helped to reduce, sequester, or avoid over 427 million tonne CO₂e, which is more than all of Australia's energy related emissions in 2016.
- Multiple Contributions to Sustainable Development
- Safeguarding Biodiversity
- Finance Global Transition to a Low Carbon Economy
- Contribute to the Paris Agreement
- Achieve Corporate Social Responsibility Requirements
- Increase Public Relations
- Improve Customer Retention



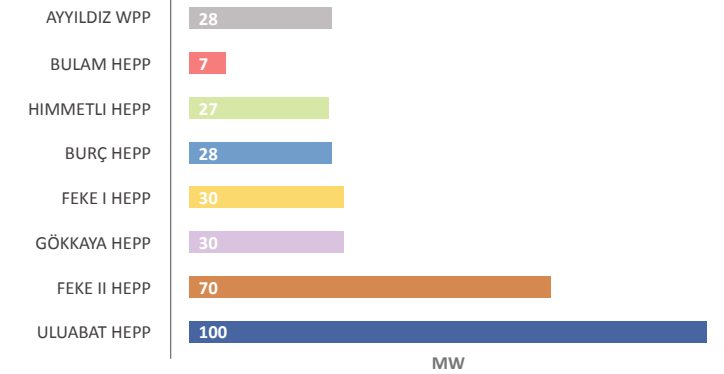
We generate 3% of Turkey's power need with a total installed capacity of 1224 MW



Renewable Energy Portfolio:
✓ 7 Hydroelectric Power Plants
✓ 1 Wind Power Plant



Carbon Management:
✓ Carbon Certification
✓ Carbon Disclosure Project
✓ Monitoring of GHG Emissions
✓ Sustainability Reports



WE ARE THE ENERGY OF TURKEY



* Kemah is in the project phase.

* You may access Akenerji Sustainability Reports from akenerji.com.tr

Ayyıldız Wind Power Plant



| Location | Balıkesir, Turkey |
|----------|-------------------|
|----------|-------------------|

| | |
|--------------------------------------|---------------------------------|
| Installed Capacity | 28 MW |
| Standard Type | Gold Standard |
| Emission Reductions per year | ~60.000 tCO ₂ e/year |
| Number of Households Supplied | ~22.000 |

The project consists 9 turbines in Ayyıldız Hill near the town of Bandırma in the province of Balıkesir, Northwest of Turkey. The purpose of the project is to contribute to the national economy and provide a portion of growing electricity demand with renewable energy from wind power. The project reduces emissions of greenhouse gases, avoiding the generation of carbon dioxide due to the production of electricity using fossil fuels. The technology used in the plant is a state-of-the-art technology, which allows operational excellence.

Gold Standard
Climate Security & Sustainable Development



Bulam Hydroelectric Power Plant



| Location | Adıyaman, Turkey |
|----------|------------------|
|----------|------------------|

| | |
|--------------------------------------|----------------------------------|
| Installed Capacity | 7 MW |
| Standard Type | Gold Standard |
| Emission Reductions per year | ~ 20.000 tCO ₂ e/year |
| Number of Households Supplied | ~ 8.500 |

Bulam Weir and HEPP Project is located in Southeast Anatolia, in the province of Adıyaman, on the Bulam river - a tributary of the Fırat River. The project location is approximately 35 km from the city center of Adıyaman and 12 km from Kocalı village, near the highway joining Adıyaman Celikhan Malatya. The project purpose is to generate energy from the Bulam River water flow and avoid the generation of carbon dioxide caused by electricity production from fossil fuels.

Gold Standard
Climate Security & Sustainable Development



Uluabat Hydroelectric Power Plant



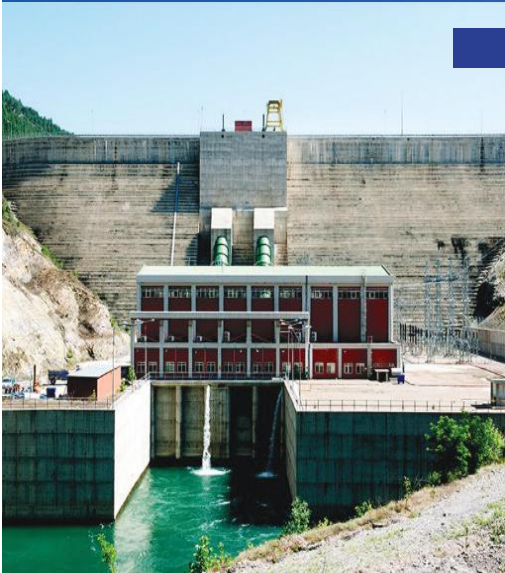
Location Bursa, Turkey

| | |
|-------------------------------|-----------------------------------|
| Installed Capacity | 100 MW |
| Standard Type | VCS |
| Emission Reductions per year | ~ 200.000 tCO ₂ e/year |
| Number of Households Supplied | ~ 95.000 |

Uluabat HEPP and Cinarcik Dam Project is an integrated project located on the lower basin of Orhaneli Creek, one of the major branches of Mustafa Kemalpaşa River. It is built within the scope of Emet Orhaneli Project developed by General Directorate of DSI (State Hydraulic Works) for utilizing the water potential in Marmara Region. Cinarcik Dam is built by DSI mainly for providing agricultural, industrial and drinking water for Bursa city. Uluabat HEPP project has been awarded to Akenerji Elektrik Uretim A.S. in year 2005 for 49 years period after the bidding by the Turkish Energy Market Regulatory Authority (EMRA).



Feki II Hydroelectric Power Plant



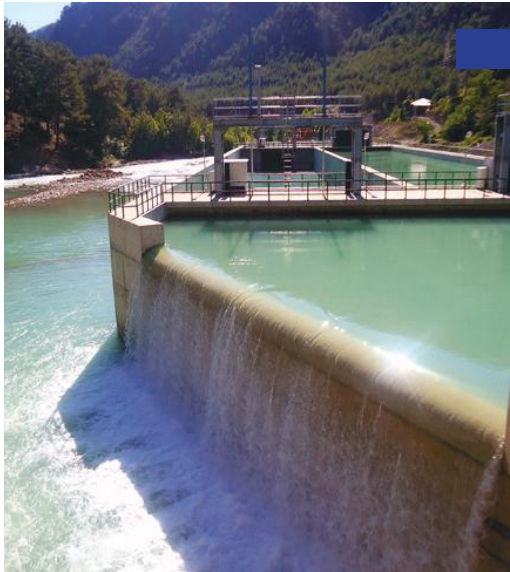
Location Adana, Turkey

| | |
|-------------------------------|-----------------------------------|
| Installed Capacity | 70 MW |
| Standard Type | VCS |
| Emission Reductions per year | ~ 120.000 tCO ₂ e/year |
| Number of Households Supplied | ~ 50.000 |

Feki II Hydroelectric power plant project is located at the south of Turkey, in the Mediterranean Region, on the Goksu Creek, a main branch of Seyhan River, within the province of Adana. The main purposes of the project are; I) utilizing the hydroelectric potential of Turkey in the southern part , in order to meet increasing electricity demand and guarantee the energy security, II) increasing share of HEPPs in electricity generation mix of Turkey and reduce GHG emissions, III) contributing to economic development by creating direct and indirect job opportunities during the construction phase and operational phase.



Feke I Hydroelectric Power Plant

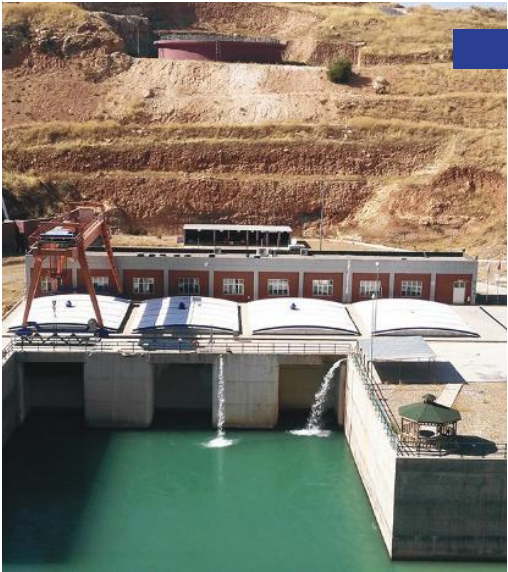


| Location | Adana, Turkey |
|-------------------------------|----------------------------------|
| Installed Capacity | 30 MW |
| Standard Type | VCS |
| Emission Reductions per year | ~ 64,000 tCO ₂ e/year |
| Number of Households Supplied | ~ 23.000 |

Feke I hydroelectric power plant project is located at the south of Turkey, in the Mediterranean Region, on the Goksu Creek, a main branch of Seyhan River, within the province of Adana, about 10 km to Feke district. The project activity reduces greenhouse gas (GHG) emissions that would have otherwise occurred in the absence of the project activity by avoiding electricity generation from fossil fuel sources. The technology used in the plant is a state-of-the-art technology with extensive automatization.



Burç Hydroelectric Power Plant



| Location | Adiyaman, Turkey |
|-------------------------------|----------------------------------|
| Installed Capacity | 28 MW |
| Standard Type | VCS |
| Emission Reductions per year | ~ 68.000 tCO ₂ e/year |
| Number of Households Supplied | ~ 26.000 |

Burcbendi HEPP project is a run-of-river type hydroelectric power plant project located in Adiyaman Province in South Eastern part of Turkey. It is about 35 km from the city centre of Adiyaman. The aim of the project is to generate energy from the Göksu River. The project consists of a weir, upstream and downstream cofferdams, spillway, connection channel to forebay, tailrace channel, penstock, power house and a medium voltage switchyard. Since the power plant is a run of river type, there is no dam construction resulting in any land to be covered with water.



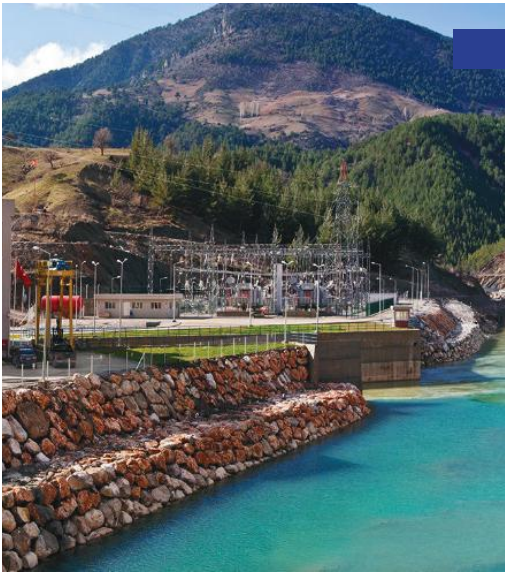
Gökkaya Hydroelectric Power Plant



| Location | Adana, Turkey |
|-------------------------------|----------------------------------|
| Installed Capacity | 30 MW |
| Standard Type | VCS + (Social Carbon) |
| Emission Reductions per year | ~ 50.000 tCO ₂ e/year |
| Number of Households Supplied | ~ 26.000 |

Located at the south of Turkey, in the province of Adana, within the district of Saimbeyli on the Goksu River, Gökkaya HEPP consists of a 115.13 meters long and 8 meters wide hardfill dam at 52.3 meters above riverbed elevation. Project contributed to sustainable development in the region through creating new job opportunities during construction phase and still continuing by creating direct job opportunities for its operations and maintenance. In addition project supports the development of Adana region while reducing GHG emissions.

Himmetli Hydroelectric Power Plant



| Location | Adana, Turkey |
|-------------------------------|----------------------------------|
| Installed Capacity | 27 MW |
| Standard Type | VCS + (Social Carbon) |
| Emission Reductions per year | ~ 50.000 tCO ₂ e/year |
| Number of Households Supplied | ~ 25.000 |

Himmetli HEPP consists of 33 meters long concrete filled weir at 13 meters above riverbed elevation, 3,950 m long modified horseshoe shaped transmission tunnel, 136.79 m long penstock. Project contributes on local and national economy, environment and local community and on sustainable development in the region and also in Turkey.



OFFSET CARBONS,
PRESERVE NATURE,
PROTECT OUR PLANET!



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