

## Green Tech International

### Key Project Information

#### Project Description

Green Tech International S.A. is developing a **first of its kind CO2 emissions reductions project by enhancing the efficiency of the use of geothermal waters**, called "Reducing 2,500,000 tons of CO2 emissions over a span of 15 years by increasing the efficiency of the exploitation and use of geothermal waters in Călimănești - Căciulata, Vâlcea county, Romania".

The proposed activity is a greenfield project for the utilisation of Călimănești - Căciulata geothermal water resources to produce heat and electricity through a high efficiency cogeneration system. The aim of this investment is to ensure green energy development while protecting the environment and fostering sustainable agriculture and tourism in the region.

The gases associated with the geothermal waters, through the proposed investment, will be used to produce electricity and heat through a high efficiency cogeneration system, based on the following aspects:

- favorable geological structure, characterized by high heat flow;
- significant geothermal water flow rates (over 250 cubic meter of hot water springing from 4 deep geothermal wells drilled at 3000 m depth) in eruptive system, with water temperature between 91 ÷ 97 degrees C.

The geothermal water, which is a renewable natural resource, will be mainly used for the preparation of heating and clean hot water for consumption in greenhouses, cold storage facilities, food processing plants while keeping and expanding the current use for residential buildings, blocks of flats and houses, tourist (hotels and guesthouses) and leisure facilities, military facilities, religious facilities, industrial annexes, service facilities (offices, commercial and social premises, hospitals, schools, etc.) or catering establishments, etc. A secondary use of geothermal water will be for balneotherapy and leisure purposes with the aim to foster local development in this region rich in renewable resources.

**Furthermore, the project captures all CO2** from the burning process of the cogeneration units and the CO2 will be consumed by the plants in the greenhouses located near the project, which are aimed to develop sustainable agriculture too.

#### What is the aim of Gold Standard certification?

The project is currently going through a Carbon Credit certification process to adhere to the international 'Gold Standard' accreditation, which utilizes innovative approaches to quantify, certify and maximize impacts towards climate security and sustainable development under Gold Standard for the Global Goals, and it is aligned with the United Nations Sustainable Development Goals.

Upon successfully finalizing its Gold Standard certification, Green Tech International is aiming to receive carbon credits in an equal amount with the certified CO<sub>2</sub> emissions reductions achieved by the project activities. The total GHG emission reductions for the 15 years crediting period (2024-2039) are estimated at 2,500,000 tCO<sub>2</sub>e, and the annual average GHG emission estimation is around 160,000 tCO<sub>2</sub>e.

## Gold Standard Certification Timeline

The project is expected to pass the Gold Standard preliminary review by the fall of 2023 and continue the certification process during 2024 with the aim to receive carbon credits at the end of 2024. After that date, the project will receive CO<sub>2</sub> credits for a 5-year cycle, renewable 3 times, upon passing all verification process.

## Project Location

The project activity is located in Romania, Valcea county in Călimănești – Căciulata perimeter. The GPS coordinates for the geothermal plant in Calimanesti are:

- 45° 13 '59.22" N and 24° 21' 07.49" E with 273m elevation over sea level

## Project Timeline Implementation

The Project's first tender for the acquisition of the major equipment shall be in Summer 2023, which is considered the start date of the project, according to Gold Standard rules and requirements. Then, the final commissioning of the integrated geothermal facility is estimated to be on Fall 2024, starting its commercial operation in the Fall/Winter of 2024.

## Baseline Scenario

According to the UN CDM methodology used to calculate the emissions savings of the project, for renewable energy technologies that displace technologies using fossil fuels, the simplified baseline is the fossil fuel consumption of the technologies that would have been used in the absence of the project activity, times an emission factor for the fossil fuel displaced.

In our specific case, the baseline scenario for thermal and electrical energy production in the absence of the project activity is twofold:

- The thermal energy is produced using fossil fuel and electricity is imported from a grid;
- The electricity and thermal energy are produced in a cogeneration unit using fossil fuel.

## Major Project Benefits

The participants of the Project recognize that this project activity is a model for other projects, aiming at delivering sustainable development through the efficient use of renewable geothermal water. Furthermore, the project is in line with specific UN requirements because it contributes not only to environmental protection sustainable, but also to sustainable agriculture and local community development.

The efficient use of geothermal energy resources in areas that are or can be supplied with heat and domestic hot water through centralised or non-centralised systems has the following benefits:

- decreases the consumption of fossil fuels needed to meet heat demand;
- decreases the environmental impact of burning fossil fuels, reducing polluting emissions.

Overall, the geothermal energy has a number of clear advantages:

- it is a local source of primary energy that can reduce imports of expensive fossil fuels (coal, oil);
- has a positive impact on the environment by replacing highly polluting fossil fuels;
- it is a reliable primary energy source that does not require storage facilities for a certain period of the day or year.

The opportunity and the need to expand and modernize the exploitation system of the Călimănești - Căciulata geothermal perimeter, takes into account the following aspects:

- the existence of new beneficiaries in the area, notably in the food, food processing and cold storage fields;
- providing thermal energy for Călimănești district heating at an appropriate flow rate and temperature;
- supplying the beneficiaries with heat on a regular basis at the level required, by creating an automatic system for the exploitation and delivery of geothermal water and thermal agent;
- the agreement and support of local authorities;
- significant decrease or even exclusion of the heating subsidy to the population;
- creating a high-efficiency cogeneration system;
- making new investments that make efficient use of the energy stored in geothermal water;
- the new investment will create new jobs;
- the development of the area, thanks to the high tourist potential and the reputation created over time;
- fostering sustainable agriculture through carbon capture

Therefore, the project contributes to the following United Nations Sustainable Development Goals:

- SDG 3 – Good health and well being
- SDG 5 – Gender equality
- SDG 7 – Affordable and clean energy
- SDG 8 – Decent work and economic growth
- SDG 9 – Industry, innovation and infrastructure
- SDG 11 – Sustainable cities and communities
- SDG 12 – Responsible consumption and production
- SDG 13 – Climate action
- SDG 17 – Partnerships for the goals.

## Additional Information

For further information, please contact us at [casiana@carbonexpert.ro](mailto:casiana@carbonexpert.ro), [hpitulea@green-tech.energy](mailto:hpitulea@green-tech.energy) and [office@green-tech.energy](mailto:office@green-tech.energy) or visit our webpage <https://www.green-tech.energy/projects/development-projects>

For information about Gold Standard, please visit [www.goldstandard.org](http://www.goldstandard.org) .