



Biomass – a priority for French district heating networks

Paris, December 2021

Agenda

- **Background and introduction**
- The Swedish biomass experience
- Executive summary
- Market analysis France
- Appendix





Paul Westin
*Senior Business Developer,
Swedish Energy Agency*

Introduction



- Sustainable Heating and Cooling is a Swedish priority, nationally and internationally. Transforming heat markets in Europe and globally by introducing more renewables and higher energy efficiency is key for achieving the sustainable development goals.
- Fossil fuels have almost entirely been phased out from heating and cooling networks in Sweden, and the introduction of a carbon tax already in 1991 was a very important driver for the successful implementation of biomass in the Swedish district energy systems.
- Biomass constitutes the largest supply of energy to district heating in Sweden, and it is dominated by residues from sustainably managed forestry of Sweden. The increase of biomass in the heating sector has been coupled with an increase in the total wood stock of Swedish forests, showcasing that biomass can be sustainably used for replacing fossil fuels in the energy system.
- The purpose of this report is to give an overview of the French biomass sector, primarily in relation to district heating networks. It identifies policy drivers, as well as market inhibitors, for the use of biomass as an energy source in French district heating networks.
- The report is intended as a supporting document for the members of the SHC by Sweden platform with the aim of identifying possible pathways for Swedish companies to enter the market. It could also serve as an introduction to the Swedish know-how and development for stakeholders abroad.
- The Swedish Energy Agency, in collaboration with Business Sweden and Sweheat & Cooling, is leading the Sustainable Heating and Cooling by Sweden program. The platform comprises 45 Swedish suppliers of technology and services to the heating and cooling markets, including biomass equipment and other application areas.

The report sets out to better understand the market conditions and business opportunities in France for Swedish companies within the biomass sector

- During the years 2013-2020, the use of biomass in district heating networks grew on average 9.5% per year in France. Between 2009-2017, biomass-related projects were the top recipient of subsidies from the public investment fund, Le Fonds Chaleur.
- The reason behind the shift towards biomass is twofold:
 - The government's national goals of increased use of renewable energy sources. As part of the French energy transition to bring down CO₂ emission, coal fired heating plants will be phased out by 2022*.
 - An abundance of biomass in many parts of France, mainly from forest and agriculture.
- The trend in increased use of biomass as fuel for district heating networks in France presents interesting opportunities, given the long history of Swedish companies active within the biomass sector.
- The Swedish district heating industry is an extensive user of biomass solutions. In total, 44% of Swedish district heating fuels originate from biomass, showing how far Sweden has come in the usage of the fuel.
- The following report sets out to better understand the market conditions and business opportunities in France for Swedish companies within the biomass industry.

- This report takes into consideration the following biomass sources (*n.b. not liquid fuels*):
 - Wood and wood processing wastes
 - Agricultural crops and waste materials
 - Biogenic materials in municipal solid waste
- The report focuses on the production of heat and combined heat and power, located at individual facilities or buildings, or district energy or utility resources (i.e. connected to grids).



Agenda

- Background and introduction
- **The Swedish biomass experience**
- Executive summary
- Market analysis France
- Appendix

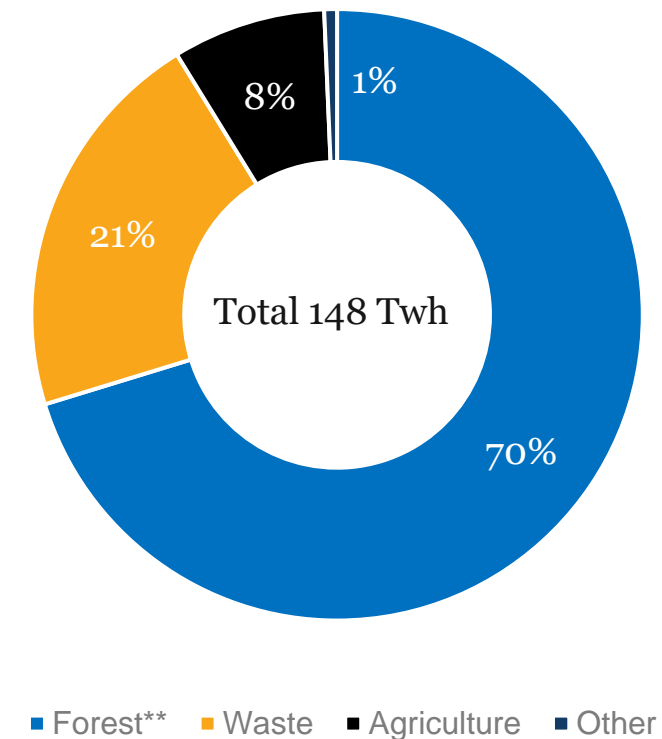


Sweden's extensive forest land and the carbon dioxide tax introduced 30 years ago played important roles in the transition from fossil fuels to bio energy

A short history of the Swedish biomass market

- Sweden has the largest forest coverage in EU with approximately 30 million hectares. Being such a forest-covered country with extensive access to biomass sources, Sweden's usage of biomass as fuel was logical and explains why the majority of biomass has originated from forest bi-products.
- Sweden has historically had several smaller boiler manufacturers, successful before and during the 1990s. Later on, many were outvalled and bought by Danish, Baltic and Slovakian companies with more competitive prices.
- Many fossil fuel boilers were converted to biomass boilers in Sweden in the 1990s when the carbon dioxide tax was introduced.
- The high carbon dioxide tax had a positive impact on the use of biomass as energy source, pushing district heating networks and the industry to transition to biomass boilers.
- The use of bioenergy in Sweden has increased steadily over the past 35 years and it has more than doubled since the 1990's.

Supply of bio energy in Sweden* (2020)
TWh



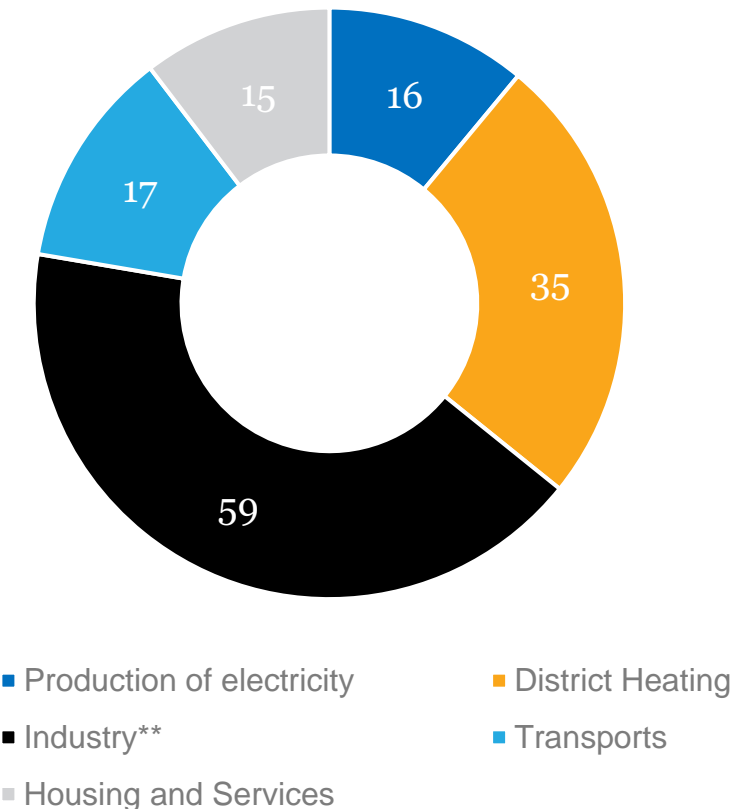
Source: Business Sweden analysis, Svebio, Bioenergitidningen *Domestic production and imported, **Not limited to firewood logs: also including biproducts and discarded wood

There is an economic rationale to use bio-energy in Sweden, with future potential to find new application areas for unexploited biomass

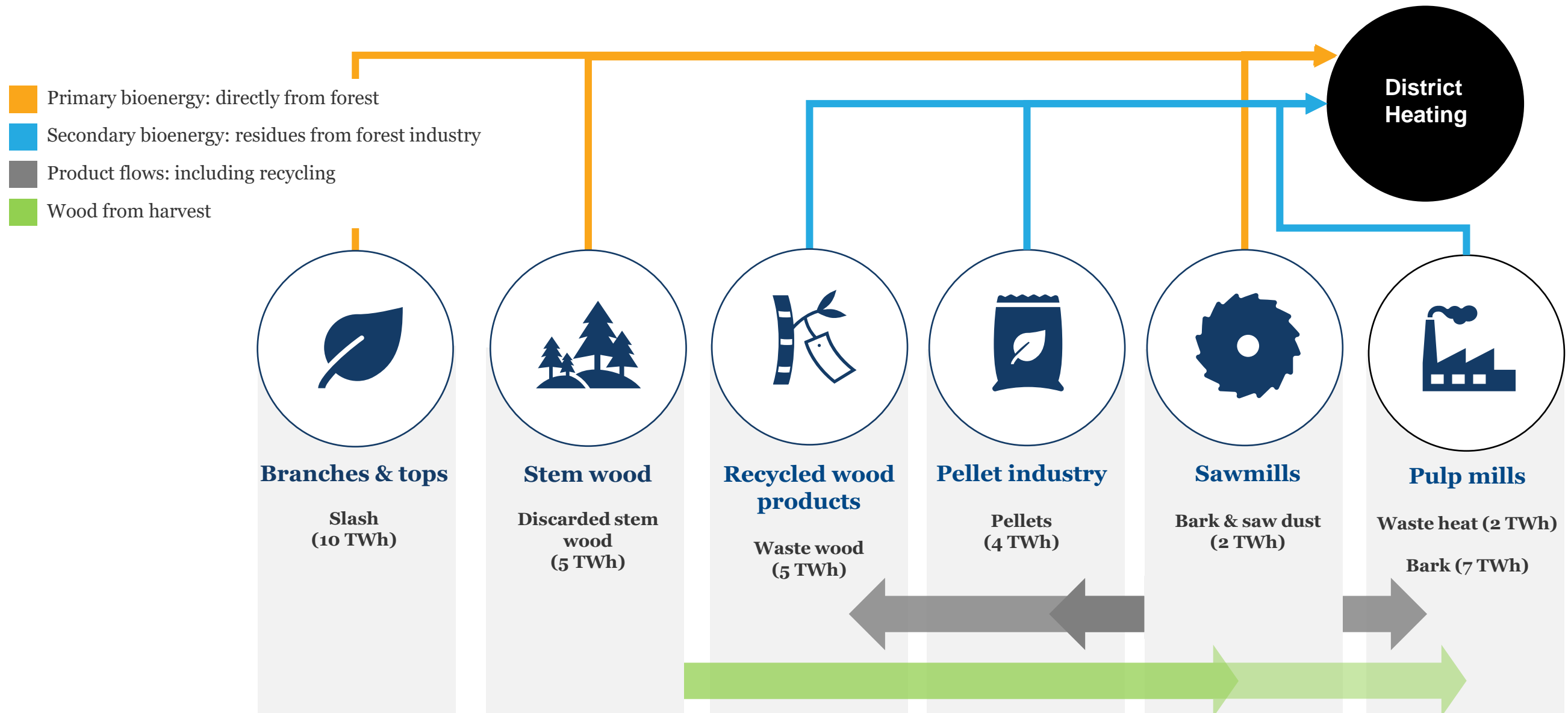
The Swedish biomass industry today

- Today, the Swedish district heating industry is an extensive user of biomass. In total, 44% of Swedish district heating fuels originate from biomass, showing that Sweden has come a long way in the usage of the fuel.
- The heating sector is close-to fossil-free. The biggest challenges are seen in the transport sector and in the industry, where bioenergy can play an important role in achieving fossil-free economies.
- The bio-energy that is used for district heating mainly originates from Swedish forests as bi-products from the industry (e.g., bark), or as harvest residues from felling (e.g., slash). A smaller part of the biomass is harvested during forest management (e.g., discarded wood and waste wood).
- There is an economic rationale to drive big-scale forestry in Sweden. Wood is produced and grown in an industrial manner and bi-products from forestry are integrated and used as bio-energy for a variety of purposes, district heating included.
- There is still potential to increase the use of biomass originating from forestry by-products. For example, only 5% of branches and tops that enter the market is used. There thus remains opportunities for future developments and application areas if bio-energy is to be used as efficiently as possible to substitute fossil fuels.

Bio energy use per sector in Sweden* (2020)
TWh



Flow chart of the Swedish forest-bioenergy system: the primary and secondary sources of bio-energy feeding into district heating*



Source: Svebio - Bioenergy from boreal forest, Swedish approach to sustainable wood use. IRENA, International Renewable Energy Agency (2019), * Expressed as energy (TWh)

Agenda

- Background and introduction
- The Swedish biomass experience
- **Executive summary**
- Market analysis France
- Appendix



Biomass is a top priority in French district heating networks



EXECUTIVE SUMMARY

- As of today, 23.8% of energy provided by district heating networks in France comes from biomass. There's a clear **trend in the increased use of biomass in district heating networks**, illustrated by an 9.5% average annual growth rate and biomass-related projects receiving the most financing from the Heat Fund between 2009-2017.
- The government has set **high climate objectives for renewable energies** and introduced policies to promote the ecological transition. For instance, 38% of France's final heat consumption should be generated by renewable sources by 2030.
- To support the ecological transition, several financial incentives have been put in place by the government to promote use of biomass. **The Heat Fund and Energy Savings Certificates are the most long-term incentives on the market.**
- **The forces driving the shift to biomass** are mainly ambitious political objectives, volatile fossil fuel prices and the availability of biomass resources, while **key challenges** mainly concern an underdeveloped biomass market and public opinion regarding biomass.
- French heat networks relying heavily on biomass as fuel distinguish themselves as numerous but are generally small in size with smaller-scale energy outputs. Plants are mostly situated in rural areas, due to the sheer size of such installations.
- The challenges French operators face in the transition to biomass as an energy source present opportunities for equipment and service suppliers. Given Sweden's history and experience in using biomass, the sector offers **interesting business opportunities for Swedish companies that want to grow on the French market.**

Agenda

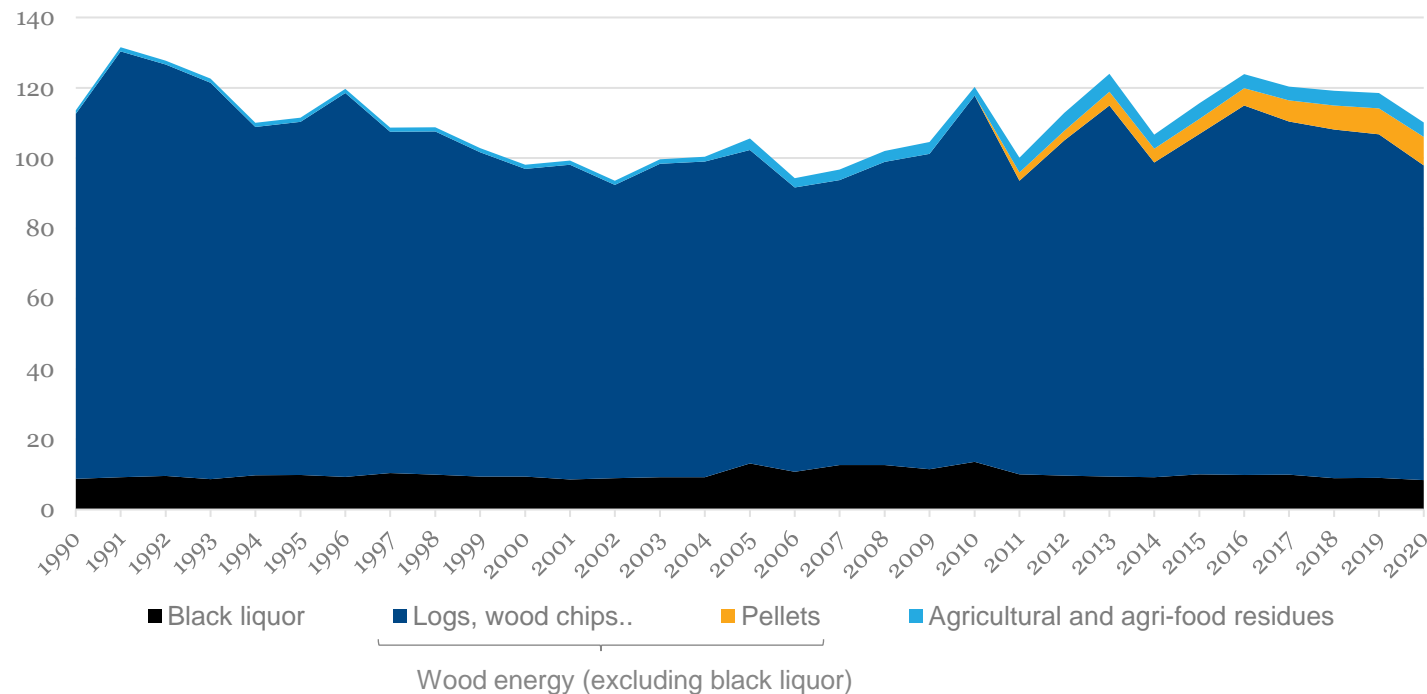
- Background and introduction
- The Swedish biomass experience
- Executive summary
- **Market analysis France**
- Appendix



Biomass production in France has historically been, and continues to be, dominated by wood energy. The energy sector consumes 18% of the wood energy

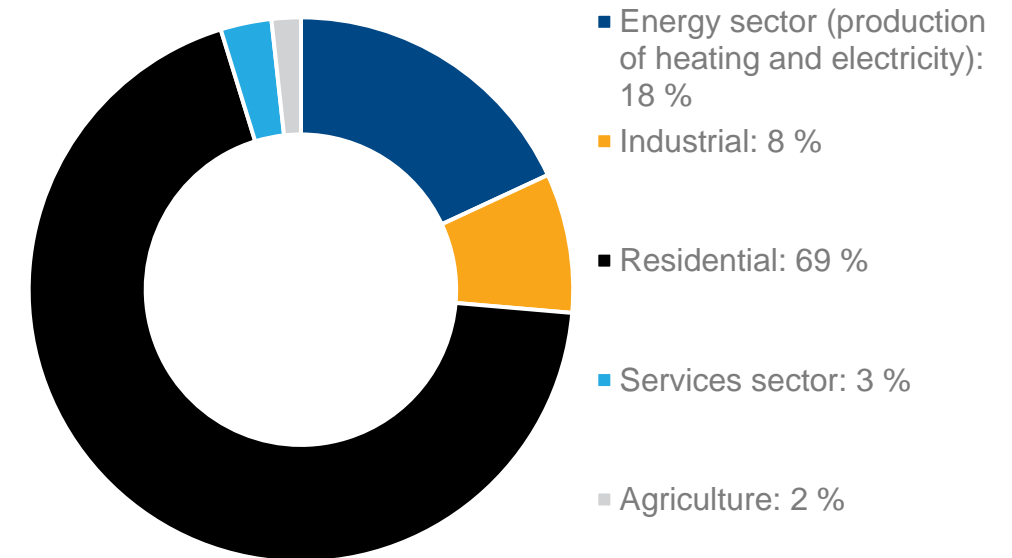
Development of solid biomass production (excluding waste) 1990-2020

Twh



Consumption of wood energy by sector (2020)

Percent

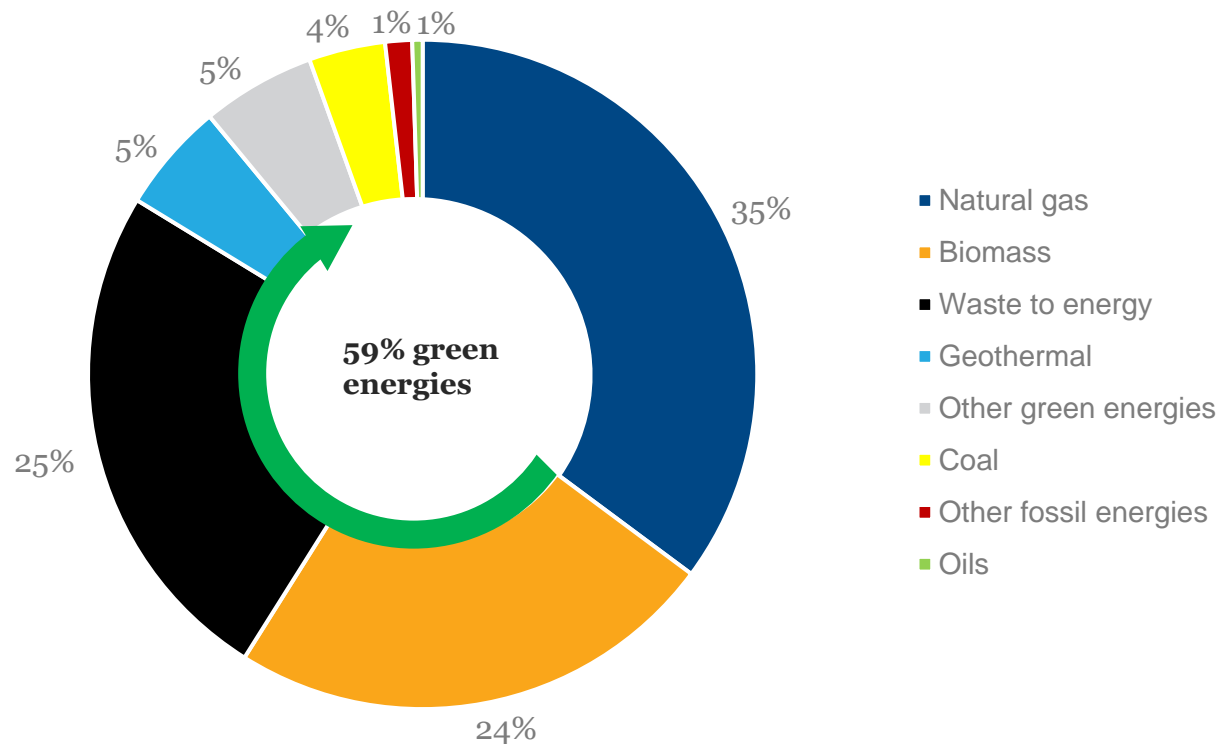


- The energy sector, which includes the production of heating and electricity, makes up 18% of total wood energy consumption
- The residential sector is by far the majority consumer at 69%, consisting of the use of logs, wood chips, pellets, etc. to heat individual houses

Source: SDES, * Production of heating and electricity

23.8% of the energy provided by district heating networks comes from biomass, meeting a wide range of heating needs

The energy mix among district heating networks (2019)
Percent



Biomass in French district heating networks (2019)

Key data and trends

- Heat produced from biomass is the second biggest renewable energy source after waste to energy
 - 23.8% of the energy provided by district heating networks comes from biomass.
 - It was multiplied by 7 between 2009 and 2019.
- Biomass is used to meet a wide range of heating needs (hot water, steam, hot air, from 100°C to more than 550°C).
- France has approximately 5,000 biomass energy installations in the collective and industrial sectors, with powers ranging from 50 kW to more than 50 MW.

Biomass used in networks: **539**
(out of 798)

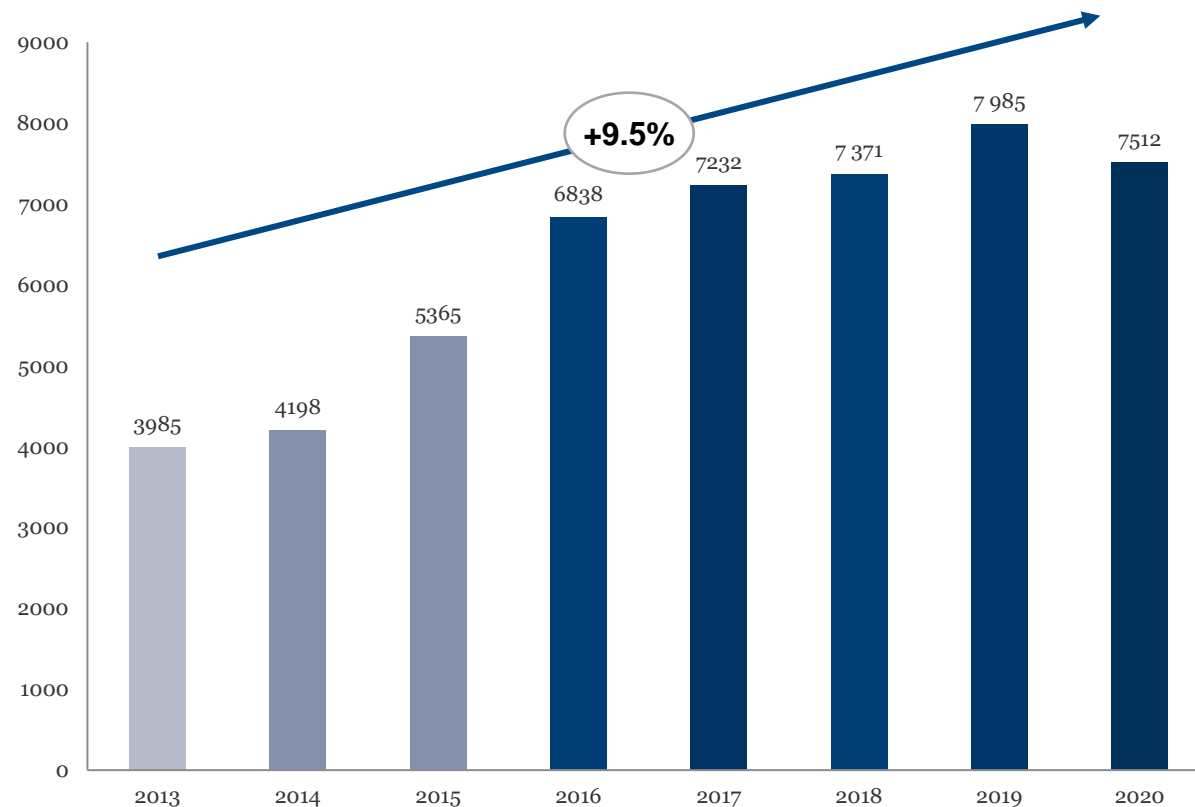
Renewable heat production: **6 841**
GWh (22,1%)

Biomass growth: **+32** new networks
(vs. 2018)

Biomass boilers in DH networks: **525** (+16 for cogeneration)

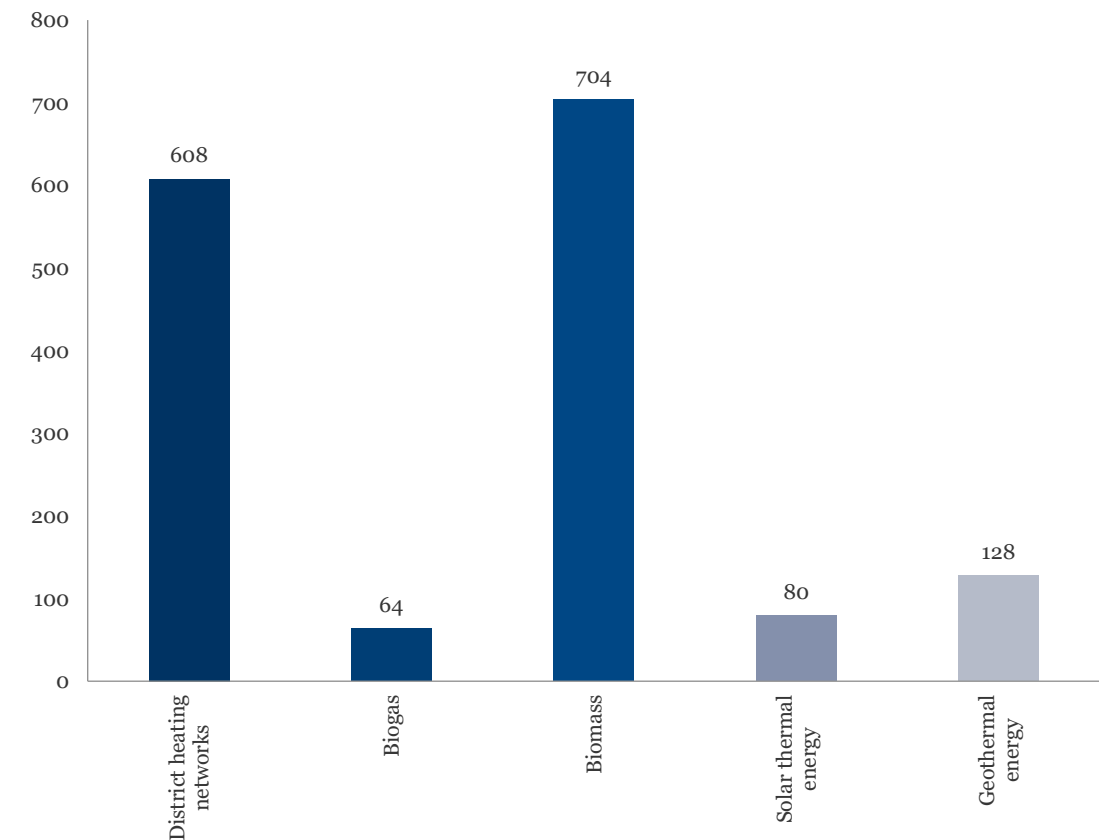
A clear trend in increased use of biomass in district heating networks, illustrated by an 9.5% average annual growth rate and Heat Fund public financing

Biomass used in French heat networks (2013-2020)
GWh, CAGR



Heat fund allocation of subsidies by project type (2009-2017)
Million EUR

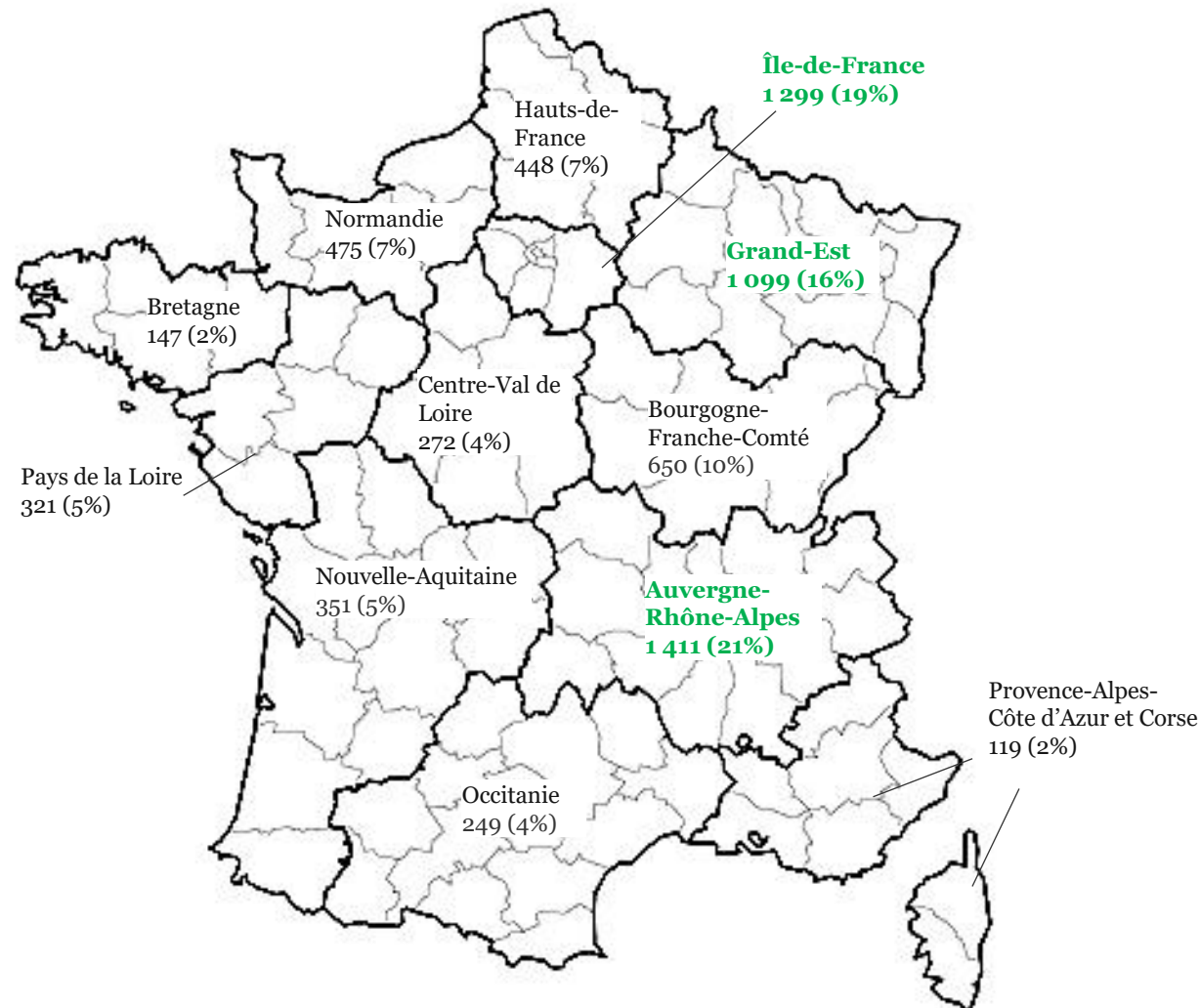
- During the 2009-2017 period the Heat fund was involved in the financing of 4300 projects, with biomass-related projects receiving the most financing.



Source: Fedene Annual Heat Networks Survey, 2013-2020 editions. ADEME, Report on Le Fonds Chaleur

Three regions stand out in terms of substantial heat production from biomass, while the wood energy market is deemed not to be utilized at full capacity

Heat production from biomass per region (2019)
GWh and percentage of total heating originating from biomass



The French wood energy market
Observations and trends

- Wood represents 40% of renewable energies produced in France
- The three main forms of wood energy used in France are: **wood logs** (35 Mt/year), **chips from wood or industry** (4 Mt/year) and **pellets** (1 Mt/year). These are used to produce heat, electricity and secondary biofuels
- 31% of France's surface, or 17 Mha, consists of forested land:
 - 25% is publicly owned (e.g., the state, municipalities, local communities)
 - 75% is privately owned, consisting of 3.3 million landowners
- The forest has an annual bio-growth of **90 million m³** with a comparatively low annual harvest of **55.3 million m³** per year
- Although biomass usage has increased steadily during the last years, the fuel is by many perceived as not abundant enough to replace current fossil fuels being used on its own

Biomass is a resource that France is not using at full capacity, there is still potential for its development



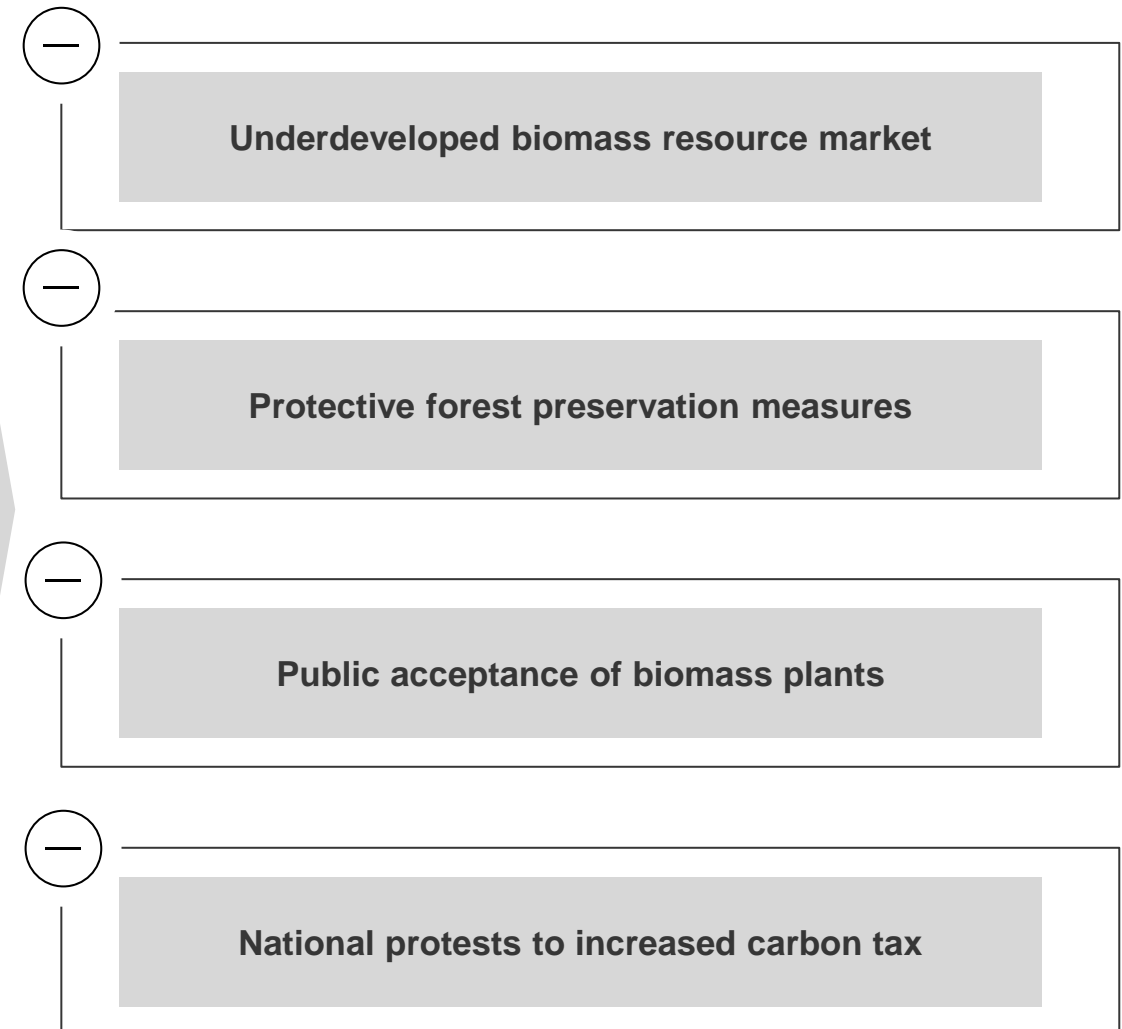
SER-FBE

National policies and incentives, together with other driving market forces, work to overcome inhibiting conditions for the development of biomass

Drivers



Inhibitors





Biomass – a national priority

Objectives for renewable energies by 2030

- 32%** Renewable energies should represent **32%** of France's gross final energy consumption. By 2020, it reached 19.1%. The biomass sector represents the largest share, producing 35.8%
- 38%** **38%** of France's gross final heat consumption should be generated by renewable sources. In 2019, it accounted for 22.5 % of total energy use (for heating and cooling)
- x3** The renewable and recovered energies delivered by heating and cooling networks should increase by **3** times to 39.5 TWh (compared to 15 TWh during reference year 2019)

Main policies for renewable energies

National Bioeconomy strategy

- In 2016, France adopted a national bioeconomy strategy that aimed to reinforce the complete value chain of the biomass sector
- A national action plan was launched in 2018
- From 2020, this was succeeded by regional strategies, where regions outline tailored strategies with reference to the Multiannual Energy Programming goals, in function of their individual capacities

RE2020

- The RE2020 is an environmental regulation with the objective to improve buildings' energy performance and comfort, while reducing their carbon impact by limiting the use of non-renewable energies
- It sets thresholds for housing that exclusively use gas for heating, which will be further restrained until 2031
- Thresholds also apply to district heating networks, but French energy operators highlighted that it will not have much impact on district heating networks that already present a high proportion of RER

Multiannual Energy Programming PPE

- The PPE program sets energy priorities for public authorities to help them achieve the energy policy objectives defined by law
- Final consumption objectives are set for each renewable energy sector
- Quantified targets currently covers 2019 to 2023 and 2024 to 2028
- These are reevaluated every 5 years, with new propositions due in 2022
- Biomass has the following objectives:
 - 143 TWh by 2023 and 157-169 TWh by 2028
 - *Reference data: 123 TWh in 2016*

Source: Business Sweden analysis, ADEME, French Ministry of the Ecological Transition, French Ministry of Territorial Cohesion

Three main financial incentives to promote biomass projects

A The Heat Fund

- **Description:**

- The French "Heat Fund" is a public aid aimed at helping communities, institutions and companies transition to heating and cooling by renewable energies.
- The goal is to make the concerned technologies economically competitive in comparison to installations using conventional energies.

- **Funding and duration:**

- Current annual budget of 370 million EUR. Total subsidies through the fund amounted to 2.6 billion EUR between 2009 and 2020.
- Funding is available to biomass projects within various sectors, such as agriculture, tertiary, public buildings, industry.
- The Heat Fund is a long-term initiative and financial incentive.

B Energy Savings Certificates

- **Description:**

- The CEE is a steering tool where the authorities for ecological transition has set obligations for energy providers to reduce energy consumption.
- This mechanism has defined goals and quotas over a 4-year fixed period, which the providers must fulfill to avoid financial penalties.

- **Funding and duration:**

- Funding is decided and paid out by energy providers.
- Providers offer various aid to support consumers' energy savings, or control energy demand: funding, premiums, and vouchers, but also advice, free services or support programs.
- From 2006 until today, obligations have increased each period. The CEE is considered an important steering tool that will continue long-term.

C Reduced VAT Rate

- **Description:**

- France has reduced the VAT rate to 5.5% for heat deliveries from networks supplied by more than 50% renewable energies, including biomass and waste energy.

- **Duration:**

- The efficiency of this incentive could be reevaluated in the near future.

“Without the Heat Fund ‘Le Fonds Chaleur’ we would not have a network, nor would we have been able to keep developing it. The price tariff would simply not have been favourable enough to justify the investment.”



Head of Energy and Heat Networks,
Rennes Métropole

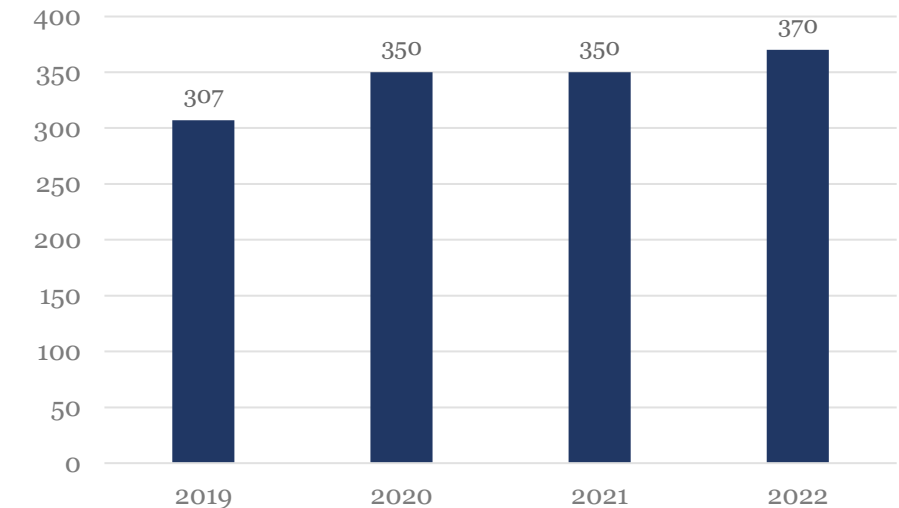
Three main financial incentives to promote biomass projects

1. The Heat Fund

The Heat Fund Le Fonds Chaleur

- **Description:** The French "Heat Fund" is a public aid that is aimed at helping communities, institutions and companies to contribute to the transition to heating and cooling by renewable energies. The goal is to make the concerned technologies economically competitive in comparison to installations using conventional energies
 - A project's feasibility is based on its rate of profitability. The industry may submit project proposals to ADEME with a minimum of a 3% profitability. The fund then supports the project until it reaches e.g., 7-10% profitability, or a minimum of 5-6%
- **Responsible organisation:** The French Agency for Ecological Transition (ADEME)
- **Funding and duration:**
 - Current annual budget of 370 million EUR. Total subsidies through the fund amounted to 2.6 billion EUR between 2009 and 2020
 - Funding is available to communities, companies and associations that carry out biomass projects within various sectors, such as public buildings, collective housing, the tertiary sector, industry and agriculture
- **Future developments:**
 - The Heat Fund is an “envelope” open to multiple renewable energies, and ADEME does not have set goals for the number of biomass projects to finance. It does, however, target biomass projects* within the framework of the French Recovery Plan.
 - ADEME has confirmed the continuation of the Heat Fund as a long-term initiative and financial incentive. At this time, projects would not be economically feasible without this aid, which proves its utility as a financial incentive

The Heat Fund Annual Budget (2019 – 2022) Million €



Source: Business Sweden analysis, ADEME, The French Ministry of the Ecological Transition, FNCCR

* BCIAT is a temporary project-based support that allocated funding to biomass projects through the Heat Fund, as well as the Decarbonization of the Industry funds (managed by the ASP)

Three main financial incentives to promote biomass projects

1. The Heat Fund

The Heat Fund

Le Fonds Chaleur

- Decarbonizing industry is difficult and costly, but it is possible to use waste or biomass for industrial heat production. Such projects are prioritized by the Heat Fund, e.g., to substitute biomass to coal, or to reduce or eliminate coal and its use in industries and heating networks
 - Support for biomass boilers is available for collective and industrial heating via the Heat Fund
 - Between 2009-2017, it funded 1093 biomass boilers: 163 in industry and the rest in collectivities*
 - By 2019, ~300 projects and 1050 thermal biomass plants had received aid. Of the nearly 2 bn EUR provided to the 4,800 installations subsidized by the Chaleur Fund, 39% contributed to financing wood-fired boilers and 39% of heating networks
- **What biomass projects qualify for aid?**
 - **Collective installations:** having a minimum production of 1,200 MWh/ year. Low-power installations producing less than 1200 MWh/year may be eligible but within the framework of territorial contracts for developing renewable energy
 - **Business sector installations** (industry, agriculture, tertiary sector) are supported if they have a production between 1,200 and 12,000 MWh/year
- **Nature of the aid:**
 - The Heat Fund finances up to 45% of heating or cooling installations by renewable energies and up to 30% of investments in heat recovery
 - The aid for biomass heat and cold production facilities is determined based on the size of the installation, and whether is connected to a DH network
 - Small- and medium sized projects will receive aid in the form of a lump sum
 - Other projects will be determined by a case-by-case economic analysis. This is generally calculated by a feasibility study that takes into various performance criteria
 - E.g., the production in MWh
 - The feasibility study, the equipment as well as the biomass boiler can qualify for aid from the Heat Fund
- **Eligibility of aid:**
 - The fund finances a variety of projects, including biomass and district heating (anyone that wants to develop a heating/cooling network can apply for aid). It pertains both to the public and private sector where financing options can be combined (for example, both the Heat Fund and Energy Savings Certificates, presented in the following section)



Three main financial incentives to promote biomass projects

2. Energy Savings Certificates

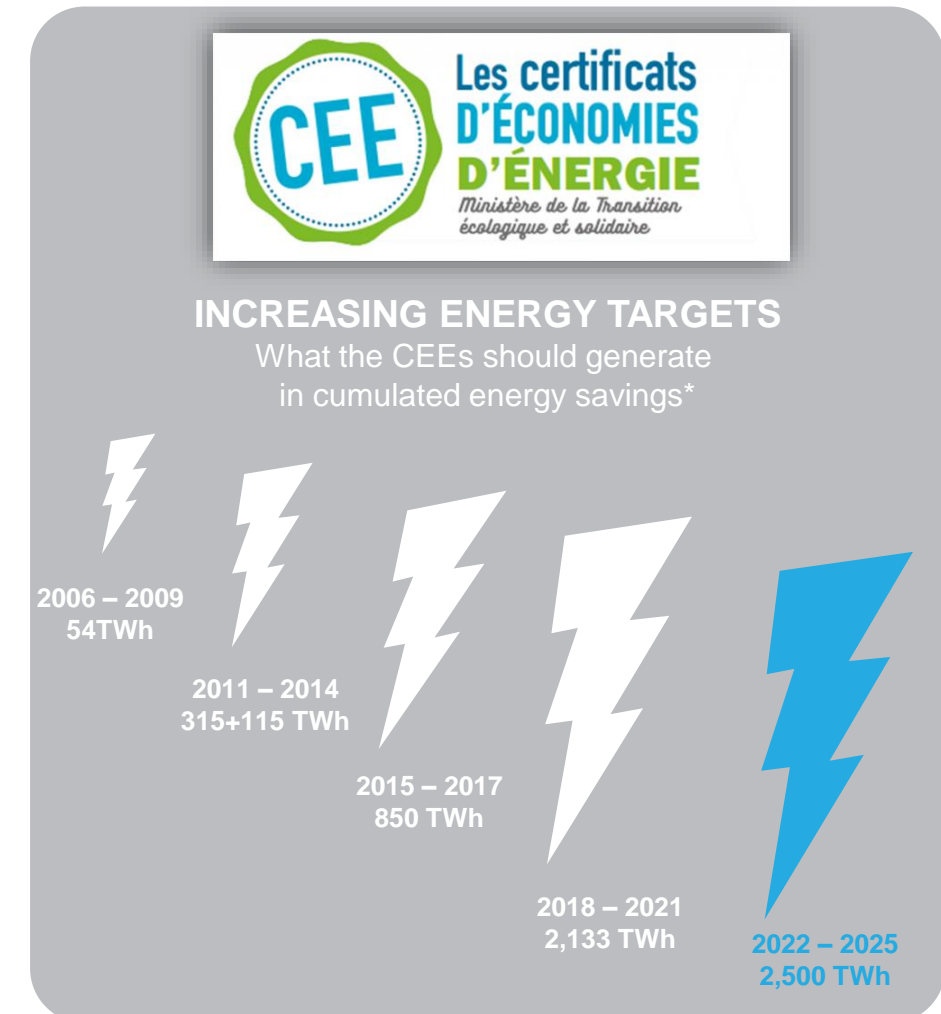
Energy Savings Certificates

Certificats d'Economies d'Énergie (CEE)

- **Description:** the CEE is a steering tool where the authorities for ecological transition has set obligations for energy providers to reduce energy consumption. This mechanism has defined goals and quotas over a 4-year fixed period, which the providers must fulfill to avoid financial penalties
 - It currently concerns about **130** companies, including energy providers as EDF, Engie and Total, and large fuel distributors as Carrefour and E.Leclerc
 - The companies can decrease their own energy consumption by doing works on their own industrial plants, but more importantly: they should play an active role in providing energy-saving incentives for the final user
- **Responsible organisation(s):**
 - Direction générale de l'énergie et du climat (DGEC)
 - Pôle National des Certificats d'Economies d'Énergie (PNCEE)
 - ADEME defines the requirements for issuing certificates and the associated flat-rate amounts of energy savings
- **Funding and duration:** decided and paid out by the energy providers
 - It is thus a private aid allocated as a quote reduction (before payment) or a lump-sum premium (before or after incurred costs). The aid is calculated over several years
 - Providers offer various aid to support consumers' energy savings
 - 1 CEE = 1kWh Cumac (cumulative volume of energy saved over the life of the new equipment)
 - Aims to save energy with the help of funding, premiums, and vouchers, but also to control energy demand advice, free services or support programs
 - As of 2021, the value of a CEE has decreased from €8 (Jan-21) to €7 (Sept-21) and €6 (Oct-21). The decrease may put a break on construction decisions

CEE energy targets (2006-2025)

TWh



Source: Business Sweden analysis, ADEME, The French Ministry of the Ecological Transition, GreenUnivers * Cumac is the cumulative energy savings discounted at four percent over the lifetime of the energy efficiency measures (Lees, 2014)

Three main financial incentives to promote biomass projects

2. Energy Savings Certificates

Energy Savings Certificates

Certificats d'Economies d'Energie (CEE)

- **Future developments:**

- From 2006 until today, obligations have strongly increased each period and the CEE will be renewed for a 5th time, starting on January 1, 2022. ADEME indicates that the system will continue in the long-run, unless they encounter some major issues

- **Energy providers offer energy savings incentives to six sectors (residential buildings, service, transport, industry, agriculture and networks), as well as regional and local authorities.**

- The energy providers can also transfer their obligations and rights to a structure called a “delegate”. These can then collect a certain volume of CEEs over a given period
- Providers can also assign contracts to mandated suppliers (e.g., for equipment) or service providers (e.g., working with installations) that complete work for the final user
- When the work has been completed, for example the installation of a heat pump, the work invoice is submitted to the administration which issues the CEEs in function to the actual energy savings

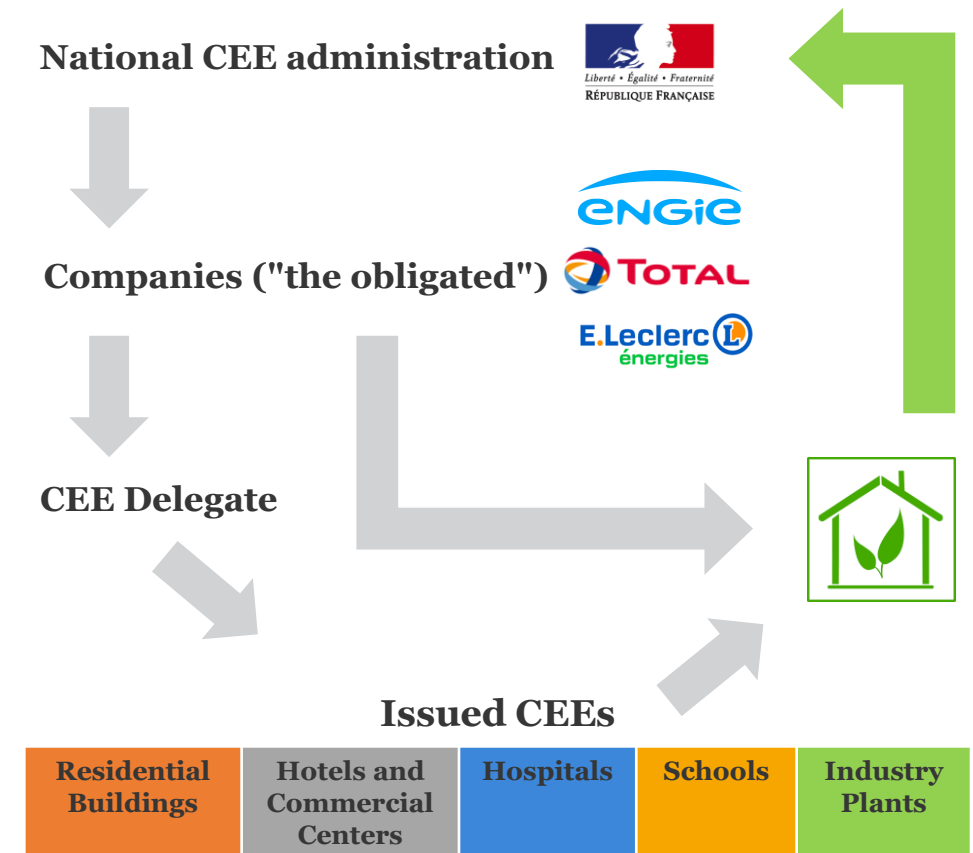
- **To apply for financial aid via the CEE programme, final users are offered:**

- Standardized energy savings works defined by 195 forms which specify what installations and works that qualify for aid (per sector). The forms are continuously revised to respond to current demand, new technologies and ministerial priorities (86% of the volume)
- Specific, also considered more tailored, operations (7% of the volume)

- **The standardised CEE energy savings operations apply to:**

- Collective biomass boiler (tertiary & residential buildings)

Flow chart of issuing CEE



Three main financial incentives to promote biomass projects

3. Reduced VAT & France Relance Recovery Plan Measures

Reduced VAT rate

- **Description:** France has a reduced the value-added tax (VAT) rate to 5.5%* for heat deliveries from networks supplied by more than 50% renewable energies
 - Renewable, or recovered, energy sources include biomass and waste energy
 - It also applies to energy savings works, as renovations or energy improvements (including the installation of a biomass boiler), as long as technical/performance requirements are fulfilled
- **Responsible organisation:** the French Government
- **Duration:** in force in mainland France since January 1, 2014
- **Future developments:** According to ADEME, the efficiency of this incentive could be reevaluated in the near future



Recovery Plan – Decarbonization of industry

- **Description:** part of the French recovery plan "France Relance" to support the transformation of industrial processes to become more energy-efficient and emit less greenhouse gas. It consists of three financing mechanisms:
 - DECARB IND: tailor-made investment aid for projects of > €3 million (project-calls)
 - BCIAT: projects for the production of biomass heat (project-calls)
 - Pre-determined list of installations of < €3 million (continuous applications accepted)
- **Responsible organisations:** the State Service and Payment Agency (ASP) and the French Agency for Ecological Transition (ADEME)
- **Duration:** in force in mainland France since September 2020. In place until December 21, 2022
- **Future developments:** the predetermined installations can be applied for at any time until the end of the program duration. The most recent calls for DECARB IND and BCIAT projects closed on October 14, 2021. New calls for 2022 has not yet been announced and the subsidy may potentially not be renewed after 2022



Source: Business Sweden analysis, ASP, Franfinance, The French Ministry of the Ecological Transition, Impots.gouv.fr. * VAT is normally set at 20%

Four key drivers of biomass developments in France, with ambitious political objectives and volatile fossil fuel prices leading the transformation

Drivers



POLITICAL OBJECTIVES TO ACHIEVE GREENER ENERGY

- Apart from national regulations and incentives to promote renewable energies, e.g., RE2020 and reduced VAT, city-level political objectives play a large role in the transition to renewable energies. Local administrations across France are requiring energy operators to increase the level of renewables in the energy mix.
- As part of the French energy transition to bring down CO₂ emissions, coal fired heating plants will be phased out by mid 2022. Such a phase out requires alternative energy resources, with biomass considered a key option.



FOSSIL FUEL PRICES

- Compared to fossil fuels, the price of energy generated from biomass has a lower cost and is less volatile.
- Fossil fuel prices are expected to further increase in the future, both due to natural market forces and regulated taxes, making biomass an increasingly interesting resource to generate energy.



AVAILABILITY OF LOCAL BIOMASS RESOURCES

- Biomass in France is mostly locally sourced (95% of wood energy), which in turn brings economic growth in terms of job opportunities and revenue streams for local wood industries and farms. The clear economic benefits, along with the energy independence that comes from utilising local resources, are important advantages.
- There are still untapped biomass resources in France, which present further potential for its use.



FAVOURABLE RENEWABLE ENERGY SOLUTION

- Considered “the lesser evil”, biomass has become an important part of the energy mix in order to achieve green and local energy production.
- Other energy sources are simply less favourable, albeit for different reasons:
 - Fossil fuels and nuclear face widespread critique due to their environmental impact and risk.
 - Renewable energies as windmills struggle to gain public acceptance.
 - Others, as solar panels, require larger spaces to produce the equivalent energy to biomass.

Description

Key market inhibitors include an underdeveloped biomass market and public acceptance of biomass plants

Inhibitors



UNDERDEVELOPED BIOMASS MARKET

- Domestic biomass resources are not yet used at their full potential.
- Unexplored recovery models and missing economic rationale for bi-products in wood and construction industries result in that resources are not utilized at their capacity.
- The pellets market is dominated by household consumers purchasing small quantities, leaving potential industrial users with, what appears to be, a too high of a price.
- The insufficient demand for biomass waste also contributes to the inefficient market.



PROTECTIVE FOREST PRESERVATION MEASURES

- There are strong forces, on both national- and EU-levels, lobbying for forest preservation.
- The preservation of biodiversity, preventing deforestation and the forests' ability to absorb carbon dioxide and produce oxygen, are some of the arguments limiting efficient forest management and using biomass resources at full capacity.
- Moreover, expensive forest sustainability certifications are leading to a lack of management (selective cutting or thinning) among privately owned forests, constituting 75% of forested land.



PUBLIC ACCEPTANCE OF BIOMASS PLANTS

- Some cities face difficulties in gaining public acceptance for new biomass plants, especially in already-developed areas. The main reasons behind are:
 - Adding a biomass boiler practically means a “degradation” of the surrounding area, such as the decreased value of property and buildings.
 - Moreover, people are afraid of the noise and air pollution made by the supplying trucks. In particular, if they have schools and other central establishments nearby.



NATIONAL PROTESTS TO INCREASED CARBON TAX

- The law proposal presented by Macron in 2018 to introduce an annual increase of the carbon tax would have been a positive step for the biomass sector.
- With a carbon tax at 100 €/ton, using pellets and wood chips would become much more profitable, and would have pushed the industry to replace coal and gas.
- However, this opportunity has not crystallized. Forceful national protests and demonstrations resulted in a limited increase in the tax.

Description

French heat networks relying heavily on biomass as fuel distinguish themselves as numerous, but generally small in size with smaller-scale energy outputs

1 Bordeaux

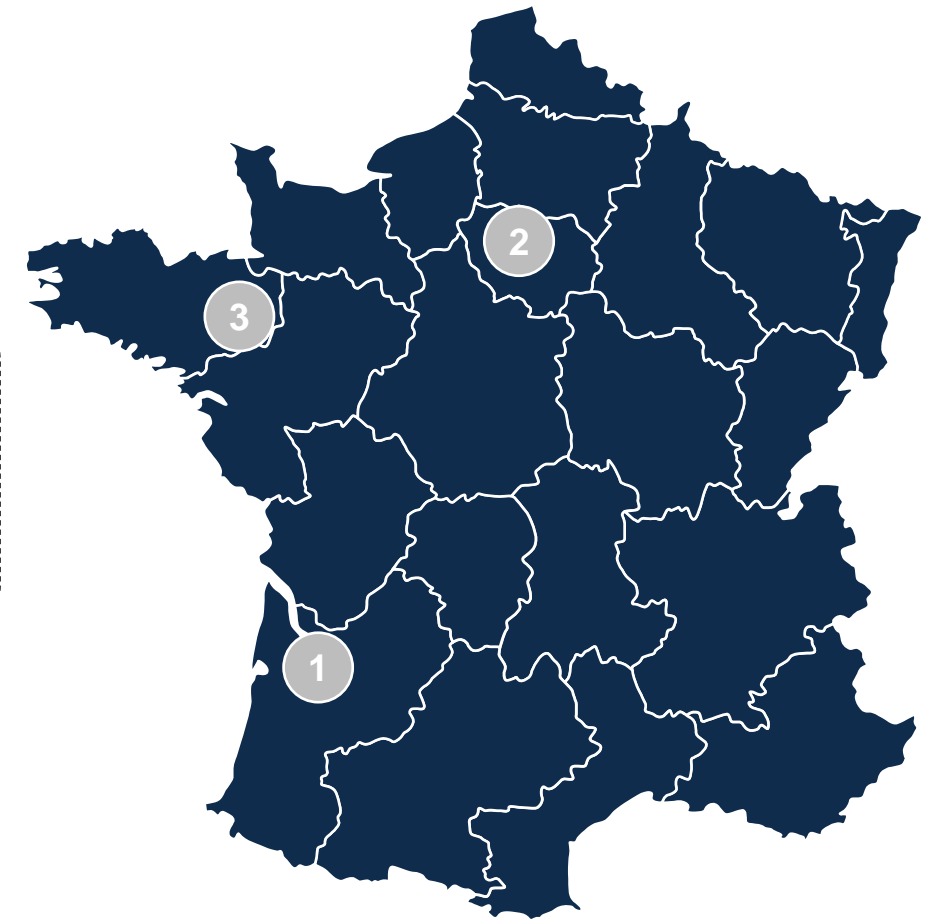
- Six heating networks in the Métropole of Bordeaux are powered by biomass and three biomass projects are currently under development
- One of the new biomass projects consists of 3 boilers with a total capacity of 4 MW, which will be installed as a backup to geothermal energy
- By 2024, biomass will represent 16% of the network's total energy mix

2 Greater Paris

- The CPCU is the largest heating network in France, providing heating and hot water to the Métropole of Paris
- In 2016, biomass was introduced to the network to diversify the energy production, which today represents 6% of the network's energy mix
- It has 2 biomass boilers (wood pellets in co-combustion) at the plant in Saint-Ouen

3 Rennes

- Biomass represents 36% of Métropole of Rennes' energy mix
- In 2015, the collectivity of Rennes invested in a little network with a big potential for growth. Private companies were then invited to invest and operate the network, where developments included both biomass and gas boilers
- By 2020, the network was developed via public concession, including a biomass boiler



The challenges French operators face in the transition to biomass as energy source present opportunities for equipment and service suppliers

Key challenges for French operators

Keep developing renewable heating networks

Large investments are needed to convert or build new boilers, often followed by new network extensions. District heating operators are looking into alternative ways of offering 100% renewable heating, such as by investing in multiple smaller boilers, rather than a large one. Public financial aid will continue to play an important role in network developments and the connection of new households.



Opportunities for equipment and service providers

- Support operators in understanding and evaluating **different solutions and operating models**, as well as the possibilities of current systems.
- Provide **technical expertise** on how to meet eligibility criteria of renewables, a requisite for financial aid
- Provide technical equipment and systems, such as **boilers and peak burners of different sizes** to operators

Replacing fossil fuels with diverse biomass sources

As French rural and industrial sectors move towards converting or replacing oil, coal and natural gas boilers, they face challenges of how to replace old systems with diverse biomass resources.



- Share **best practices** for converting boilers and building new ones
- Provide technical expertise to private and public operators on possibilities and constraints related to **different biomass sources**

Developing the market for biomass resources

Creating effective recovery models for bi-products in wood and construction industries, ensuring that biomass resources are sourced locally, and efficiently managing forests are considered important challenges.



- Offer **services and knowledge transfer** on how to better manage and commercialize forestry resources
- Introduce new technologies and innovative recovery models to **mobilize biomass resources**

The biomass sector presents interesting business opportunities for Swedish companies that want to grow on the French market (1/2)

KEY RECOMMENDATIONS FOR SWEDISH COMPANIES

1.

As fossil fuel prices rise, Swedish biomass technology companies will gradually find new growth opportunities on the French market

- Due to market forces or regulated taxes, the transition to biomass will become increasingly profitable, and French industries will progressively be incentivized to make the change.
- With this shift, Swedish biomass technologies will become more relevant for heating generation.
- By entering France, Swedish suppliers currently competing on the mature home market could explore new revenue streams in Europe's 3rd largest economy.

“The most carbon-intensive energies are gradually being replaced by renewable and recovered energies - mainly biomass. The industry has made commitments to move away from coal by 2030.”



FEDENE

2.

Facilitate efficient management of biomass resources in numerous sectors and levels of society

- As mentioned in this report, biomass is a resource that France is not using at full capacity, with large potential for development. New technologies and innovative recovery models provided from abroad, along with a stronger demand, will support a more efficient use of resources.
- As a country with great experience in forestry and bio-energy, Sweden can also play an important role in setting the European agenda on forest management.

“The market for biomass, notably from the construction industry, needs to be better developed. Demand also needs to be developed, so that bi-products from construction material is better utilized.”



SER-FBE

The biomass sector presents interesting business opportunities for Swedish companies that want to grow on the French market (2/2)

KEY RECOMMENDATIONS FOR SWEDISH COMPANIES

Collaborate with local organisations and collectivities* to access potential customers

3.

- Collaborating with territorial organisations and advisors that support the engineers and developers of biomass plants and district heating networks, is a good way to be referenced locally, and access decision-makers of local district heating networks.
- These organisations are interested in learning about innovative solutions and management methods, which they can discuss and present to collectivities

“There are many (wood and energy) territorial advisors that are active within the sector to help and support the collectivities in the development of renewable heat networks.”



FNCCR

Invest in local presence

4.

- To become competitive in call for tenders, Swedish companies should provide a complete offering of equipment, installation and services. To achieve this, companies must be able to mobilise various local service providers and speak the local language.
- To ensure capability to deliver, companies should invest in local presence on the French market, either directly or indirectly
 - *Indirect presence:* e.g. find a French partner or employ a French representative
 - *Direct presence:* e.g. create a legal entity or acquire local company

* Local authorities, elected officials, unions

SUSTAINABLE HEATING & COOLING BY SWEDEN



Cecilia Hedlund
*cecilia.hedlund@b
usiness-sweden.se*



Sofia Kristensson
*sofia.kristensson@
business-sweden.se*



[Sustainable Heating & Cooling by Sweden \(shcbysweden.se\)](https://shcbysweden.se)



Sign up for the monthly newsletter:
[Monthly newsletter](#)

Agenda

- Background and introduction
- The Swedish biomass experience
- Executive summary
- Market analysis France
- **Appendix**



Interviews conducted with French and Swedish market experts

Role	Organisation	Organisation type
Director of renewable heating, cooling, and transport	SER-FBE	Industry association
Head of Energy and Heat Networks	Rennes Metropole/SREC	Agglomeration around the city of Rennes
Head of District Heating	FNCCR	Federation of Local Authorities
CEO	Svebio	Industry association
Associate Professor, Assistant Director of Environmental Engineering	Lunds Tekniska Högskola	University