

Chambéry, France

Hot property

The project consists in replacing a highly polluting old gas-fuelled district heating boiler by new biomass-based equipment with lower emissions and more stable production and selling costs. It is located in a distressed neighbourhood of the city of Chambéry, France, which is the subject of an 'integrated urban development programme for renewal'. The project has been designed and implemented by the *Société Chambérienne de Distribution de Chaleur* (SCDC). This private company provides heating and hot water under a 30-year contract with the city council. The project forms part of a jointly designed heating development strategy based on the transition from fossil to renewable energy as part of the local climate plan.

Hot property

The project installed a biomass-fuelled 7 Megawatt boiler, located in the distressed urban area of Hauts de Chambéry. It annually produces heating for 4 000 equivalent dwellings or 2 800 Tonne (Ton oil equivalent) by burning 14 000 tons of woodchips, reducing greenhouse gas emissions by 30% as compared to the former gas boiler. The equipment was delivered in mid-2011 and has been fully operational since October 2011.

The project is in line with the thematic focus on sustainable growth in the Europe 2020 strategy, and was inspired by the EU's integrated energy and climate change objectives, which have been endorsed at national, regional and local levels. They are dubbed '20-20-20', as they are to reduce greenhouse gas emissions to at least 20% below the 1990 levels, to have 20% of energy consumption coming from renewable sources and to reach a 20% reduction of primary energy use compared with projected levels, to be achieved by improving energy efficiency – all by 2020.

The project was selected within the operational programme for the Rhône-Alpes region under a measure aiming to develop renewable energy and promote biomass production. At the city level, the project has been designed to contribute to the general policy for the improvement of the environment and urban quality and to the local climate plan, whose main objective is also to reduce greenhouse gas emissions by 20% by 2020. As such, the project forms one stage in the implementation of the 'strategic plan for city heating development' jointly designed and implemented by the city council and the SCDC utility company. This strategy provides that, by 2020, 65% of the heat will be produced from renewable resources, leading to a significant reduction in emissions. The project is also promoting the development of the wood industry in the region, at least in terms of quantity produced and jobs created.

In providing heating and hot water to most of the neighbourhood's 14 000 inhabitants, the great majority tenants of the 3 500 social housing dwellings, the project contributes to the renewal of the neighbourhood as part of its integrated urban development plan for renewal. Because of the lower VAT rate that is levied on renewable energy and its more stable selling price, the project is expected to benefit low-income social housing tenants, as well as other customers such as public housing landlords and private businesses.

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The city of Chambéry, capital of Savoy in the Rhône-Alpes region of France, is of medium size, with 60 000 inhabitants and 120 000 in the metropolitan area. It has undertaken a project which at first sight might seem unremarkable, but which is highly significant for three reasons. Despite its technical complexity, the project looks quite simple and modest: the replacement of an old district heating boiler by a new one, using an ERDF contribution of €2 150 000. The fact that the old one used fossil fuel and was highly polluting while the new one burns biomass, might not be an impressive innovation; yet for the city it is a major step towards developing a renewable energy resource. It is one of the key levers to reduce emissions of CO₂ and it offers an opportunity to foster the development of wood production in a region with a high and underused forestry potential.



The city of Chambéry, Rhône-Alpes, France

District heating – the lever for an environmental turnaround

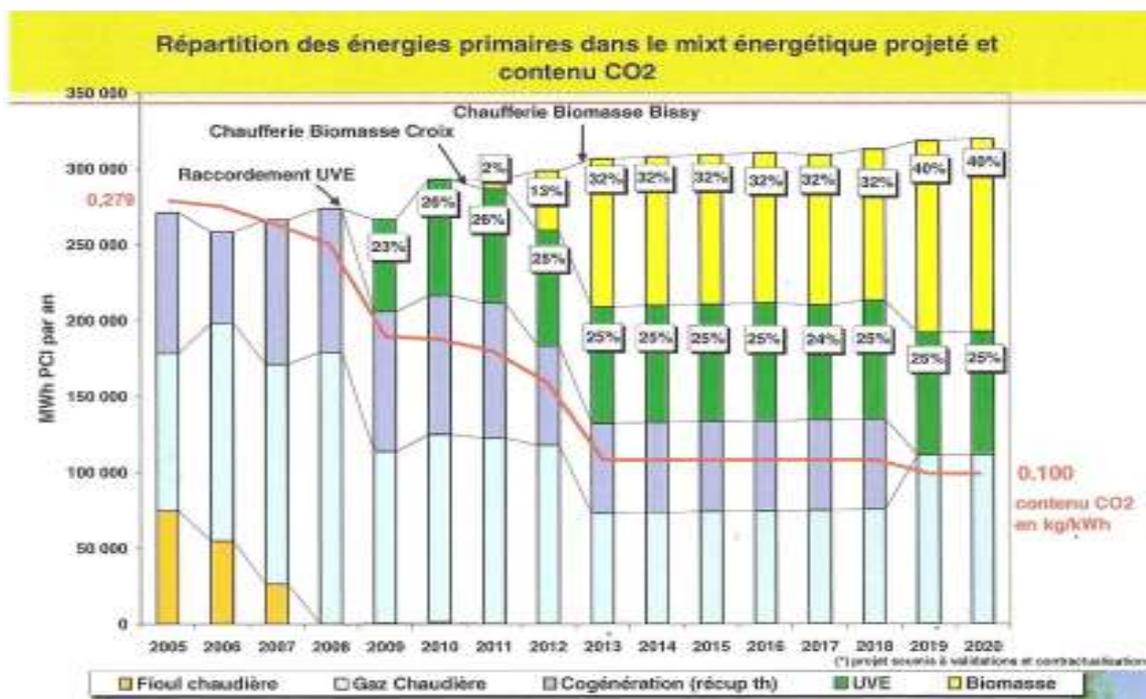
Chambéry ranks about 100th in terms of population in France, yet has the fifth-largest urban heating system. With six boilers of a combined power of 200 Megawatts, this system heats the equivalent of 25 000 dwellings. Until 2008, this equipment was 100% fossil-fuelled. Over the last decade the city council – and more recently the regional council – have developed a strongly commitment to sustainable development. The design of an Agenda 21, whose main strand of work was to prepare a Local Climate Plan in 2006, offered an opportunity to stage a broad debate, based on an accurate measurement of emissions produced in the metropolitan area. The diagnosis showed that this level was very high, reaching 780 000 Teq CO₂ (tons equivalent CO₂). This means that the greenhouse gases emitted have the same global warming effect as 780 000 tons of carbon dioxide. Of this total, 40% was produced by the housing and service sector, with almost 10% generated by the urban heating system. Both diagnosis and debate concluded that changing the energy sources used by these boilers was ‘the most effective lever’ for achieving a reduction of about 20% in CO₂ emissions by 2020 – corresponding to a 155 000 Teq CO₂ decrease. A biomass heating boiler, such as the one funded by the project, reduces CO₂ emissions by 14 000 tons/year (or 4 600 Teq CO₂) and over 10 years can deliver 36% of the total reduction target.

A purpose-designed public-private partnership

The project was designed and implemented by the *Société Chambérienne de Distribution de Chaleur* (SCDC) a private company which is the local branch of a national heating company COFELY. This is a subsidiary of the multinational group Gaz de France-Suez, a former public company privatised four years ago. SCDC produces and distributes heating and hot water under a 30-year contract with the city council called a 'delegation of public service'. This legal arrangement allows for depreciation and possible compensation at the end of the contract if it is not renewed. It also provides that the city becomes the owner of the plant. So, if SCDC is a final beneficiary, the city is *in fine* an indirect beneficiary. The project was unanimously approved by a vote in the city council.

Within this contract, subject to adjustments, a joint strategy plan for city heating development until 2020 (*schéma directeur horizon 2020 du réseau chaleur*) was drawn up in synergy between the company and the city council, in cooperation with ten other stakeholders, including regional and *département* councils and major customers such as social housing agencies. According to this strategic plan, 65% of the heat will be produced by renewable resources by 2020.

The first renewable energy unit, a waste incinerator, was built in 2009, and provides 25% of the city's district heating. The project under review is the second stage of this diversification or transition process. It contributes around 13% of the target. In 2013, in the third stage, a 14MW biomass boiler will be built. By that time, as is shown in the graph below, more than 50% of the heat will be produced from renewables, meaning that the selling price can be cut by 10% owing to the VAT reduction from 19.6% to 5.5%.



Split of primary energy sources in the projected energy mix and CO₂ content¹

Meeting Structural Fund objectives

¹ Legend: *Ficoul chaudière* = fuel oil. *Gaz chaudière* = gas. *Cogénération* = cogeneration. *UVE* (*unité de valorisation de l'énergie*) = waste incineration. *Biomasse* = biomass. *Raccordement* = connection

Source: *Schéma Directeur Horizon 2020 du Réseau Chaleur*. SCDC and City of Chambéry, September 2011, p. 101.

SCDC applied for support under the regional operational programme (ROP) established under the regional competitiveness and employment objective of the EU's cohesion policy. Conveniently, one of its sub-measures aims to 'promote the development of renewable heating' – an exact fit with the project's goals. A feasibility study commissioned by the company was attached to the application. Like all projects on energy and environmental issues, the application was assessed by the regional branch of the Agency for Environment and Energy Management (ADEME) and by the technical departments of the regional branches of the Ministries of Agriculture and Industry. The project was selected on the basis of the criteria set out in the ROP and in the implementation document, such as quality of management, economic and social implications and environment impacts. Selection was also based on quantitative and qualitative indicators of the project's direct contribution to renewable energy, its strong impact on CO₂ emissions and its capacity to foster the region's wood production and create new jobs. Though one qualitative indicator refers to 'a good assessment of impacts in the vicinity' related to the project's location in a densely-populated area, no reference is made to the lower and more sustainable heating selling price that will result.

The ERDF contribution of €2 150 000 covers 55% of eligible expenses² (and 42% of the total cost). The Regional Council contributed a further 5%, while 40% of eligible expenses (and 54% of the total cost) was funded by the beneficiary. Both main partners – the SCDC Operations Manager and the Deputy Mayor in charge of environment and energy – agree that 'the project would not have gone ahead without ERDF support because the cost would have been too high for SCDC'.



The biomass boiler

A professional approach to management

The SCDC Operations Director managed the project implementation, adding this function to his other responsibilities. The work was supervised by a steering committee composed of both key stakeholders, assisted by their respective expert advisers. Representatives of major customers such as the Social Housing Agency, the hospital and private property owners were associated or consulted. The steering committee took key decisions such as selecting the building company

and choosing the equipment to be installed by the manufacturer. No details of the number of meetings held or of the management workload are available. But the technician now running the plant was actively involved in the installation. The project required a long phase of tests and controls entrusted to the partner's advisers and external safety organisations. The Managing Authority asked ADEME to make a specific assessment of the quality of management (*contrôle qualité gestion*).

The project was selected in January 2010. Construction started that September and the equipment was delivered in June 2011. Following tests and controls, it became fully operational in October 2011 at the start of the winter season.

Benefits for the local population

Hauts de Chambéry is a suburb in the upper town, which was developed in the early 1970s and is now rather distressed. It has a population of 14 000, for the most part living in the 3 500 social housing units which make up a large share of the premises served by the new boiler.

² Total cost: €5 020 000. ERDF 43%, Regional Council: 4%, beneficiary: 53%.
Eligible expenses: €3 877 000. ERDF 55%, Regional Council: 5%, beneficiary: 40%.



Hauts de Chambéry, site of an integrated urban programme, where the project is located

This area is the subject of an integrated urban development plan for renewal (*programme urbain intégré de rénovation*). Local associations involved in this programme see the project as important to a more sustainable type of urban renewal, as it supplies heating at a lower cost to low-income social housing tenants. The social strand of sustainability is put forward, even though heating expenses are not easily identifiable, as they are lumped together with the other elements of the rent paid to the social housing agency. It is however considered of minor importance in comparison to more controversial operations such as housing demolition and rebuilding – with the decanting and rehousing that this implies.

Local associations and residents have been informed about the project but not closely involved, except for those living in the vicinity of the boilers, who were consulted at a public enquiry prior to its construction. The issues that came up related to the noise of the lorries delivering the woodchips (there are three deliveries a day during the winter), but these have been solved. The boiler is seen by residents as a delivery service or as a basic utility, like electricity or water.

Of course the new dwellings are energy efficient and the renovation of existing flats has also improved their energy performance, contributing to the ‘third 20% objective’ of reducing primary energy use by 20% compared with projected levels, by improving energy efficiency. Even if this objective is not mentioned in the joint SCDC-city strategy on urban heating, this strategy is based, in the medium term, on stabilising overall heating production while gaining new customers such as the owners of private houses and office buildings.

Opening up to the city at large

The project is encapsulated in the broader urban renewal strategy, which aims to profoundly transform the image of the neighbourhood, and open it up to the city at large. Since 2006, several major projects have been implemented, such as the creation of a school dining hall, the extension of a kindergarten (2007), renewal of the shopping centre, and the creation of a new centre for the elderly with 82 beds. All these projects include energy-efficient solutions for heating, in which the SCDC project comes as a flanking measure to provide sustainable energy solutions to public amenities and services.

Boosting regional wood production

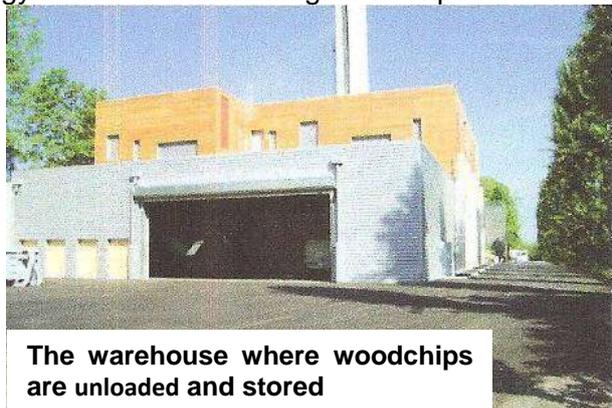
In addition to sourcing energy renewably and reducing CO₂ emissions, the third objective of the project is to promote wood production in the surrounding area. The zone concerned is defined as a 100km radius, in order to limit transport costs and emissions. The Programming Committee and its advisers from both ministries doubted the capacity of regional wood producers to deliver 14 000 tons of woodchips a year. It asked ADEME to assess the production capacity of a new unit to be set up as mentioned in the application. To prevent a

bottleneck developing, SCDC decided to call the producers together to make a joint diagnosis, set up a selling platform, and define common terms of reference. The selling platform consists of a coalition of potential sellers ready to sell woodchips, with whom SCDC can discuss orders, quantity delivered, etc. After a few months in operation, the quantity of wood has been secured, according to the SCDC director.

Impact studies on the economic development of forested areas of the region by stimulating wood production were included in the *ex ante* feasibility made prior to the project's inclusion in the Integrated Urban Programme. The productive capacity of this new unit is to be checked during the first year by the local environmental agency, ADEME. Other issues of quality were raised, regarding excessive humidity and sawdust, which can damage conveyor belts, and require each lorry load of wood to be tested on delivery. Definition of terms of reference and of quality standards with providers is still under discussion within the selling platform in order to address and solve these problems.

Good initial results

At the end of October 2011, the new biomass heating boiler went online. Since then, it has produced around 4 000 Megawatt-hours of energy per month, which is in line with the forecasts given in the feasibility study and the funding application. Given that it generates 13% of the city's total production for 2012, the new boiler marks an important step in the transfer from fossil-based to renewable energy-based urban heating. It is expected to cut CO₂ emissions by about 14 000 tons in 2012. It also helps the city to reach the threshold of 50% renewable energy which will qualify it for a lower VAT rate, thus reducing the selling price by over 10%. In addition and along with other similar plants and coupled with a growing demand from individual consumers, the project has boosted the production of wood and made a contribution to the organisation of the supply side of this market, which until recently was poorly structured.



The warehouse where woodchips are unloaded and stored

Similar plants have been built over the last year in the region and the project is not a one-off. SCDC plans to install two similar plants of the same capacity next year on another site. The ERDF's support is acknowledged in the project's publicity, and numerous city representatives from Rhône-Alpes and nearby regions have visited with a view to imitating it.

Using local resources for local benefit

Even if this project did not take a new approach in comparison to previous practices applied in the region, or innovate much in terms of implementation, communication or dissemination, in the city of Chambéry and the Rhône-Alpes region it is still felt to be a good practice. It makes a key contribution to diversifying the energy sources of a major urban heating system and migrating from fossil to renewable energy. It is expected to reduce CO₂ emissions and boost wood production in a mountain region with great potential in this field. No major obstacles cropped up during implementation, and most technical problems have been solved.

These achievements may have been made easier by the context within which the project was designed and implemented and by its mode of governance. The strategy and the project itself are the outcome of debates, participation and empowerment of a local association and residents as part of creating the local climate plan. Based on a shared diagnosis of the environmental situation and levels of emissions, this planning process built a strong

commitment to renewable energy among key stakeholders, and the project idea was formulated during this exercise. The project also benefits from the synergy between the city council's heating policy and the strategy of the private utility company. Finally, the project benefited from a high level of technical support during its design and implementation. An *ex ante* feasibility study was carried out, and it was managed by a solid public-private partnership set up for the purpose.

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AEIDL has been contracted by the European Commission in 2012 in order to provide 50 examples of good practice in urban development supported by the European Regional Development Fund during the 2007-2013 programming period (contract reference 2011.CE.16.0.AT.035). The views expressed by AEIDL remain informal and should not under any circumstance be regarded as the official position of the European Commission.