Cultures SUCRE

statistical Memo

SUGAR AND OTHER BY-PRODUCTS

CAMPAIGN 2021-2022

FRANCE • EUROPE • WORLD • OTHER BY-PRODUCTS

KEY FIGURES

OF THE BEET-CANE-SUGAR SECTOR

SUGAR-PRODUCING FRANCE AS AT 1 APRIL 2022

The figures for this Statistical memo take account of the 2021-2022 campaign, when figures for this campaign are available.

SUGAR PLANTS

SUGAR BEET (2021-2022 campaign)

23,700 growers produced on 402,000 ha (i.e. 1.6% of the Utilised Agricultural Area) **34.5 million tonnes** of sugar beet with **16%** sugar content.

SUGAR CANE (2020-2021 campaign)

More than 2 million tonnes of sugar cane was harvested over 37,742 hectares in departments on Mainland France and overseas French departments.

SUGAR PRODUCTION

In 2021-2022, Metropolitan France had five sugar companies with 21 sugar-producing plants spread over northern France.

In regulatory terms, production* in 2021-2022 is **4.6 million tonnes of beet sugar**.

DROM (French overseas departments) (2020-2021 campaign):**
In all, 5 sugar factories produced **214,233 tonnes** (Reunion, Guadeloupe, Martinique).

Alcohol/ethanol-producing France (2020-2021 campaign):
In 2021, Metropolitan France had 5 companies with 12 distilleries producing alcohol from beet and cereals and 1 company only rectifying and dehydrating the raw alcohol.

France produced **14.7 Mhl** agricultural alcohol (bioethanol+traditional alcohol, vinification excluded) in 2020/2021.

- **6.3 Mhl** from beet (43%) and **8.4 Mhl** from cereals (wheat+corn) (57%).
- **9.1 Mhl** for the bioethanol (62%) and **5.6 Mhl** for traditional alcohol (38%).

In France, ethanol and beet sugar production puts to work **23,700** growers and supports more than **6,000** jobs in the sugar factories. The number of indirect or related jobs are also counted.

FRANCE IN THE SUGAR-PRODUCING WORLD***

- Ninth largest sugar producer in the world
- Second beet sugar producer in the world
- Leading sugar producer in Europe (Metropolitan France + DROM)

* *The definition of sugar production (Regulation (EU) 2017/1185) counts the quantities produced at the syrup stage regardless of the subsequent use (food, non-food, alcohol/ethanol).*

** *The 2021-2022 figures will only be known after the harvest which is later in the French West Indies, i.e. in September 2022. The first estimation of DROM production in 2021-2022 is around 200,000 t.*

*** *Average over three years.*

Sources: S.N.F.S., O.D.E.A.D.O.M., SNPAA, I.S.O.

FRANCE

23,700
growers

34.5 Mt
of sugar beets

4.6 Mt
of beet sugar

21
active sugar factories

2 Mt
of sugar canes

0.21 Mt
of cane sugar

9th largest sugar producer in the globe
1st largest sugar producer in Europe

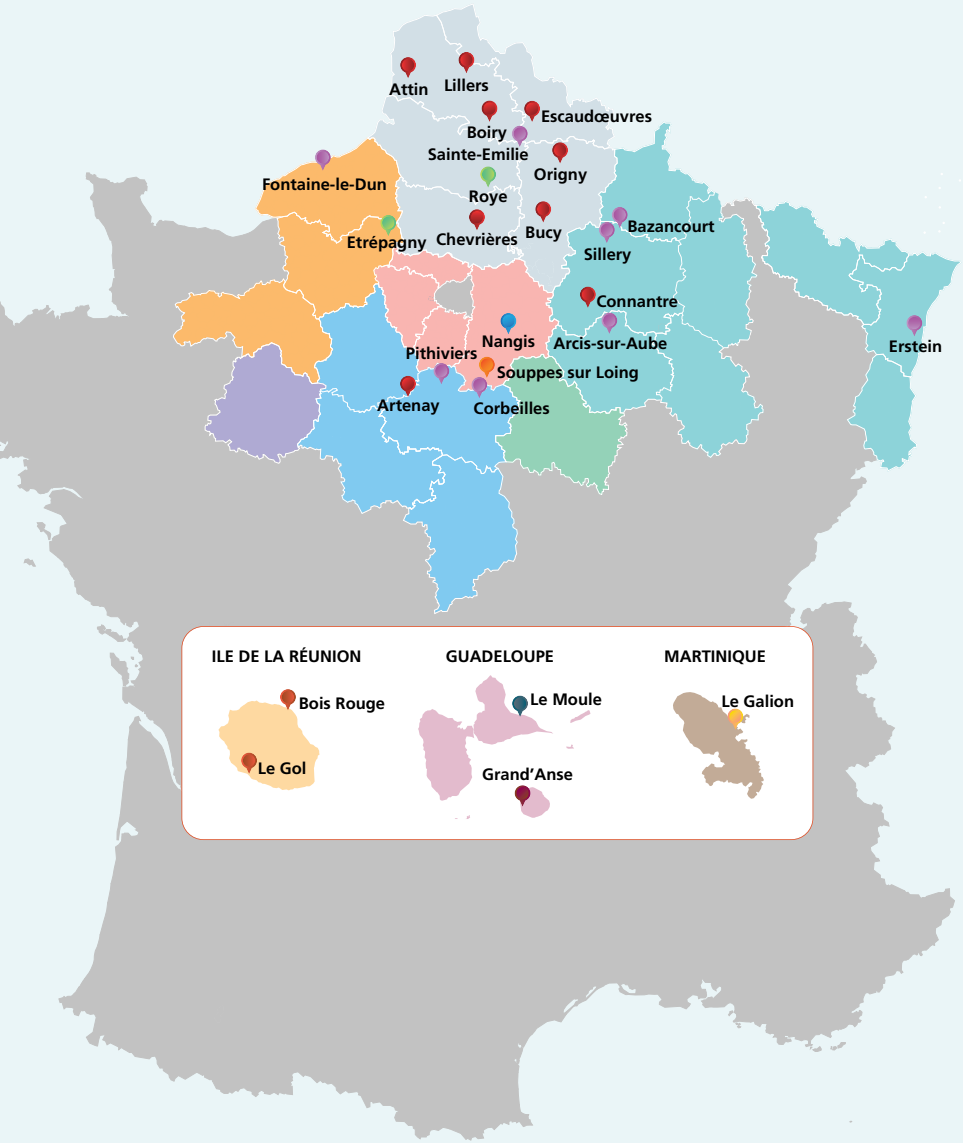
5
sugar factories in French overseas departments

Mt = million tonnes

The figures on this statistical memo take into account the 2021-2022 campaign, when the figures for this campaign are available.

The sugar sector in France

2021 – 2022 campaign - Main sugar-producing departments



Sugar beet sector in France

5 sugar companies and groups in mainland France

Groupe Cristal Union

(8 plants)

- Sucrerie d'Arcis-sur-Aube
- Sucrerie de Bazancourt
- Sucrerie de Corbeilles
- Sucrerie d'Erstein
- Sucrerie de Sillery
- Sucrerie de Fontaine-le-Dun
- Sucrerie de Pithiviers
- Sucrerie de Sainte-Emilie

Lesaffre Frères

(1 plant)

- Sucrerie de Nangis

Ouvré et Fils SA

(1 plant)

- Sucrerie de Souppes-sur-Loing

Saint Louis Sucre

(2 plants)

- Sucrerie d'Etrépagny
- Sucrerie de Roye

TEREOS

(9 plants)

- Sucrerie d'Artenay
- Sucrerie d'Attin
- Sucrerie de Boiry
- Sucrerie de Bucy
- Sucrerie de Chevrières
- Sucrerie de Connantre
- Sucrerie d'Escaudœuvres
- Sucrerie de Lillers
- Sucrerie d'Origny

Sugar cane sector in France

4 sugar companies in the French overseas departments

Reunion

TEREOS Océan Indien

- Sucrerie de Bois-Rouge
- Sucrerie du Gol

Guadeloupe

GARDEL S.A.

- Sucrerie du Moule

SUCRERIE ET RHUMERIE MARIE GALANTE S.A.

- Sucrerie de Grand'Anse

Martinique

S.A.E.M. DE PRODUCTION SUCRIÈRE ET RHUMERIE DE LA MARTINIQUE

- Sucrerie du Galion

Source: S.N.F.S

Changes in metropolitan production

thousand tonnes of white sugar

Sugar campaign	Production	Number of sugar plants
2017-18	6,237	25
2018-19	5,092	25
2019-20	4,969	25
2020-21	3,445	21
2021-2022 (provisional)*	**4,560**	**21**

Source: S.N.F.S.

**Provisional Metropolitan sugar production*

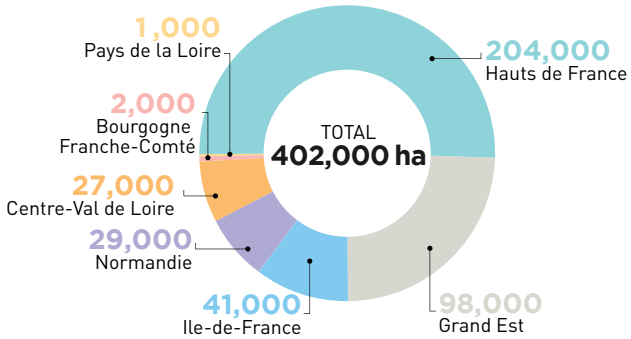
In France, the 2021/22 estimated financial report shows 5.7 million tonnes of sugar used, distributed in the following way: 2.8 million tonnes of sugar sold in France; 1.7 million tonnes of sugar sold in the EU; 0.4 million tonnes of sugar exported to third countries; and 0.8 million tonnes of sugar exported in the form of sugar-sweetened products.

In France, more than two thirds of the uses are destined for human consumption (table sugar, food industry products) with the remaining volume used in the chemical and pharmaceutical industries and the alcohol/ethanol sector.

Sugar beet growing areas

In 2021-2022, sugar beets are grown in 7 regions in France, accounting for around 402,000 hectares[1].

Surface area of beet cultivation destined for sugar factories and sugar factories-distilleries (by region in hectares)



Source: Agreste, 01/12/2021 (2021 sowing)

1-This total also includes the French beet growing areas set aside to produce alcohol and bioethanol.

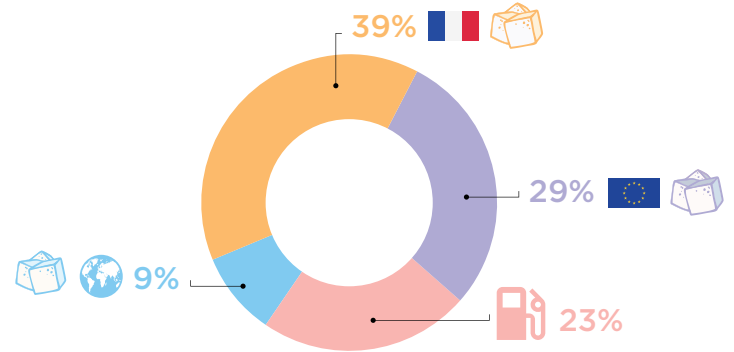
Changes in sugar beet production

Sugar beet (all uses together)

Sugar campaign	Seeding (1,000 ha)	Sugar content (°S)	Beet yields (t at 16 °S/ha)	Tonnage of beet harvested (million t at 16 °S)
2012-13	386	18.1	85.8	33.1
2013-14	391	17.6	85.3	33.4
2014-15	405	17.7	92.8	37.6
2015-16	383	18.3	87.8	33.6
2016-17	402	18.3	85.8	34.5
2017-18	485	18.0	96.1	46.7
2018-19	485	19.0	82.0	39.6
2019-20	445	17.8	85.0	37.8
2020-21	421	17.1	61.4	25.8
2021-22 (estimations)	**402**	**17.4**	**85.7**	**34.5**

Sources: C.G.B., I.T.B.

Breakdown of beet production in 2021-2022



The beet yields experienced large growth for more than 50 years (48.3 tonnes per hectare in 1960-61 versus 96 tonnes per hectare in 2011-12). This growth was essentially due to the progress made in the areas of genetics, seed selection and improved farming techniques.
The French sector has observed that for the past ten years, the beet yields have stabilised and endured significant fluctuations due to climate variations and parasitic attacks. Restrictions on the means of combatting parasites has penalised profitability in the French sector.
The genetic improvement of the beet varieties and the progress in farming techniques remain vital components in increasing productivity and guaranteeing the continuation of the French beet-sugar-ethanol sector.
The 2021-2022 campaign is distinguished by its lower yields compared to the 5-year average due to a drop in sugar content (2020/21 campaign not included).

Source: C.G.B.

Organic sector in France

The players in the beet-sugar sector in France have been involved over the past several years in an organic beet sugar production sector with continually expanding farming areas, which went from **1,000 hectares in 2019 to nearly 2,000 hectares in 2021**.

French sugar industry: a positive contribution to the country's trade balance

In 2021-2022, French **exports** (to third countries) and **shipments** (to EU countries) of unprocessed sugar will reach **2 Mt**, compared with **imports** of **0.3 Mt**. Net exports (exports - imports) represented 35% of the French sugar production in 2020-2021 (DROM included).

Sugar is shipped mainly to the EU countries of Italy, Spain and Germany.

Outside the EU, the main customers are the United Kingdom and the countries located in West Africa, North Africa and the Middle East.

Thus, the positive balance of 505 million euros in 2021 (calendar year) shows the essential contribution made by the sugar industry to the country's balance of trade.

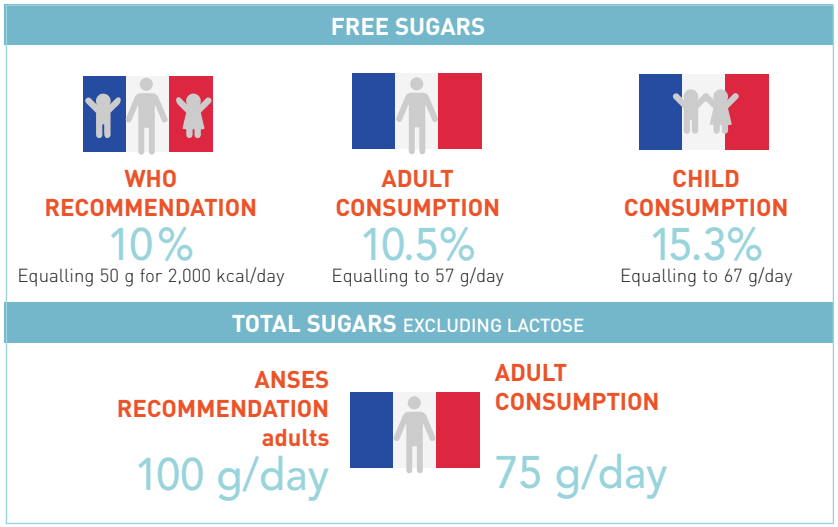
Sugar consumption in France

The sales of sugar are a unique reflection of a notion of availability or volumes of sugar marketed at the scale of a country or a population. **In France, sales per inhabitant have been stable for more than fifty years.**

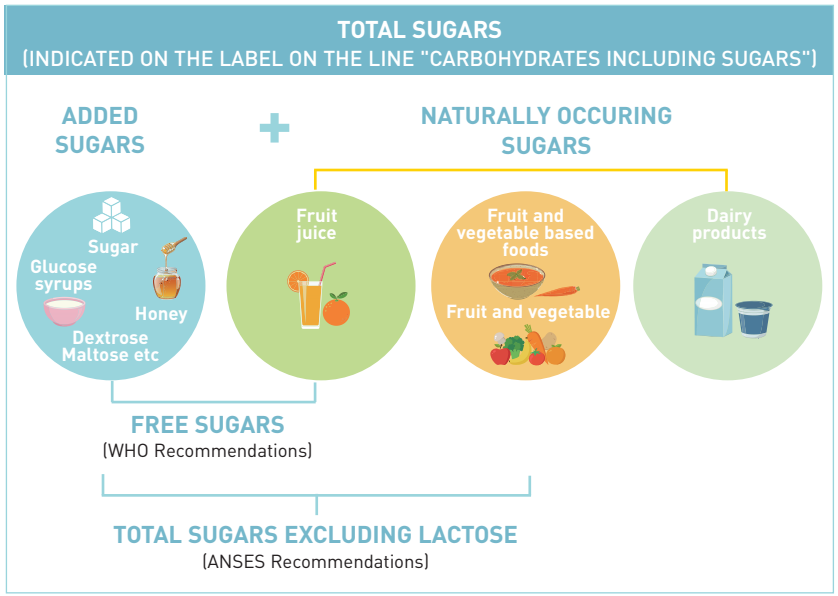
Here are the WHO and ANSES recommendations relating to sugar consumption. WHO recommends strongly limiting **free sugars** (added sugars and sugars found naturally in fruit juices), including cane or beet sugar, to at less than 10% of daily calories (i.e. 50 g for 2,000 Kcal) to prevent obesity and tooth decay.

ANSES made another recommendation: do not consume more than **100 g of sugars per day (excluding lactose)**, i.e. all sugars brought by food, be they naturally present (glucose, fructose or sucrose from fruit) or added to foods (sucrose from beet or cane, glucose syrups and honey mainly).

On average, adults therefore comply with the recommendations but children overrun them substantially. As it is an average, many adults are however above the recommendation.



Sources: CCAF (Credoc) 2019, Anses 2017



Source: Cultures Sucre

Main free sugar contributors to our diet

Consumption surveys assess the foods that make the most contribution to the free sugar intake (sugar + other added sugars + sugars found naturally in fruit juices).

Free sugar contributing foods
(% of total free sugar intakes)
Top 10*

** French people 3 years and older*
Source: CCAF 2019 (Credoc)

EUROPE

16.1 Mt
of white sugar produced

14.5 Mt
of white sugar used

1.4 Mt
of white sugar imported

1 Mt
of white sugar exported

91
active sugar factories

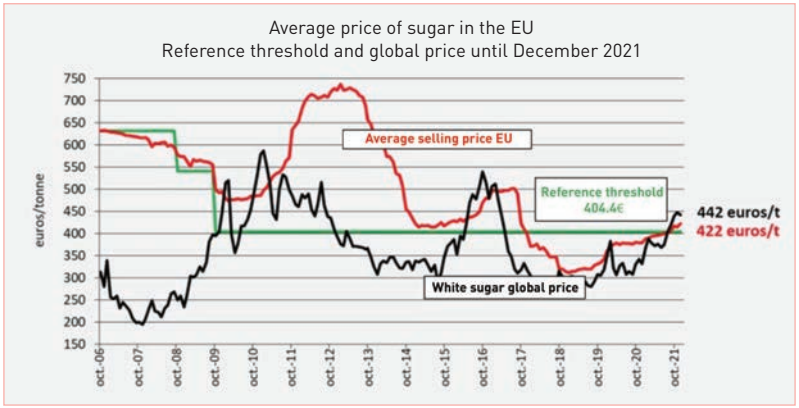
105,374
growers

The figures for this Statistical memo take account of the 2021-2022 campaign, when figures for this campaign are available.

The sugar market

The sugar market in 2021

The Covid-19 pandemic in 2020 had a **negative impact on the global sugar market**, which has just come out of a long, severe crisis, upsetting the recovery that would have allowed for better focused essentials.
The return of economic growth in 2021 and the progress in vaccinations, however, have bolstered the global demand for sugar, **bringing upward momentum to prices despite a certain volatility**.
The community price of sugar, identified by the information system for EU sugar prices, also **continued to rise** and in December 2021 it finally reached a level slightly above the community reference threshold set at 404.4 euros per tonne in the EU common organisation of agricultural markets.



Sources: Commission, ICE

Despite this recovery, **the sector's economic activity was significantly penalised** by the impact of an infestation by the **Beet Yellows Virus**, which considerably reduced sugar production during the 2020/21 campaign.
Also, beet growers and sugar factories, like the rest of the agri-food industry, are suffering from **the unprecedented rise in energy costs**, which greatly drives up production costs for both farming (fertiliser, etc.) and sugar production processes, which use a large amount of fuel. The war in Ukraine has further aggravated this change.

Sugar balance of the European Union of 27*

	Production	Uses**	Exports	Imports
2021-2022 (forecast)	16,100	14,550	1,000	1,400
2020-2021	14,546	14,141	860	1,300

** These data do not include sugar imports and exports as processed products nor the stock variations.*
*** All uses, including industrial uses (in millions of tonnes of white sugar).*

The European Union of 27 countries produced 16.1 million tonnes of white sugar in 2021-2022. The uses cover food consumption as well as a variety of industrial uses: manufacture of alcohol and ethanol, yeasts, pharmaceutical and chemical products.

Source: European Commission

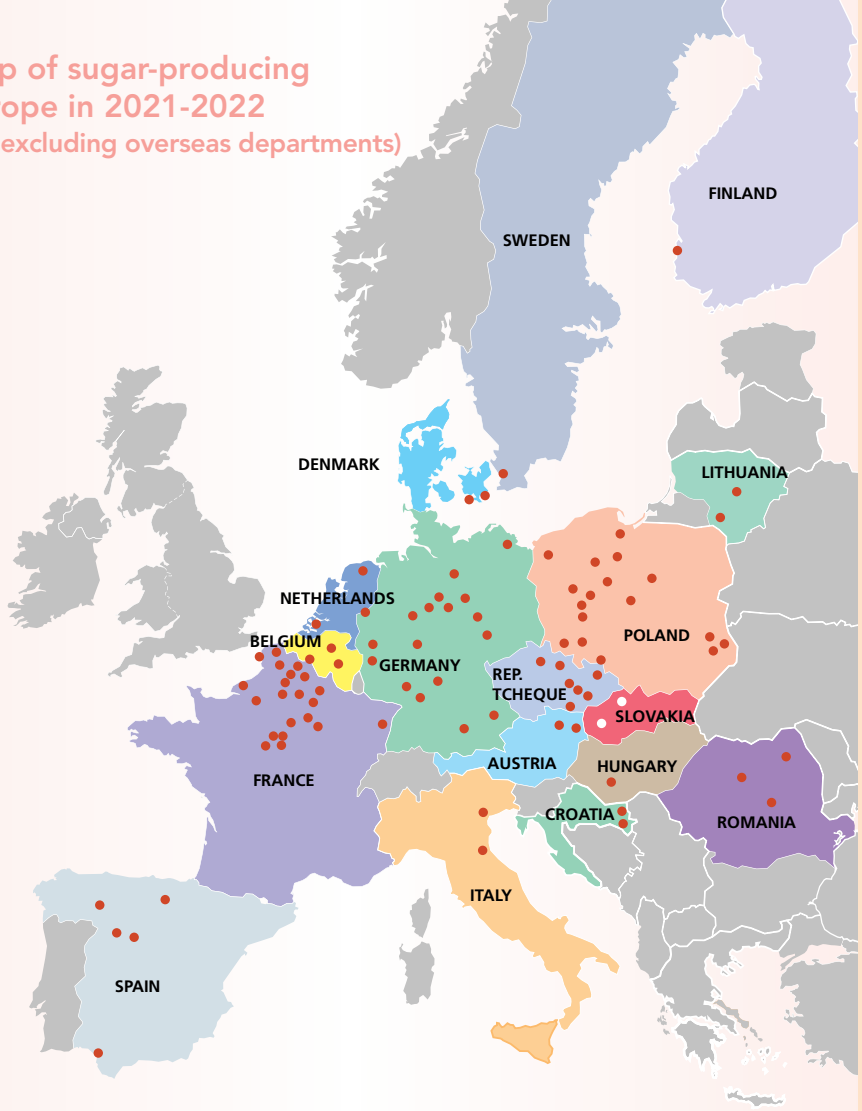
European sugar industry in 2021-2022 excluding overseas departments

Countries	Number of sugar plants 2020-2021	Production of sugar (beet) 2021-2022* (in thousand of tonnes)	Number of planters 2020-2021	Yield sugar (forecast) 2021-2022 (t/ha)
Germany	18	4,578	23,638	13.2
Austria	2	307	4,073	8.1
Belgium Luxembourg	3	576	6,421	10.4
Denmark	2	415	797	12.5
Spain	5	389	2,933	14.7
Finland	1	65	600	5.7
France	**21**	**4,560**	**23,700**	**12.6**
Greece	0	0	0	0
Hungary	1	85	214	8
Italy	2	259	3,012	9.1
Lituania	2	118	171	8.5
Netherlands	2	1,132	7,161	13.7
Poland	17	2,299	29,307	9.2
Czech Republic	7	570	943	9.9
Romania	3	116	588	5.7
Slovakia	2	200	214	9.1
Sweden	1	290	1,094	10.1
Croatia	2	124	508	10.7
E.U. of 27	**91**	**16,082**	**105,374**	**11.6**

**(forecast) white value*

Sources: European Commission, FranceAgriMer – C.E.F.S.

Map of sugar-producing Europe in 2021-2022
(EU excluding overseas departments)



The dots represent each sugar-producing plant.

Sources: S.N.F.S., A.G.P.

WORLD

170.5 Mt
of raw sugar produced in the world

133.1 Mt
of cane sugar

37.4 Mt
of beet sugar

World's largest producer

BRAZIL

36.2 Mt
of sugar

World's largest consumer

INDIA

26.4 Mt
of sugar

World's largest exporter

BRAZIL

24.7 Mt
of sugar

World's largest importer

INDONESIA

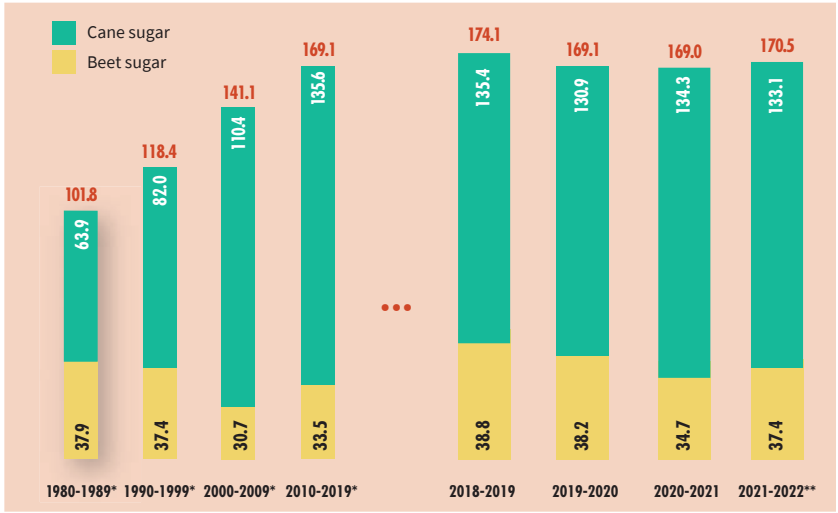
5.2 Mt
of sugar

The figures for this Statistical memo take account of the 2021-2022 campaign, when figures for this campaign are available.

Changes in world sugar production

Per campaign *(in millions of tonnes of raw sugar)*

Global Production/ten-year averages and last four campaigns

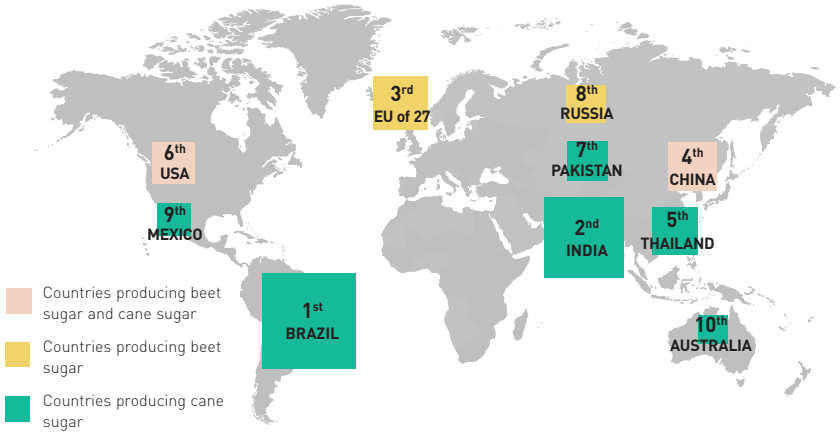


Source: ISO

1- The graph combines the figures from national campaigns with dates varying from country to country, unlike the balance table established at a fixed date. Slight differences therefore result.
Cane sugar henceforth represents 78% of world production.

Raw sugar value - Estimations*

10 largest sugar-producing countries in the world



World sugar balance

1 October to 30 September *thousand tonnes of tel quel sugar[1]*

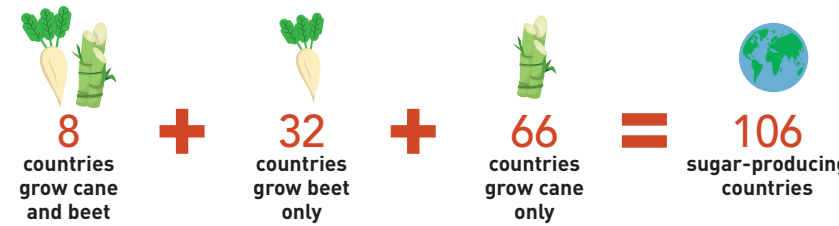
Oct/sept	2019/20	2020/21	2021/22
Initial stock	98,665	98,809	96,557
Production	169,057	169,032	170,512
Consumption	169,180	171,326	172,440
Final stocks	98,809	96,550	94,425

1- In these statistical data, certain figures are expressed in white sugar, others in raw sugar and others in tel quel sugar. Global statistics are normally expressed in raw sugar; nevertheless, the ISO has been expressing balance statistics in tel quel since 2015. The conversion rate from raw to white, given by the International Sugar Council and used here by ISO, is 0.92. The conversion rate from white to raw is 1.09.

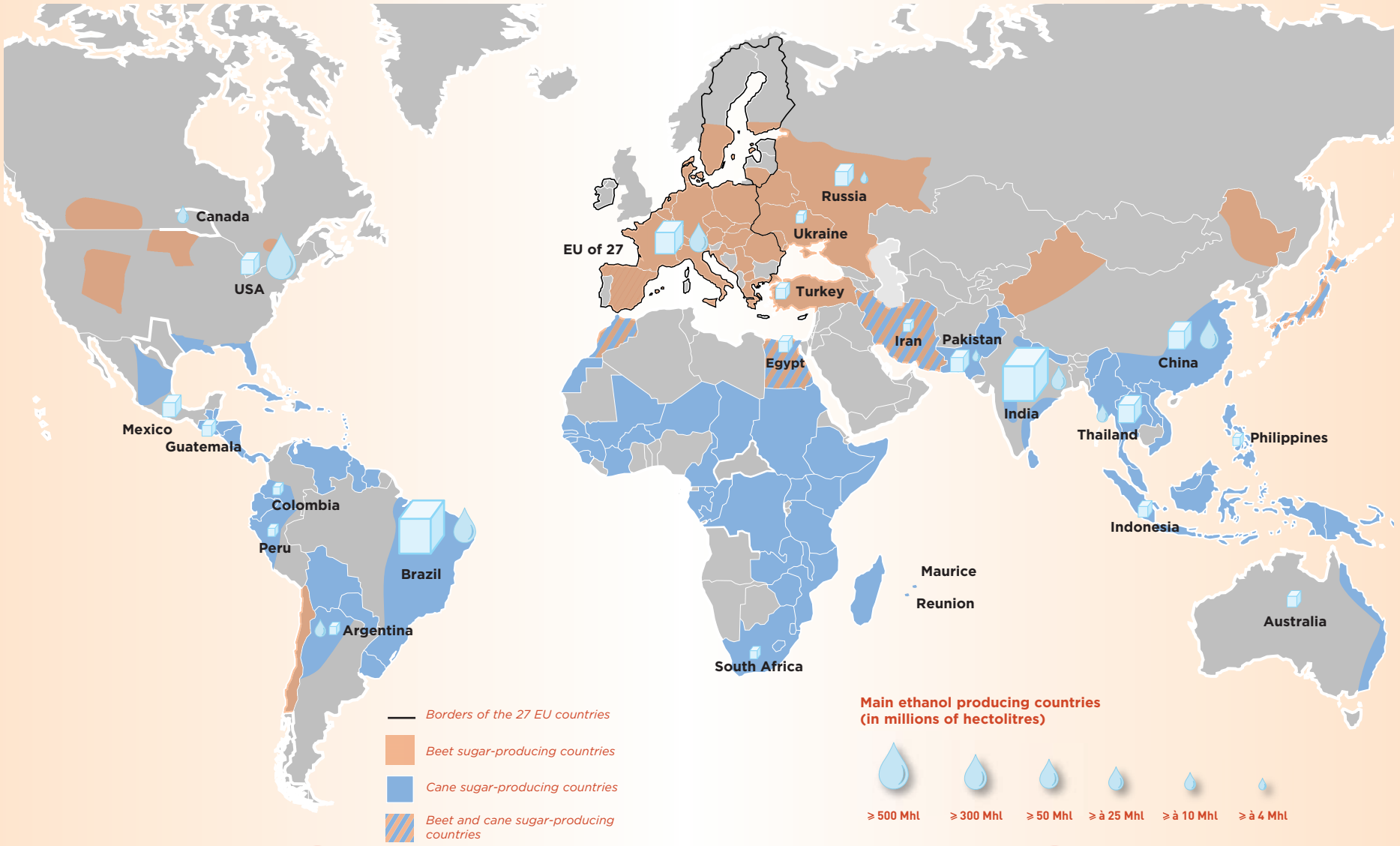
Sources: I.S.O. - S.N.F.S.

Sugar worldwide 2021-2022

Source: F.O. Licht



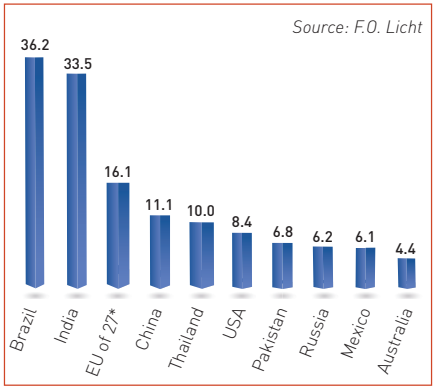
Sugar-plant cultivation regions, sugar-producing countries and ethanol-producing countries



Sugar worldwide 2021-2022

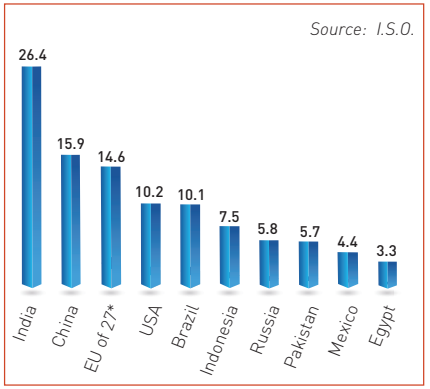
The ten largest producers

Account for 76% of world sugar production, i.e. 138.8 million tonnes of sugar (raw value):



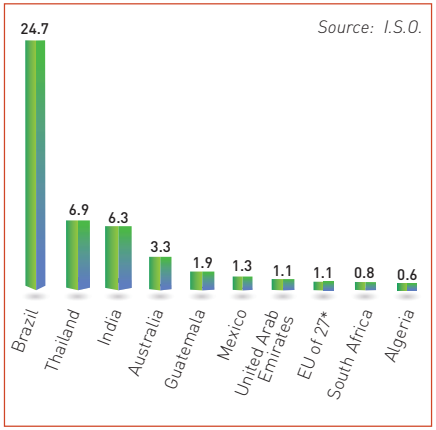
The ten largest users

Represent 60% of worldwide sugar consumption, i.e. 103,8 million tonnes of sugar (tel quel value):



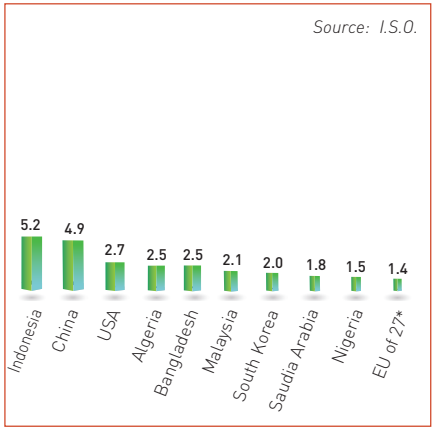
The ten largest exporters

Exports (million tonnes of tel quel sugar):



The ten largest importers

Imports (million tonnes of tel quel sugar):



*Source: European Commission

OTHER BY-PRODUCTS

A tonne of sugar beet produces

160 kg of sugar

OR

100 L of alcohol

\+ pulp + molasses + fertilising by-products

A tonne of sugar cane produces

115 kg of sugar

OR

90 L of alcohol + combustible bagasse + molasses

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By-products in France and Europe

Pulp

Once all the sugar has been removed by diffusion in warm water, the beet - now called pulp - is used in animal feed. Rich in vitamins, proteins and minerals, it also contains the residual sugar. This composition is an ideal feed for animals, especially ruminants which consume it fresh or dehydrated.
There are now **new industrial outlets for it: opaquing agent for paper pulp, natural fibre insulation for buildings, filtering industrial effluents, etc.**

Pulp production in France

2020-21 Campaign	Tonnage of dry materials	% compared to 28 EU country production
Compressed pulp	665,120	26%
Dehydrated pulp	613,760	23%

Sources: A.R.T.B., C.G.B., U.S.I.C.A.,C.I.B.E.

Molasses

Molasses is the end product for both cane and sugar beet - non-crystallised, viscous and highly-coloured. It is used to help fermentation in the production of alcohol, yeasts or micronutrients and in compound animal feeds.

- Production by the Member states of Europe of 28, 2020-2021 campaign: **3,500,000 tonnes**
- Production in Reunion: **62,664 tonnes** in **2021**
- Production in the French West Indies:
  - Martinique: **583 tonnes** in **2021**
  - Guadeloupe (GARDEL + SRMG): **21,060 tonnes** in **2021**

Sources: CEFS, Reunion Chamber of Agriculture, Reunion sugar syndicate; Martinique: company data; Guadeloupe: company data, Agreste.

Bagasse

Bagasse is a lignocellulosic residue obtained after grinding canes to extract the sugar which is now basically used as fuel in sugar-plant boilers.
Production in Reunion: **462,879 tonnes** (2021)
Production in Martinique: **11,164 tonnes** (2021)
Production in Guadeloupe (GARDEL + SRMG)): **127,870 tonnes** (2021)

Sources: Reunion Chamber of Agriculture, Reunion sugar syndicate; Martinique: company data; Guadeloupe: company data, Agreste.

Skimmings

Co-product of the sugar-making process, the skimmings are collected when purifying the juice from the beet by precipitation of impurities. Rich in mineral salts and especially calcium, they are recycled in farming as calcareous fertilizers.

ALCOHOL BIOETHANOL

15.1 Mhl
of agricultural-origin alcohol produced in France (2020-2021 campaign)

50,000
farmers*

< 1%
of usable French farming land**

12
production sites in France***

230
million euros in the French commercial balance in 2020

590
million euros in revenue in 2020

**Beet and grain farmers.*
***Equalling 300,000 hectares for production of bioethanol production and its food by-products.*
****Raw alcohol, with 5 recent global-scale industrial facilities.*

◆ Alcohol and bioethanol in France, Europe and worldwide

Ethylic alcohol or ethanol, more commonly known as **"alcohol"**, is produced either by synthesis or by fermenting and distilling agricultural substrates (from beet or cane, cereals or vinification).

Production in the sugar sector comes from fermenting the sugar contained in the juices extracted from the beet or cane, in syrups created by crystallisation and in the molasses. The alcohol is used in food (beverage alcohol), industry (solvent for chemistry), perfumery and pharmaceuticals for hydroalcoholic gel for instance. It is also being used more and more as fuel and takes then the name of **bioethanol.**

FRANCE

France was the largest European producer of alcohol in 2021 with a volume accounting for 21% of European production, ahead of Germany (16%) and the United Kingdom (8%) and Spain (7%).

Sources: FranceAgrimer , F.O. Licht

Alcohol production in France (thousand hl)

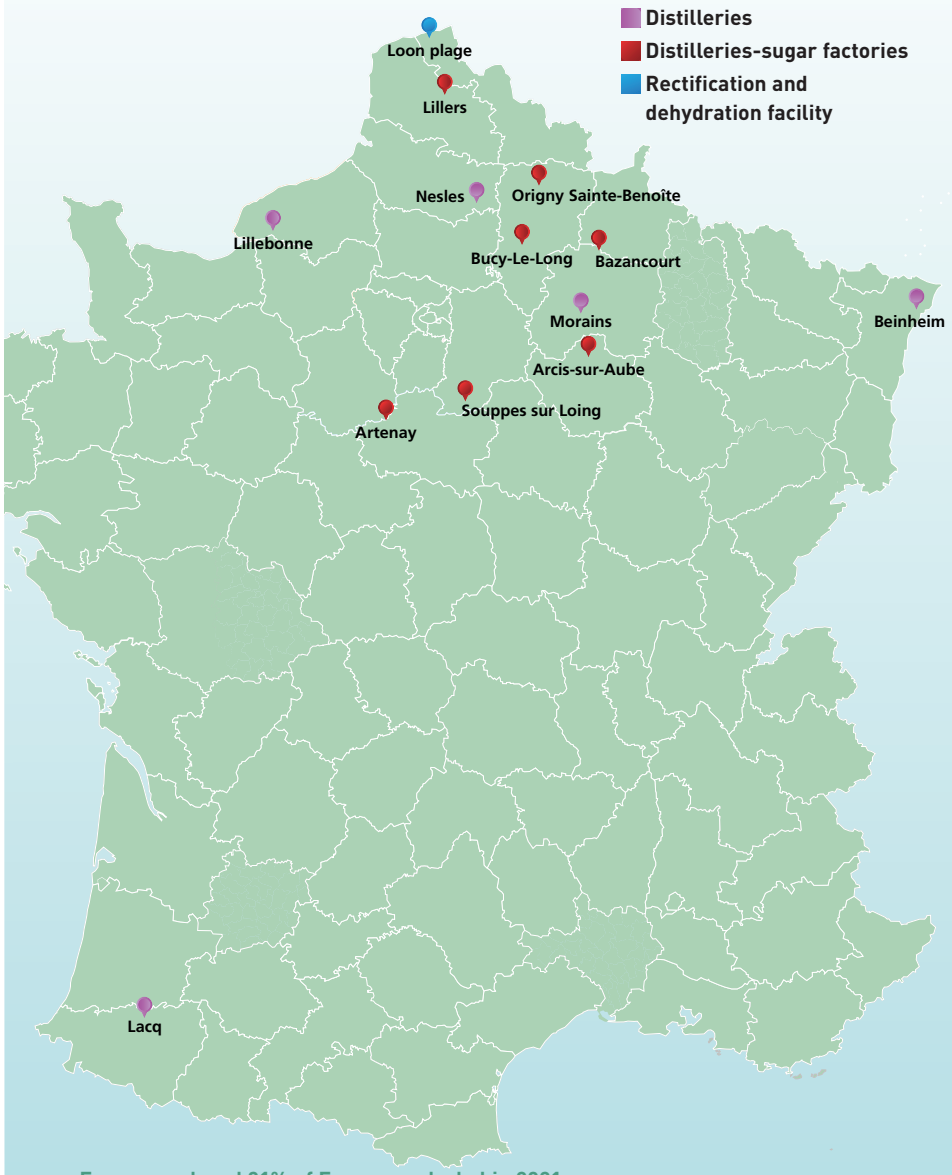
Origin	2017-18	2018-19	2019-20	2020-21
Beet*	9,710	9,140	8,742	6,290**
Cereal	8,141	8,421	8,493	8,379
Vinification (estimate)	430	419	626	426
Total	**18,281**	**17,980**	**17,861**	**15,095**

Sources: S.N.P.A.A., France Agrimer and CGB

**Includes alcohol from molasses.*

***This level is low due to the Beet Yellows Virus affecting beet production in 2020.*

◆ Agricultural-origin alcohol sector in France



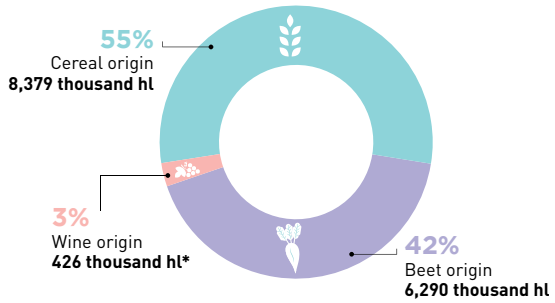
France produced 21% of European alcohol in 2021.
Two thirds of the alcohol produced in France is used as bioethanol (France or export).

Source: S.N.P.A.A.

FRANCE

Alcohol and bioethanol production in 2020-2021

2020-2021 breakdown depending on the origin (in %)



Source: FranceAgriMer

**European Regulation (COMMISSION DELEGATED REGULATION (EU) 2020/592 of 30 April 2020) authorising crisis distillation.*

BIOETHANOL FUEL IN FRANCE

Volume of bioethanol fuel in alcohol production in France

Million hl	2016-17	2017-18	2018-19	2019-20	2021-22*
Alcolhol production	16.3	18.3	17.9	17.8	15.1
Including bioethanol	**10**	**11**	**10.5**	**11.1**	**9.5**
Beet bioethanol	3	4.2	3.5	3.5	2.3

** Provisional*

Sources: S.N.P.A.A., C.G.B.

Use of bioethanol 2020

According to the Directorate-General of Customs and Indirect Taxes (DGDDI), the volumes declared under the Incentive Tax for Incorporation of Biofuels (TIRIB) in **2020** were as follows:

- Ethanol incorporated directly: **6.7 Mhl**
- Ethanol in ETBE: **3.1 Mhl**
- Total quantity of ethanol incorporated: **9.9 Mhl**

The official rate for incorporating renewable energy in petrol was 7.95% in 2020.

Biofuel incorporation objectives in petrol in France (in energy)

France	2017	2018	2019	2020	2021	2022	2023
Objectives	7.50%	7.50%	7.90%	8.20%	8.60%	9.20%	9.50%

Source: Customs

Incentive tax for biofuels incorporation (TIRIB): Ethanol from residues (residual starch and 45% (50% from 2022) after two extractions of sugar) is counted above 7% up to 0.2% in 2019 and 0.4% in 2020 and 0,8% in 2021 and 1% in 2022.

Incorporation of bioethanol in petrol in France (including double counting)

Bioethanol and others*	2015	2016	2017	2018	2019	2020
(% petrol)	6.40%	7.00%	7.50%	7.82%	7.95%	8.20%

**others: petrol type hydrotreated palm oil*

2022 SP95-E10 and Superethanol-E85 report in France

Superethanol-E85

Marketed since 2007 in France, Superethanol-E85 contains between 60% and 85% bioethanol with the rest being unleaded petrol.

The consumption of Superethanol-E85 increased by 33% in 2021 (versus 21% for overall petrol consumption). In 2021, this fuel represented 4% of the petrol sales in France.

Taxed less because it's more ecological, Superethanol-E85 remains the least expensive fuel on the market. Sold on average for 0.94* euros per litre at the pump, it can help consumers **save 500 euros per year for 13,000 km of driving** when compared with SP95-E10 petrol and more than 800 euros for 20,000 km of driving, in keeping with the average of the last five years (2017-2021: 540 euros).

Since the start of April 2022, nearly 2,800 service stations offer Superethanol-E85, amounting to 30% of the French service stations recorded on prix-carburant.gouv.fr

**prix-carburants.gouv.fr as of 25/03/22*

E85 conversion boxes approved by the government

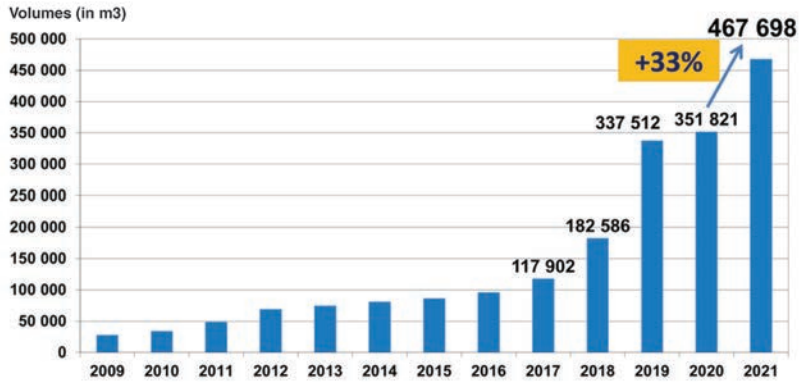
More than 30,000 approved E85 conversion boxes were installed in France in 2021, amounting to two times more than the previous year. More than 135,000 petrol vehicles equipped with boxes are now running on Superethanol-E85.

Since 1 April 2021 and entered into force by the amended approval decree, 9 our of 10 petrol cars are eligible to have the approved conversion box installed, including vehicles with particle filters and 15 CV or higher engines. Four manufacturers of E85 boxes – Biomotors, FlexFuel Energy Development, Borel and eFlexFuel Technology – received at least an authorisation for one of the 12 categories of existing vehicles (details at www.infoE85.fr).

To use Superethanol-E85, drivers can also opt for Flex-E85 origin vehicles. Two carmakers now offer a range of Flex-E85 vehicles: Ford and Jaguar – Land Rover.

After the success of its Kuga Flexifuel E85 SUV in 2019, **Ford unveiled a range of six new E85-compatible vehicles in 2021**: Fiesta EcoBoost, Puma EcoBoost, Focus EcoBoost mHEV, Kuga FHEV, Fiesta Van and Transit Connect.

Annual consumption of Superethanol-E85 since 2009



Source: Customs

SP95-E10

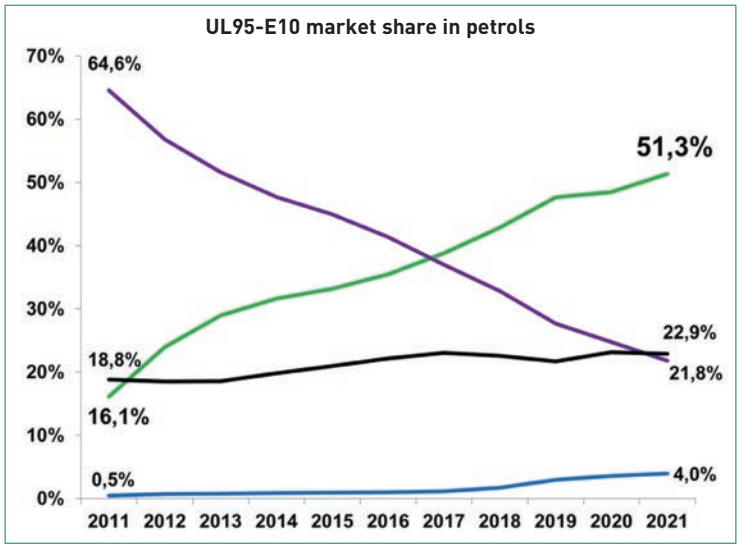
Marketed in France since 2009, SP95-E10 contains 90% fossil-fuel petrol and up to 10% bioethanol.

In December 2021, SP95-E10 reached a record share of 55.6% of the petrol market.

As the main petrol in **France since 2017**, SP95-E10 sales continued to rise in 2021. **Its annual market share increased by nearly 3 points to reach 51.3% in 2021**. Sold for three to four cents* cheaper than SP95 and containing up to 10% ethanol, SP95-E10 is more attractive for drivers. With the spike in fuel prices at the end of the year, **it achieved a record 55.6% share of the petrol market** in December.

**prix-carburants.gouv.fr*

UL95-E10 market share in petrols

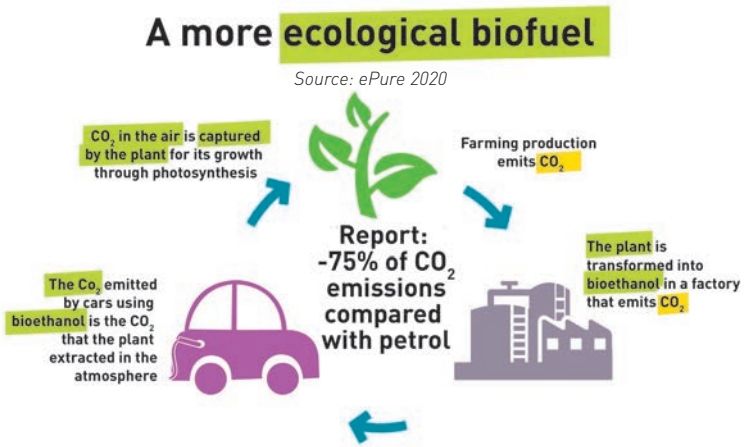


Source: CPDP

Immediately available renewable energy

Bioethanol now replaces a portion of fossil-fuel petrol and helps combat global warming. Pure bioethanol produced in Europe reduces net greenhouse gas emissions (CO_2 equivalent) by more than 75% on average compared with the substituted fossil-fuel petrol (source: ePURE for 2020).

Bioethanol produced in France helps avoid the emission of 1 million tonnes of CO_2 per year, equalling the emissions of 500,000 cars.



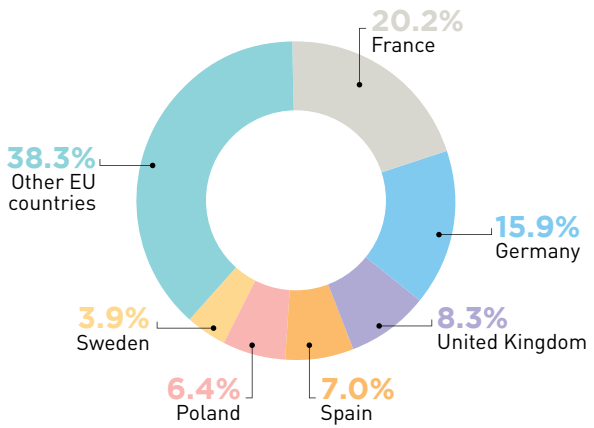
EUROPE

Alcohol and bioethanol production in Europe (thousand hl)

** Estimates* *Source: F.O. Licht*

Pays	2017	2018	2019	2020	2021*
France	17,200	18,250	17,850	16,900	15,000
Germany	12,700	11,170	10,280	11,000	11,800
United Kingdom	11,100	9,300	4,600	6,000	6,200
Spain	4,070	5,520	5,780	5,200	5,200
Poland	3,730	3,800	4,090	4,170	4,800
Sweden	2,500	2,450	2,800	2,800	2,900
Other EU countries	24,090	27,920	25,770	22,870	28,500
Total	**75,390**	**78,410**	**71,170**	**68,940**	**74,400**

Breakdown of alcohol and bioethanol production in 2021 (estimates)
(percentage)



Sources: F.O. Licht, European Commission

In Europe, bioethanol is mixed with petrol, either pure or after processing into ETBE (ethyl-tert-butyl-ether compound of half ethanol and half isobutylene, a petroleum by-product).

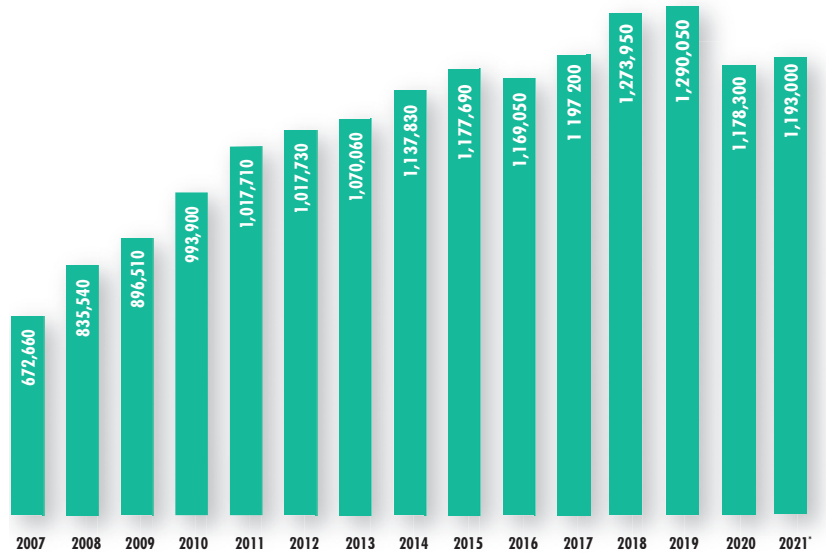
Agricultural alcohol uses in Europe

Uses (Mhl)	2019		2020	
Food	10.3	14%	10.2	14%
Industrial/Other	9.2	13%	14.4	20%
Fuel	52.3	73%	48.5	66%
Total	**71.8**	**100%**	**73.1**	**100%**

Source: European Commission

WORLD

Changes in worldwide alcohol production (including bioethanol)
(thousand hl)



** Estimation* *Source: F.O. Licht*

Ethanol and alcohol in the world
The 5 largest ethanol and alcohol producers (in thousands of hectolitres)

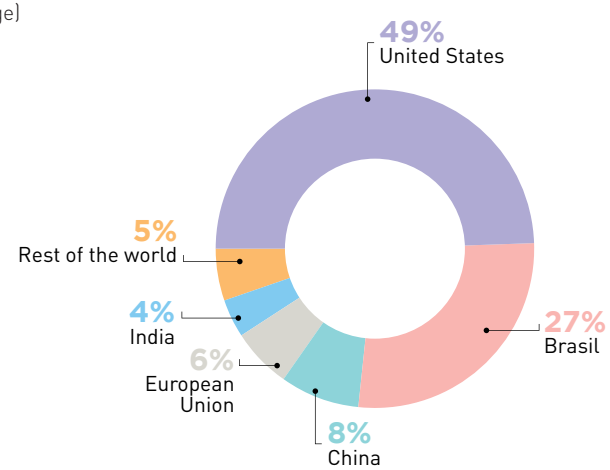
Pays	2017	2018	2019	2020	2021*
United States	615,340	623,760	613,259	544,000	586,000
Brazil	277,781	331,160	331,160	355,870	326,000
China	95,000	100,000	98,000	92,000	101,000
European Union	75,390	76,900	71,170	67,700	76,000
India	20,600	34,500	31,800	37,500	45,000
Rest of the world	113,089	107,630	144,661	81,230	59,000
Total	**1,197,200**	**1,273,950**	**1,290,050**	**1,178,300**	**1,193,000**

** Estimates*

Source: F.O. Licht

The ten largest producers accounted for 95% of the total volume of world alcohol production in 2021.

Breakdown of alcohol production (including bioethanol) in 2021
(percentage)



Sources: F.O. Licht, European Commission

KEY FIGURES

CONSTANTS

- 1 hectolitre (hl) of bioethanol = 79.3 kg
- 1 hectolitre (hl) of petrol = 75 kg
- 1 tonne (t) of bioethanol = 12.6 hl

LOWER CALORIFIC VALUE (LCV)

- In volume, bioethanol LCV = 21.285 MJ/l
- In volume, petrol LCV = 32.020 MJ/l

ETHANOL/PETROL ENERGY RATIO = 0.66

- 1.5% of bioethanol in volume has to be added to incorporate 1% of bioethanol in LCV in petrols.
- Bioethanol sector: 72% less greenhouse gas than the petrol sector (ePURE 2020)

KEY FIGURES: AVERAGE OVER 5 YEARS

1 hectare of beet
- = 87 tonnes of beets
- = 8,700 litres of ethanol
- = 7.1 tonnes of ethanol
- = 4.6 tonnes oil equivalent

Sources: A.D.E.M.E., C.G.B., S.N.P.A.A.

bioéthanol
Roulons plus vert et moins cher

www.bioethanolcarburant.com

Cultures Sucre has produced this statistical memo by consolidating the figures supplied by the following bodies:

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(Agriculture Ministerial Statistical Department)
- **A.R.T.B., Paris,** tel. +33 (0)1 44 69 41 84, www.artb-france.com
(Beet Production Technical Research Association)
- **C.E.F.S., Brussels, Belgium,** tel. +32 (2) 762 0760, www.cefs.org
(European Association of Sugar Manufacturers)
- **C.G.B., Paris,** tel. +33 (0)1 44 69 39 00, www.cgb-france.fr
(General Confederation of Beet Growers)
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(International Confederation of European Beet Growers)
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