

**Public**

## Environmental and Social Data Sheet

### Overview

Project Name: RESEAU DE CHALEUR GEOTHERMIE EN VAL D'ORGE  
Project Number: 2020-0573  
Country: FRANCE  
Project Description: Expansion and modernization of the district geothermal heating system in the department of Essonne (France - Ile de France region).

EIA required: yes

Project included in Carbon Footprint Exercise<sup>1</sup>: yes

(details for projects included are provided in section: "EIB Carbon Footprint Exercise")

### Environmental and Social Assessment

#### Environmental Assessment

The Project will support the Promoter's investment programme to develop sustainable district heating (DH) in different municipalities in the Essonne Department, located in the vicinity of the municipalities of Grigny and Viry-Châtillon, where the Promoter is already active. It will increase the substitution of natural gas heating by more sustainable heating sources<sup>2</sup> and increase the reach of the DH network on existing building stock. The investments will thus generate environmental benefits by reducing emissions of greenhouse gas and air pollutants from heat generation. The Promoter's DH network is also designed to be efficient per the Energy Efficiency Directive 2012/27/EU (as amended by (EU) 2018/2002) definition of an efficient DH system, as it is expected to be supplied by 72% from geothermal energy sources at completion.

Given the relatively small scale of each individual operation, nature of the investments and expected locations in urban areas, the investments are not likely to have a significant negative environmental impact. Temporary nuisance due to construction works (traffic, road interruption, dust, noise) will be mitigated through appropriate site organisation and construction management.

The extension of the DH network will be carried out in the municipalities of Grigny, Ris-Orangis, Morsang-sur-Orge, Fleury-Mérogis, Sainte-Geneviève-des-Bois and St-Michel-sur-

<sup>1</sup> Only projects that meet the scope of the Carbon Footprint Exercise, as defined in the EIB Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: 20 000 tonnes CO<sub>2</sub>e/year absolute (gross) or 20 000 tonnes CO<sub>2</sub>e/year relative (net) – both increases and savings.

<sup>2</sup> Through the expansion of the Promoter's geothermal heat generation capacity and infrastructure.

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Orge, and will not affect any environmentally sensitive or protected areas. The selection of best available materials should ensure reliability during operation. The heat pipes will be insulated as per best practice and leaks will be detected through continuous pressure measurements in the system.

Due to the type of activity associated with DH network extensions, their location in urban areas outside cultural heritage sites and protected nature sites, the typically expected low impacts as well as available suitable mitigation measures, EIA processes are not likely to be required. The works are subject to building permits to be provided by the local authorities.

The implementation of the geothermal heat generation source will be realised on a relatively isolated wooded wasteland close to major roads and to a suburban railway, with no other infrastructure project planned in the vicinity. The existing underground infrastructure have been identified and taken into account during the drilling operations. Some deforestation will be required to clear the drilling works area but will be conducted outside of the local fauna reproductive periods. A reforestation program is planned at completion and included in the investment costs

The drilling locations have been selected in accordance with the French Mining Law and the drilling equipment will be compact and soundproof to minimize environmental disturbances, with well pads located at 100s metres away from the nearest households. There will be no hydraulic stimulation involved and submersible pumps will be installed to support the geothermal water production. However, the wells will require some one-off acidification after completion to create an appropriate contact area with the geothermal reservoir. Drilling waste will be treated and disposed of in line with national environmental obligations.

Strategic shallow aquifers will be isolated with double and triple cemented extended casings and subject to the regional water development and protection regulations. Non-hazardous drilling mud made of clays and water will be used. The geothermal system will also be designed, operated, controlled, treated, maintained and regularly reported to the competent authorities, in line with the obligations pertaining to the research, drilling and exploitation permits in particular in order to mitigate any corrosive action from the Dogger geothermal fluid, which is expected to have a 10-15 g/L salinity in the area. In case of a well deterioration that could jeopardise the system's compliance to environmental regulations with no possible remediation, prevention measures will be undertaken and the well will be obligatorily shut-down. The decommissioning procedures will have in any case to follow the obligations to ensure the protection of the strategic shallow aquifers, through partial or full cementation of the borehole. The closest freshwater catchment site is located at 3 kilometres to the South of the drilling location.

The geothermal system will operate as a closed-loop, with return water being re-injected into the exploited reservoir, thus minimizing any subsurface stress disturbance risk through volumes balancing as well as any impact of geothermal fluid disposal in the environment.

The geothermal project component falls under Annex II of the Environmental Impact Assessment Directive (2014/52/EU amending the 2011/92/EU) leaving it to the national competent authority to determine whether an environmental impact assessment is required according to criteria defined in Annex III of the Directive. Under the French Law, geothermal components subject to research authorisation requests, which is the case for this Project, require a full EIA. The EIA decision from the competent authorities was on-going at the time of appraisal and will be followed-up with appropriate disbursement conditionality.

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The existing 43 MW Grigny II central heating plant, not part of the Project scope, but which partly supplies the Promoter's DH network at peak periods, is classified as an ICPE (*Installation Classée pour la Protection de l'Environnement*) under the French Law and as such is subject to regulatory controls by the DRIEE (*Direction Régionale et Interdépartementale de l'Environnement et de l'Energie*).

### **EIB Carbon Footprint Exercise**

The estimated annual absolute emissions of the Project in a standard year of operation are 12 kT CO<sub>2</sub>eq and the estimated emissions savings are 25 kT CO<sub>2</sub>eq/year, through the substitution of natural gas by geothermal heating, which will reduce the intensity of emission of greenhouse gases and other air pollutants due to heating.

The absolute emissions include the emissions related to the natural gas used for peak/back-up heating purposes in the Project boundaries (based on an additional net heat supply of 155 GWh/year including 72% renewable energy share), as well as the emissions related to electricity consumption by pumps installed to support vertical production lifting, return water re-injection and surface network operations. There is no gaseous emissions during the standard geothermal heat generation operations, as the operational pressure is maintained above the bubble point pressure.

The baseline comprises of emissions related to natural gas burnt in existing individual boilers displaced by the DH extension 72% supplied by the expanded geothermal generation.

As an ICPE, the Grigny II is operated in line with the regulations relative to ICPE installations and its emissions are controlled annually by an independent audit.

On the geothermal side, electricity rather than diesel will be used for drilling, minimizing environmental emissions. H<sub>2</sub>S emissions that could be released from the geothermal fluids are muffled by the drilling mud and other best practice measures and are expected to stay below the national thresholds, but will be in any case continuously monitored and if necessary controlled during the drilling but also the operations.

For the annual accounting purposes of the EIB Carbon Footprint, the project emissions will be prorated according to the EIB lending amount signed in that year, as a proportion of Project cost.

### **Social Assessment, where applicable**

The Promoter and its external partners have demonstrated good practice since they started operating the existing DH network in Grigny and Viry-Châtillon in 2017, with respect to environmental, health and safety management.

The Promoter and its external partners follows the national and industrial standards for the design, engineering and operations of its projects. In addition to procedures to meet regulatory requirements, the Promoter and its contractors have safety, health, emergency, environmental and risk management systems in place, which are applied to new projects and ongoing operations. The safety and reliability of the installations are also supported by inspection and maintenance programmes and extraordinary maintenance interventions are reported to the regional competent authorities. Appropriate security, safety and emergency measures will also be set-up in line with potential recommendations from the competent

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authorities issuing the relevant permits on the basis of the impact studies submitted by the Promoter's consultants.

Working hours on the drilling site are subject to local regulations on environmental noise and public health and public access to the site will be restricted.

## **Public Consultation and Stakeholder Engagement**

As per the French environmental legislation, the environmental impact studies on the geothermal component implementation is being subject to public consultation as part of the EIA process.

In the context of its DH services provision to its shareholding municipalities, annual meetings are organised by the Promoter where its residential collective customers are informed on any on-going or planned construction works or any operational issues on the network. The Promoter is also planning to organise such information meetings in municipalities where it will extend its DH network as part of the Project scope and ahead of the start of the implementation phase.

## **Other Environmental and Social Aspects**

The geothermal works will be closely supervised by qualified geothermal consultants and this management structure will be carried over to the geothermal system operations.

Regular reporting on the progress of the drilling operations will be submitted to the competent authorities.

## **Conclusions and Recommendations**

The Project is expected to reduce emissions of greenhouse gases and other air pollutants by replacing individual natural gas heat sources in residential, public and commercial buildings with centralised heat generation, by adding new renewable heat generation as well as by extending the reach of its existing DH network assets.

The environmental approach taken by the Promoter and its external partners has been assessed by the Bank as satisfactory. Based on the information available, the Project is expected to have minor negative residual impacts and thus is acceptable for Bank financing from an environmental and social perspective, subject to the following conditions, to be included in the Finance Contract to be signed with the Borrower:

- Prior to the disbursement of funds related to any Project component, the Promoter will provide to the Bank any environmental screening decisions related to this Project component, if applicable. If for any reason any of the Project components were screened in and required an EIA, the Promoter undertakes not to allocate the Bank's funds to those components of the Project until the EIA and/or the necessary nature assessments have been finalized and approved by the competent authority in form and substance satisfactory to the Bank. For any screened-in components, once available, the Promoter will provide the Bank with the EIA report, Form A or Form B (if applicable) and the approval from the national authorities for publication on the Bank's website.

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- The district heating network elements of the Project shall comply with the “efficient district heating and cooling” categorisation per the EU Energy Efficiency Directive 2012/27/EU.
- The Promoter undertakes to keep the Bank informed on the environmental and construction permitting status of the geothermal component and in particular on any material competent authorities or public comments or appeals.
- The Promoter undertakes to take into account and implement conditions expressed in any decision, permit or consent granted by the competent authority concerning nature, environment and social aspects, as well as concerning implementation and operational practices.