Promoting the penetration of agrobiomass in European rural areas

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D5.1: National and European framework conditions

Part 5: National framework conditions - France

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Abbreviations

Abbreviation	Explanation
AASQA	Approved Air Quality Monitoring Associations
ADEME	Agency for the Ecological Transition
CAP	Common Agricultural Policy
CHP	Combined Heat and Power
EAFRD	European Agricultural Fund for Rural Development
GDP	Gross Domestic Product
LCSQA	Central Air Quality Monitoring Laboratory
LTECV	Law on energy transition for green growth
NAPCP	National Air Pollution Control Plan
NCEP	National Climate and Energy Plan
NOX	Nitrogen Oxides
PCAET	Climate-Air-Energy Territorial Plan
PM	Particle Matter
PPE	Multiannual Energy Programming
RDP	Rural Development Programme
SNBC	National Low Carbon Strategy for 2050
SRB	Biomass Regional Scheme
SRC	Short Rotation Coppice
VAT	Value Added Tax

Project consortium

#	Full name	Acronym
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2	Fundación Centro de Investigación de Recursos y Consumos Energéticos	CIRCE
3	Asociación Española de la Valorización Energética de la Biomasa	AVEBIOM
4	BIOS BIOENERGIESYSTEME GmbH	BIOS
5	Food & Bio Cluster Denmark	FBCD
6	Bioenergy Europe	B.E.
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9	Institouto Agrotikis kai Synetairistikis Oikonomias INASO-PASEGES	INASO-PASEGES
10	Bioenergy Association of Ukraine	UABIO
11	White Research Sprl	W.R.
12	Agronergy	AGRONERGY
13	Association d'Initiatives Locales pour l'Energie et l'Environnement	AILE

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Country: France

The weight of agriculture continues to decrease in France and reached less than 2 % of GDP in 2017 (1). Nevertheless, this sector remains strategic on the subjects of food self-sufficiency, international trade, the dynamism of territories and the management of landscapes.

The law on energy transition for green growth (LTECV, law n ° 2015-992 of 17 August 2015) enabled the implementation of a new planning tool: the national biomass mobilization strategy and regional biomass schemes (the SNMB (2), decree n ° 2016-1134 of August 19, 2016). This document describes in particular the need to respect a hierarchy of biomass uses (food, materials, chemistry, energy etc ...), a sustainable mobilization (soil conservation, biodiversity etc…), and the inventory of available resources and existing markets. This SNMB has been implemented in each region of France as Biomass Regional Scheme (SRB).

This national scheme provide an agricultural biomass definition: agricultural biomass includes crop residues, as well as intermediate crops for energy purposes, the specific case of perennial crops (miscanthus, SRC) and woodland outside forests (hedges or agroforestry lands).

According to the LTECV, 38 % of the heat consumed in France must be of renewable origin at 2030. The latest estimates presented in this panorama show that this share amounted to 19.9 % at the end of 2018. Without acceleration, France will not be able to respect either the objectives of the LTECV and the multiannual energy programming (PPE), nor its commitments at European and international level in terms of renewable energies and the fight against climate change (3).

Agrobiofuels are still underdeveloped in biomass boilers (4). Their development is hampered for two reasons. The first, in the same way as wood energy, is explained because the market is not dynamic enough due to the very low fossil fuel prices and the absence of carbon tax for projects not subject to CO_2 quotas. The second is linked to the high availability of wood in the forest and the majority of wood energy from forests in the boiler room supply (19.8 million m^3 of additional wood could be mobilized annually by 2035, while ensuring the sustainability of the French forest (3).

However, in accordance with the LTECV law of 2015, France has implemented a National Low Carbon Strategy by 2050 (SNBC (5)). This document highlights the need to decarbonize and diversify the energy mix, particularly through the development of energies renewable (carbon-free heat, biomass and carbon-free electricity). One of the levers is to very strongly develop the mobilization of the biomass resource, in optimal environmental and economic conditions, while respecting biodiversity, by favoring material uses and by ensuring the efficiency of the sectors, including in energy recovery (cf. the National Biomass Mobilization Strategy (2): crop residues, livestock effluents, waste in particular from the forest-wood sector, and other residues), by favoring regional or local uses and taking into account the impacts of climate change, including on water resources.

Thus, the national low carbon strategy (5) describes strong prospects for the development of biomass energy with an almost complete decarbonization of energy production by 2050. So, it is a form of response

to fears that the forestry sector may have of possible competition from other biomass energy sources such as agrobiofuels. The stakes exceed the production potential of the forest: the baseline scenario of the SNBC, which predicts to reach carbon neutrality in 2050 a final energy requirement of around 1,060 TWh, clearly indicates that half would come from biomass. At this deadline, 400 to 450 TWh of gross biomass resources will have to be mobilized, compared to 180 TWh in 2016. 230 TWh would come from agricultural biomass including biomass from agroforestry, for 100 TWh from forest biomass and for 100 TWh of waste (including wood waste), livestock effluents and other residues.

The agriculture sector plays an important role in the production of bio-based energy resources, in particular through the recovery of its waste. Almost two-thirds of the biomass mobilized by 2050 will come directly or indirectly from the agricultural sector. Thus the SNBC encourages the exploitations to valorize the wood-energy resulting from the hedges and agroforestry (Within the framework of the Development plan of Agroforestry and the National Program of the Forest and Wood) which will contribute in a positive way to the added value of the sector.

The 2019 energy-climate law (n° 2019-1147 of 8 November 2019 reactivated to energy and climate) which amends the 2015 LTECV law confirms this: 23 % of renewable energies in consumption gross energy final in 2020, 38 % of renewable energies in the final heat consumption in 2030, multiply by 5 the quantity of heat and cold of renewable origin in the heating networks between 2012 and 2033, drop to 50 % of electricity production by nuclear power, closing of coal plants in 2022.

1. Agrobiomass availability

This distribution of resources is classified by agrobiofuel categories and thus makes it possible to distinguish the agrobiofuels to be favoured according to regions. The attached maps show the most widely used agrobiofuels in boilers today.

Each map shows an estimation of the available from the total of annual production.

Cereals and related by-products

Cereals

Cereal Straw

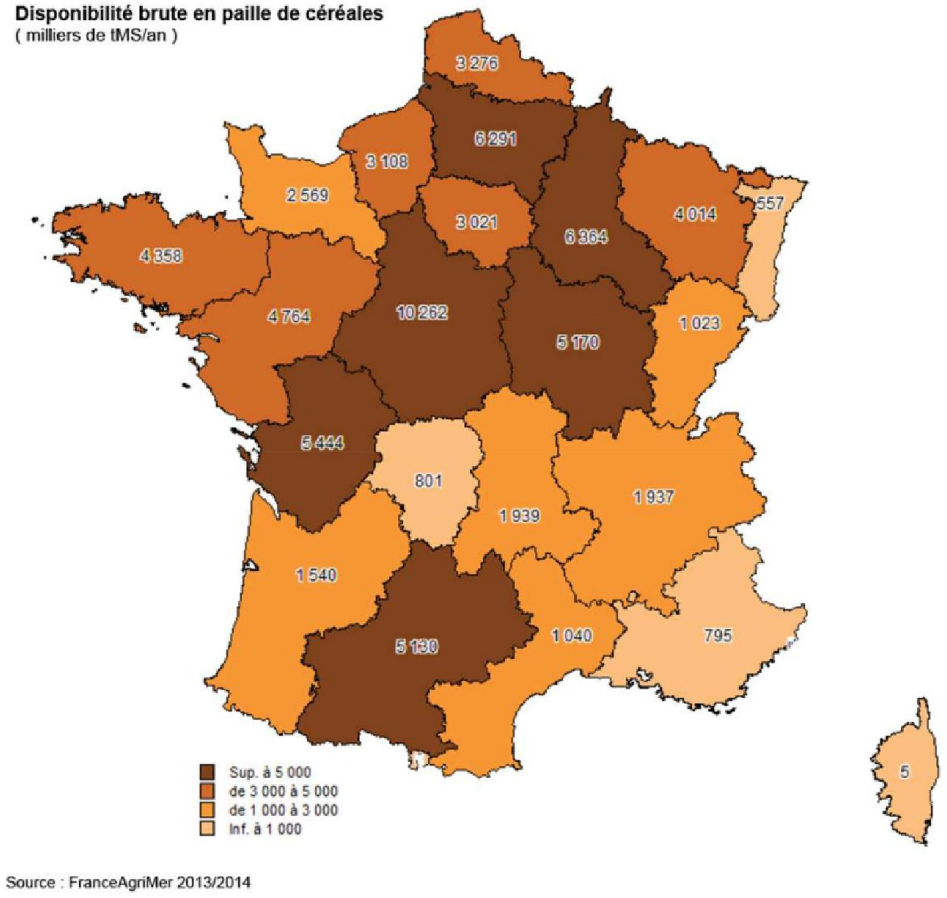


Figure 1: Estimate of the available grain straw resource in thousands of tDM / year (6) et (7)

The cereal straw development potential in France is considered weak to zero because of soil conservation practice development and carbon storage volunteer development.

Cereals

Maize (stalks, cobs)

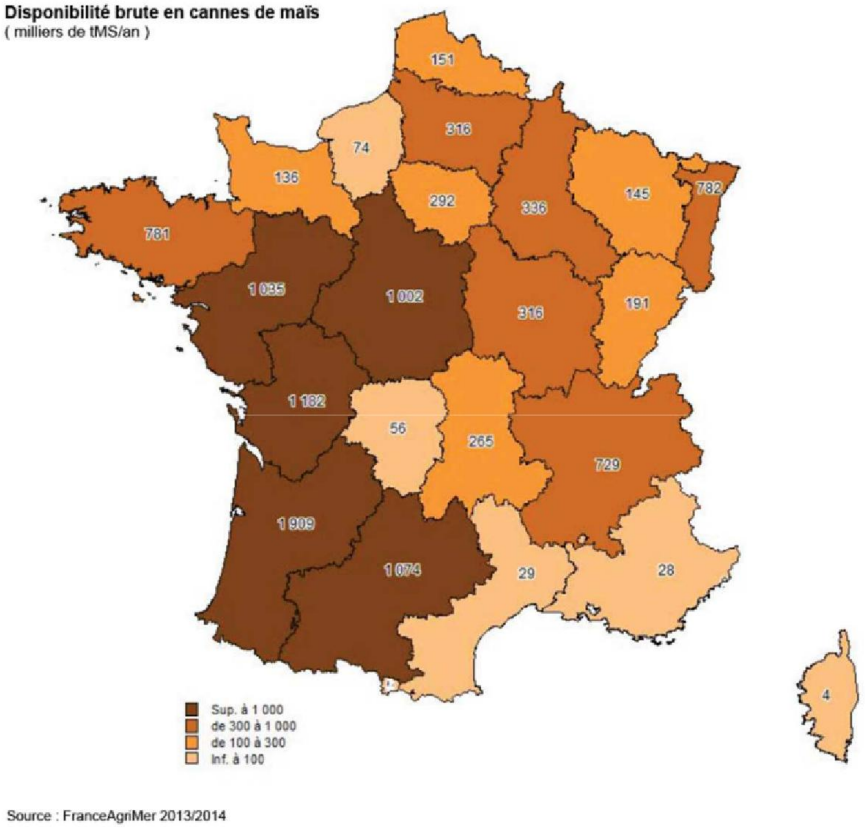


Figure 2: Estimated resource available in canes and corn cobs in thousands of tDM / year (6) et (7)

Cereals

Silo residues

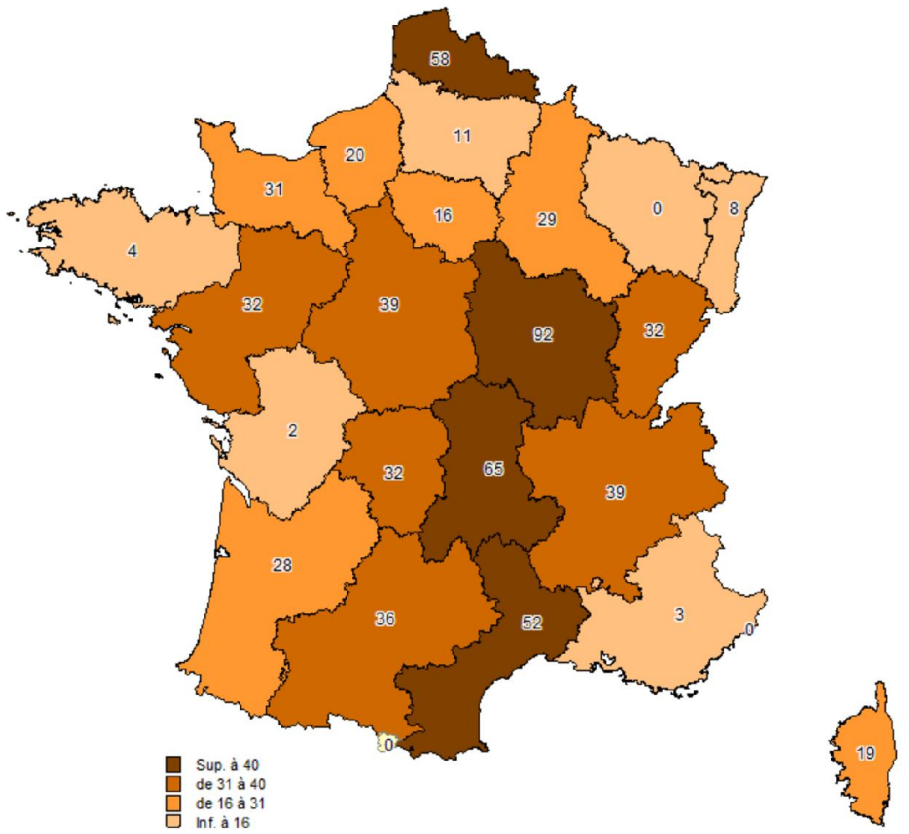


Figure 3: Estimate of the resource available from silos in thousands of tDM / year (6) et (7)

Flax and Hemp

Flax and Hemp

Flax fiber

Figure 4: Estimated resource available in flax fiber (8)

Flax and Hemp

Oilseed flax straw

Figure 5: Estimate of the resource available in oilseed flax straw (8)

Flax and Hemp

Hemp straw

Figure 6: Estimated resource available in hemp straw (8)

Permanent Crops

Permanent Crops

Hedgerows

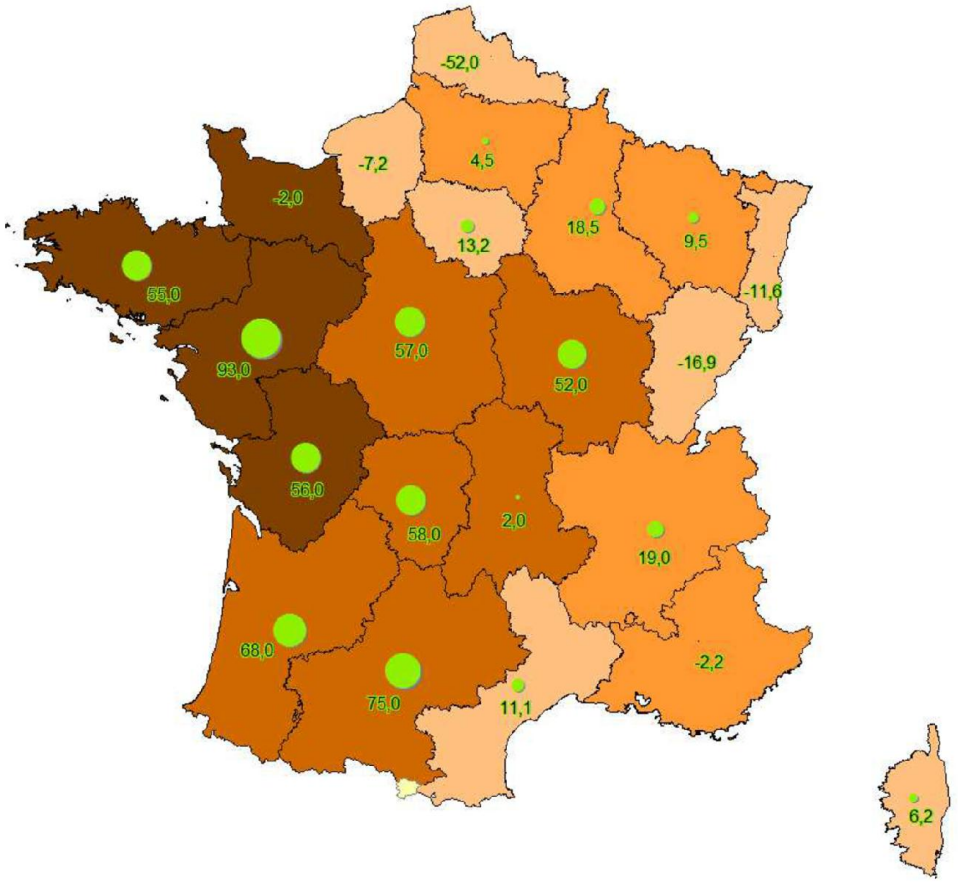


Figure 7: Estimate of the hedgerow and hedge resource available in "Industry wood - Energy wood" (BIBE) in thousands of m^3 / year (9)

Permanent Crops

Vineyards

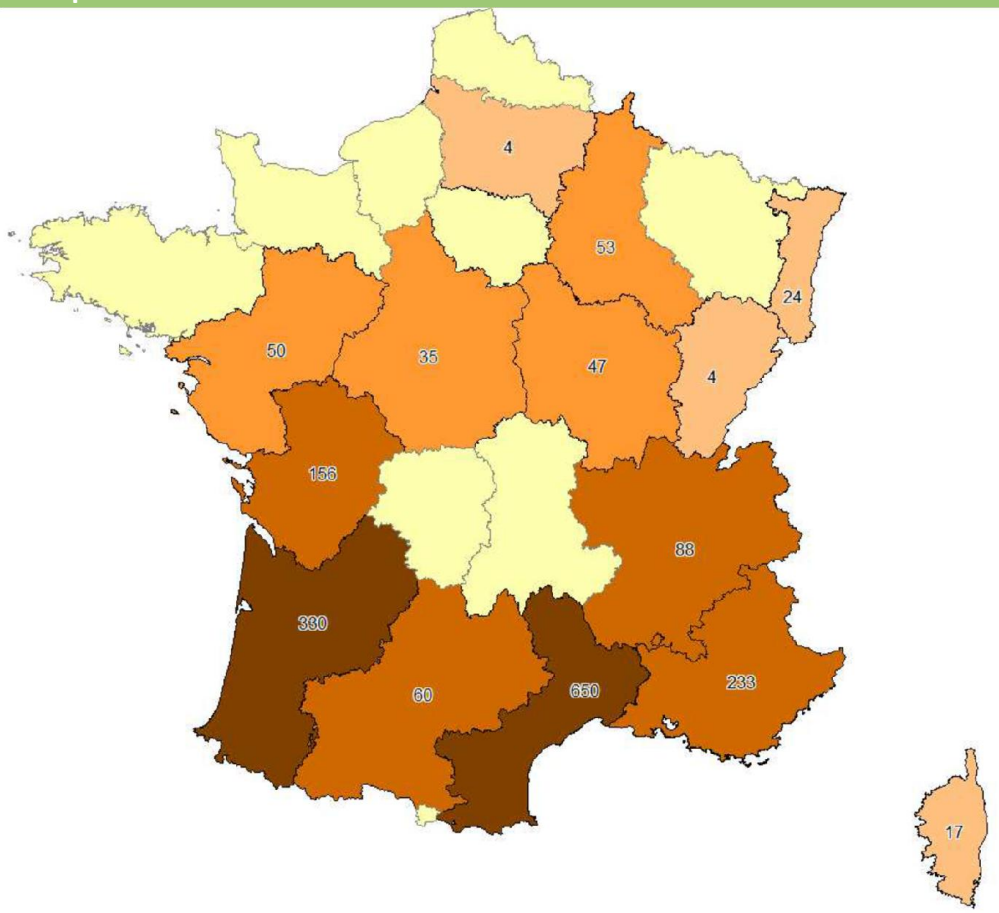


Figure 8: Estimated resource available in branches and vineyard stem in thousands of tDM / year (9)

Permanent Crops

Pruning orchards, shells and fruit pits

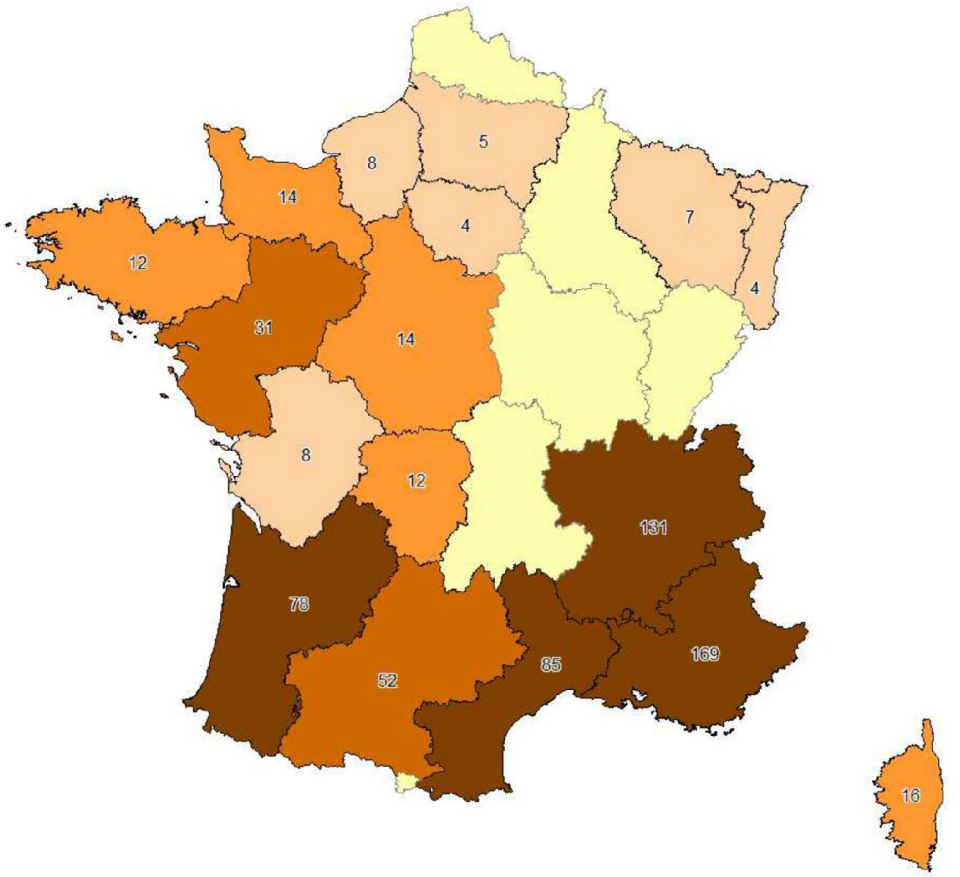


Figure 9: Estimate of the available resource in pruning orchards, shells and fruit pits in thousands of tDM / year (9)

Energy crops

Energy crops

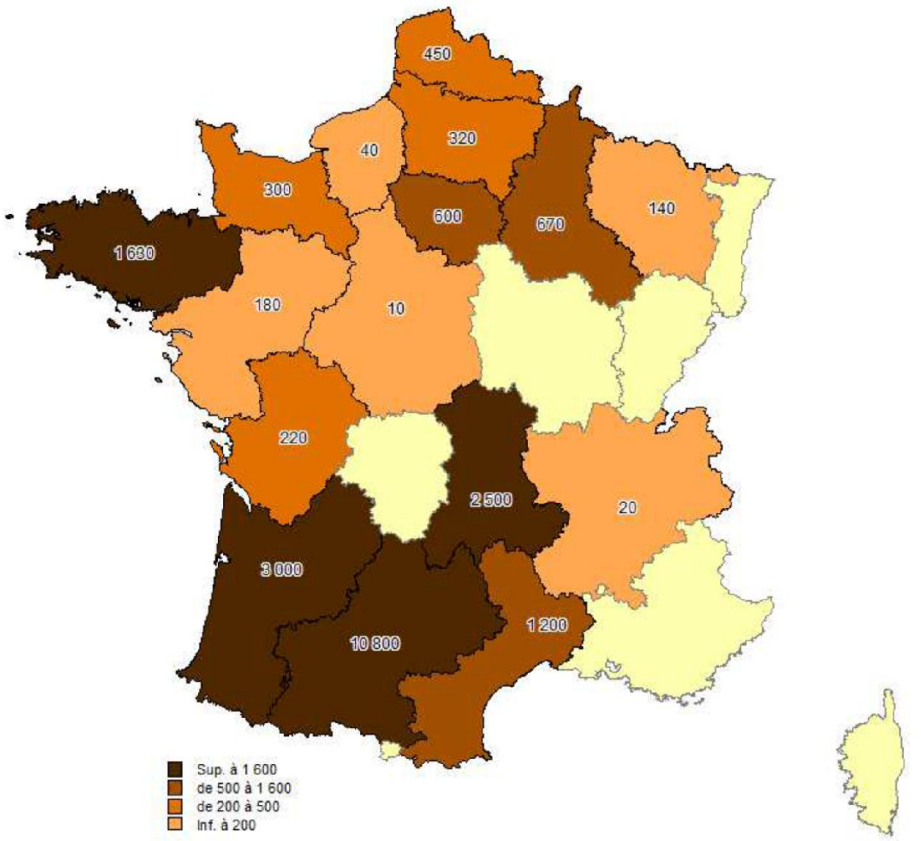
Woody varieties - SRC (Poplar, Willow, Robinia, etc.)	

Figure 10: Estimated resource available in short rotation coppice (Willow) in tDM / year (10)

Energy crops

Grassy Varieties (Arundo Donax, Miscanthus, Switch grass, etc.)

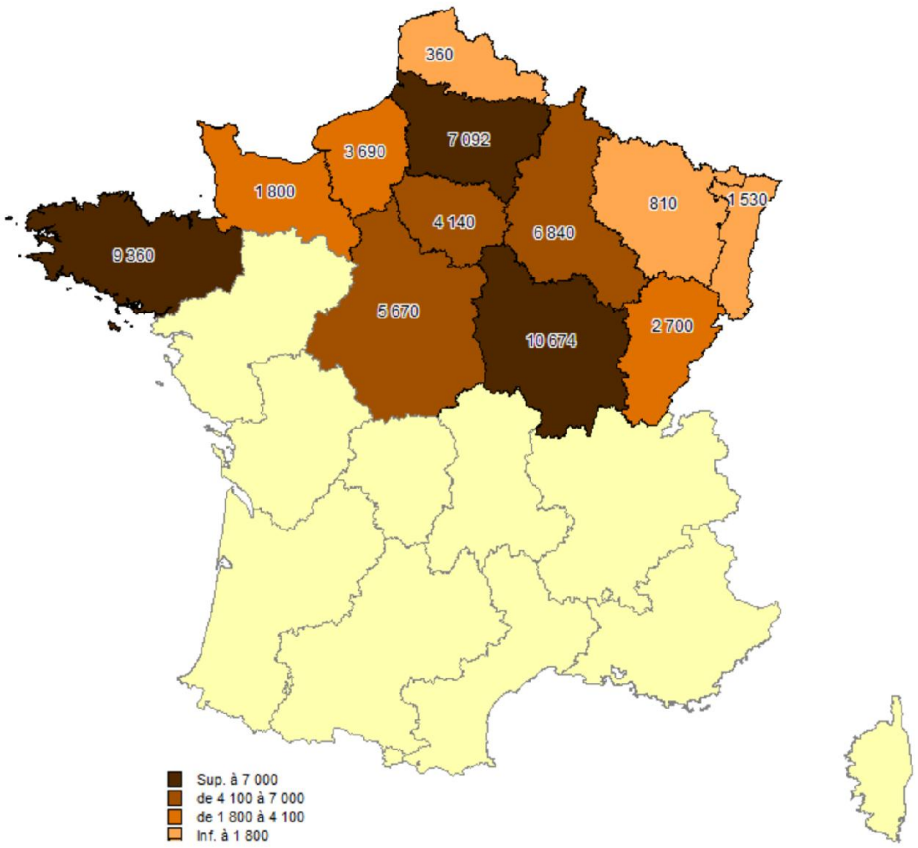


Figure 11: Estimated resource available in Miscanthus and Switchgrass in tDM / year (10)

Table 1: Overview of development level and potential of different agrobiomass types in France.

Origin	Name	Planting frequency	Harvesting frequency	Current level of development	Development potential
Woody by-products from pruning	Coppice of fruit crops and orchards*	Perennial	Several years	-	Strong
	Grubbing up and renewal of fruit crops and orchards*			-	Strong
	Hedges and agroforestry lands*			++	Strong
	Mowing of moors mows			-	Medium
	Reed mows			-	Medium
	Vineyard prunings*		Biennial	-	Strong
	Vineyard stem and roots*	Perennial	Several years	-	Strong
Lignocellulosic energy crops	Miscanthus*	Perennial	Annual	++	Strong
	Switchgrass (Panicum)*			+	Medium
	SRC Willow (2-3 years rotation)*			+	Strong
	SRC Willow (7-8 years rotation)*			++	Strong
	SRC poplar (7-8 years rotation)*			+	Strong
	SRC poplar (2-3 years rotation)*			+	Strong
	Reed (Arundo)			-	Medium
	Fescue			--	Medium
	Sorghum	Annual		--	Medium
	Triticale			-	Medium
	Canne de Provence			-	Medium
	Hemp*			-	Medium
	Alfalfa		Several times a year		Weak or zero
Crop-by products	Silo waste*	Annual	Annual	+	Medium
	Cereal straws (wheat, barley, etc.)*			--	Weak or zero
	Oilseed cereal straws (rapeseed, etc.)*			+	Medium
	Chaff*			--	Weak or zero
	Corn cobs seeds*			+	Medium
	Corn cobs*			--	Medium
	Corn canes*			+	Medium
	Beet haulm*			--	Weak or zero
	Olive stone			-	Medium
	Plum stones			-	Medium
	Apricot stones			-	Medium
	Walnut shells			--	Medium
	Sugar cane bagasses			-	Medium
	Hemp dust			++	Medium
	Flax straw*			-	Weak or zero

* The current level of development and development potential for these biomass resources is outlined in report **(4)**.

2. Rural Development

Rural Development	
How is Rural Development managed?	Rural Development policy in France is managed on a decentralised basis by the main administrative regions of the country through 21 Rural Development Programmes (RDPs). The RDPs are funded under the European Agricultural Fund for Rural Development (EAFRD) and national contributions. The RDPs set out priority approaches and actions to meet the needs of the specific geographical area they cover. So agricultural regions are very different and their biomass valorization strategies too. Thus, the Regional Biomass Scheme (SRB (2)) define the hierarchy of uses according to resources, soil sensitivity and the agricultural context. For example, some French regions (such as Brittany) favour the valuation as an amendment rather than the combustion of straws.
Are agrobiomass feedstocks suitable for bioheat included in the Ecological Focus Area? (for example, Short Rotation Coppice, Miscanthus, Silphium perfoliatum)	Miscanthus (if no fertilization), Short Rotation Coppice, hedges are included in the list of ecological focus areas (11).
Are there any restrictions on the cultivation of dedicated energy crops (woody or grassy varieties)?	No
Are there any restrictions or mandated practices covering agricultural residues collection?	No
Is there any support for the valorization of agricultural residues at national level? Or at local level?	No

Rural Development	
Is there a ban on burning stubbles, prunings or other agricultural residues?	The burning of agricultural residues is not strictly prohibited for farmers. In neither the RSD (departmental health regulations) nor the environmental code apply to the burning of agricultural residues. Burning straw and other crop residues (oilseeds, protein crops, cereals except rice) is however prohibited for farmers who ask to receive direct support aid within the framework of the Common Agricultural Policy (CAP) according to decree n ° 2004-1429 of December 23 2004. Only the Prefect can authorize this burning as exceptional when it turns out necessary (12). But farmers are generally aware of the need to reduce burns, especially they prune hedges.

3. Logistics and other market considerations

Logistics	
Are harvesters/balers for agricultural residues readily available in the market? Is there an investment support available to cover the cost of these machines?	The sector of agricultural machinery manufacturing is well developed in France. No investment support is available for purchase of harvesters.
Are there any specialized service companies for agricultural residues harvesting and logistics? How does the biomass market usually operate?	We can find some companies specialized in harvesting or marketing agricultural residues. Also, it can develop specialized activities in farmers' groups such as the CUMA network (Agricultural Equipment Cooperative). www.ouest.cuma.fr/sites/default/files/recuperation_menues_pailles_comment_a_quel_cout_quelles_quantites.pdf
Are there companies producing agro-pellets? Are there any resistance in the market for this kind of product?	There are several examples of agro-pellet producers. https://www.bioenergie-promotion.fr/2305/natural-energie/ https://www.bioenergie-promotion.fr/wp-content/uploads/2010/10/ft-agro-pellet-chaudieres-natural.pdf https://chambres-agriculture.fr/fileadmin/user_upload/National/002_inst-site-chambres/pages/exploitation_agri/Gamai/Fiche_IDF_granulchauff_MEPsept13.pdf RAGT Energie (https://www.ragt.fr/en/businesses/ragt-energie/) is a service company that facilitates the creation of this kind of activity thanks to support in the formulation of solutions under the CALYS brand.

4. Air quality

Air quality	
Has the state submitted a NAPCP? (National Air Pollution Control Programme)	France has submitted a NAPCP in October 2019[1]. The NAPCP (French: PREPA) sets the state strategy to reduce emissions of air pollutants at the national level and compliance with European requirements.
Competence over air quality related issues is at National or at Local level?	Competence is shared between national government that sets the limits and provides a framework and regional authorities. A national air quality monitoring system has been put in place thanks to the NAPCP: - The central air quality monitoring laboratory (LCSQA) commissioned by the ministry in charge of the environment - A network of approved air quality monitoring associations (AASQA) in all regions. At local level, the atmospheric protection plans (PPA) define the objectives and the measures, making it possible to bring within the agglomerations of more than 250,000 inhabitants. In addition, all communities are obliged to take into account the air quality issue in the territorial planning document thanks to the planning of climate-air-energy-territorial plans (PCAET) by 2019.

[1] French: https://ec.europa.eu/environment/air/pdf/reduction_napcp/FR%20final%20NAPCP%209Oct19%20.pdf
English translation:
https://ec.europa.eu/environment/air/pdf/reduction_napcp/FR%20final%20NAPCP%209Oct19%20EN.DOCX

Air quality	
Are performance standards and/or emission limits a possible barrier to deployment of agrobiomass heating systems up to 500 kW?	Investment support facilities select generators according to emission performance requirements. So generators do not perform well with agrofuels will not be supported. For domestic generators, the "Green Flame"[2] label (13) was created and uses as a reference the classes defined in standard EN 303.5, in this case class V. For generators for professional use, the support devices are very restrictive up to 1 MW in particular for particulate emissions (14). Indeed, a national database[3] has been set up by ADEME and references the commercial brands which have demonstrated their performance. Equipment not included in this list will not be eligible for aid, unless a smoke filtration equipment is fitted to comply with the particle emission threshold of 75 mg / Nm3 of 6% of O_2.
Are performance standards and/or emission limits a possible barrier to deployment of agrobiomass heating systems from 500 kW to 1 MW?	See above; the scheme applies to capacities up to 1 MW.

[2] www.flammeverte.org/aides-disponibles/informations-generales
[3] www.ademe.fr/sites/default/files/assets/documents/bdd_chaudieres_biomasse.zip

5. Tax breaks

Tax breaks	
What is the VAT applicable to agrobiomass feedstock?	The VAT that applies on the sale of biomass fuel to the final consumer is 10 %.
For comparison, what is the standard VAT rate and the one applicable to fuels used for heating (e.g. heating oil, LPG, natural gas, firewood, pellets, etc.)?	The conventional VAT rate is 20 %. A reduced VAT rate of 5.5 % applies to the supply of electricity with a maximum power exceeding 36 kVA, heat energy, natural gas fuel, and heat supply.
Are there any tax detraction on refurbishment of buildings/replacement of heating system that can be potentially applied to agrobiomass heating?	Yes, just like wood boilers. There is a tax credit allocated based on the level of annual household income. https://www.maprimerenov.gouv.fr/prweb/PRAuth/BPNVwCpLW8TKW49zoQZpAw%5B%5B*/!STANDARD

6. Other support measures targeting heating

Other support measures targeting heating	
Are there any rural development measure in place to support the production of bio-heat on-farm?	No measure specifically targeting farmers
Are there national or local incentives to substitute old fossil fuel boilers (investment support)? Are they applicable to agrobiomass heating solutions?	There are incentives for individuals and for professionals : For individuals, there does not seem to be a distinction according to biomass fuel. The incentives are as follows: CITE[4], a tax credit for individuals. More information here: https://qualit-enr.org/actualites/nouveaux-baremes-cite-2020 The "Air Fund"[5], funded by ADEME (15), encourages the replacement of old wood heating devices. It is installed in certain regions which have a problem of pollution with large particles. For professionals, the national incentive is the "Heat Fund"[6], funded by ADEME, but we can identify local subsidies system. The application of national incentive depends on the region. When there is an articulation with the regional biomass scheme as in Brittany for example, then the subsidies favor wood energy. Projects promoting straw for example are not eligible. So it depends on the regions.
Are there any specific measures in support of energy communities / renewable energy cooperatives that could be applicable to agrobiomass heating?	No measure specifically targeting energy communities.

[4] www.economie.gouv.fr/particuliers/credit-impot-transition-energetique-cite
[5] www.ademe.fr/particuliers-eco-citoyens/financez-projet/renovation/aide-fonds-air
[6] www.ademe.fr/expertises/energies-renouvelables-enr-production-reseaux-stockage/passer-a-laction/produire-chaleur/fonds-chaleur-bref#documents

7. Buildings Efficiency

Buildings Efficiency	
Are there any incentives to renovate buildings integrating renewable heat? Are agrobiomass systems eligible for support under such schemes?	Yes, just like wood boilers. There is a tax credit allocated based on the level of annual household income. There are also Energy Performance Certificates. https://www.maprimerenov.gouv.fr/prweb/PRAuth/BPNVwCpLW8TKW49zoQZpAw%5B%5B*/!STANDARD

8. Policy Coherence

Policy Coherence	
Are policy instruments impacting agrobiomass designed in a coherent way? *1. Soil considerations vs. Valorisation of residues* *2. Definition of waste vs. co-products/agri residues* *3. Is the Common Agricultural Policy Strategic plan being developed in harmony with the National Energy and Climate Plan?* *4. NECPs: 5 dimensions are developed in harmony?* *5. Is there a national bioeconomy strategy? Are there any measures targeting agrobiomass for energy? Are those measures coherent with rural development and energy and climate related policies?*	These questions are answered in the introductory section.

References

1. **Chambre d'agriculture.** *REPÈRES SOCIO-ÉCONOMIQUES SUR L'AGRICULTURE FRANÇAISE Évolutions sur longue période.* s.l. : https://chambres-agriculture.fr/fileadmin/user_upload/National/FAL_commun/publications/National/memento-agriculture-VD-version-web.pdf.

2. **Ministère de la Transition écologique et solidaire.** *Stratégie Nationale de Mobilisation de la Biomasse.* s.l. : https://www.ecologique-solidaire.gouv.fr/sites/default/files/Strat%C3%A9gie%20Nationale%20de%20Mobilisation%20de%20la%20Biomasse.pdf.

3. **CIBE, la FEDENE, le SER, UNICLIMA.** *PANORAMA DE LA CHALEUR RENOUVELABLE ET DE RÉCUPERATION, ÉDITION 2019.* s.l. : https://www.fedene.fr/wp-content/uploads/sites/2/2019/10/PANORAMA_CHALEUR_2019.pdf.

4. **ADEME, Deloitte Développement Durable, Association d'Initiatives Locales pour l'Energie et.** *Biomasse agricole : état de l'art et analyse.* s.l. : https://www.ademe.fr/sites/default/files/assets/documents/mobilisation-biomasse-agricole-rapport.pdf, 2017.

5. **Ministère de la Transition écologique et solidaire.** *stratégie nationale bas-carbone.* s.l. : https://www.ecologique-solidaire.gouv.fr/sites/default/files/2020-03-25_MTES_SNBC2.pdf, 2020.

6. **FranceAgriMer.** *Rapport sur « L'Observatoire National des Ressources en Biomasse (ONRB) » : Evaluation des ressources disponibles en France.* Décembre 2016.

7. —. *Unité Grandes cultures, Etats Statistiques.* 2013-2014.

8. **FranceAgriMer, Deloitte.** *Rapport sur « Les enjeux de la valorisation de la biomasse non sylvicole en matériaux biosourcés ».* février 2016.

9. **ADEME-IFN-FCBA–SOLAGRO.** *Biomasse Forestière, Populicole et Bocagère disponible pour l'énergie à l'horizon 2020.* 2009.

10. **RMT biomasse et territoires.** *Croisement entre « les fiches de cultures Miscanthus et Switchgrass », « les surfaces agricoles 2012 » et « les rendements moyens des cultures de l'ADEME ».* 2012.

11. **Minstère de l'Agriculture.** *Rappels reglementaires sur la declaration des SIE.* s.l. : http://www.cher.gouv.fr/Politiques-publiques/Agriculture-et-developpement-rural/Teledeclaration-des-aides-2020/Rappels-reglementaires-sur-la-declaration-des-SIE, 2020.

12. **Ministère de l'Ecologie.** *Pour mieux respirer NE BRÛLEZ PAS vos déchets verts - Information et recommandations à l'attention des agriculteurs.* s.l. : http://draaf.auvergne-rhone-alpes.agriculture.gouv.fr/IMG/pdf/201903-nebrulezpasvosdechetsverts-agriculteurs_cle41198a.pdf, 2017.

13. **label Flamme Verte.** *Informations générales.* s.l. : flammeverte.org/aides-disponibles/informations-generales, 2020.

14. **ADEME.** *Le Fonds Chaleur en bref.* s.l. : https://www.ademe.fr/expertises/energies-renouvelables-enr-production-reseaux-stockage/passer-a-laction/produire-chaleur/fonds-chaleur-bref#documents, 2020.

15. —. *Aide du Fonds Air.* s.l. : https://www.ademe.fr/particuliers-eco-citoyens/financez-projet/renovation/aide-fonds-air, 2020.