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Preface

Dear Reader,

This is the 11th annual Evaluation and Progress Report presented by the Federal Office for Agriculture and Food (BLE) as the competent authority.

For 4.6 million tonnes of biofuels certified as sustainable within the meaning of the Biofuels Sustainability Ordinance, crediting was applied for in the quota year 2020. Compared with the previous year, this is an increase of 36%. This is the highest volume of biofuel ever declared since the introduction of the quota obligation. A significant proportion of the increase is due to the reduction to be provided by the obligated party compared with the reference value of 6% from the quota year 2020. Previously, a reduction of 4% was sufficient.

The average emission savings of all biofuels remained almost unchanged at around 83%. After looking at the last reporting years, the emission savings seem to be levelling off at this high level. The increased use of biofuels to replace fossil fuels led in total to the avoidance of 13.2 million tonnes of CO_2 equivalent.

During the reporting period, we adapted our control procedures at short notice to the restrictions resulting from the Covid-19 pandemic. The main issue was whether on-site inspections can still be carried out in the usual way or only in a modified way.
The BLE developed a procedure that nevertheless allowed the assessment of the activities of a certification body without carrying out on-site inspections.
Most inspections were carried out remotely.

This year, the General Customs Directorate has again extended the deadline for submitting written notifications and concluding quota trade agreements until 15 June 2020.
Accordingly, the data needed for this report was available only later.

The 11th Evaluation and Progress Report provides information to the interested public and experts about the development of biofuels and bioliquids placed on the market in Germany.

Dr Hanns-Christoph Eiden
President of the Federal Office for Agriculture and Food

1. Introduction

1.1 General

On 5 June 2009, Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources (Renewable Energy Directive) was published in the Official Journal of the European Union. This Directive forms part of the EU climate and energy package adopted by the Council on 6 April 2009. This package consists of binding legislation intended to ensure that the EU meets its climate and energy targets by 2020[1].

The Directive is careful to point out that the control of European energy consumption and the increased use of energy from renewable sources, together with energy savings and increased energy efficiency, constitute important parts of the package of measures needed to reduce greenhouse gas emissions and comply with the Kyoto Protocol to the United Nations Framework Convention on Climate Change, and with further Community and international greenhouse gas emission reduction commitments beyond 2012.

The overall aim of this Directive therefore includes goals such as increasing the proportion of energy from renewable sources within the EU[2], decreasing dependencies on fossil fuels and reducing greenhouse gas emissions.

At the national level, each Member State must therefore take measures and develop appropriate instruments for achieving the targets set or any more comprehensive national targets.

The use of energy from renewable sources in the transport sector is viewed as one of the most effective tools available to the community for reducing its dependence on imported oil in the transport sector – a sector exposed to acute risks in terms of energy security – while influencing the fuel market for transport[3].

[1] The three most important targets in the package are: Reduction of greenhouse gas emissions by 20% (compared with 1990 levels), 20% of energy in the EU to be from renewable sources, improving energy efficiency by 20%

[2] At least 10% of final energy consumption in transport by 2020, Article 3, paragraph 4 Directive 2009/28/EC

[3] Recitals of Directive 2009/28/EC of the European Parliament and of the Council

The Renewable Energy Directive prescribes sustainability criteria for biofuels and bioliquids:

- The greenhouse gas emission savings achieved by the use of biofuels and bioliquids must be at least 50% (at least 60% in the case of new installations)[4],

- Biofuels and bioliquids must not be made from raw material obtained from land of high value in terms of its biodiversity

- Biofuels and bioliquids must not be made from raw material obtained from land with a high carbon stock

- Biofuels and bioliquids must not be made from raw material obtained from land that was peatbog in January 2008, unless evidence is provided that the cultivation and harvesting of this raw material does not involve drainage of previously undrained soil

According to Commission Communication 2010/C 160/02, the sustainability criteria for biofuels and bioliquids can be implemented as follows:

1. By national schemes

2. By using a voluntary scheme that the Commission has recognised for the purpose
   or

3. By complying with the terms of a bilateral or multilateral agreement concluded by the European Union with third countries, which the Commission has recognised for this purpose

The European Commission publishes the implementing decisions on the recognition of voluntary schemes for the area of the Renewable Energy Directive in the Official Journal of the EU. The recognition is valid for a maximum of five years and must then be reapplied for. These voluntary schemes are active in the field of sustainable biomass production alongside the certification schemes recognised by the BLE (DE schemes) and national schemes of other Member States.

On 4 August 2010, the German government adopted the National Renewable Energy Action Plan. The German government subsequently published its energy policy for an environmentally friendly, reliable and affordable energy supply on 28 September 2010. Article 27, paragraph 1 of the Renewable Energy Directive requires Member States to complete transposition into national law by 5 December 2010. In Germany, this was achieved by

[4]The emissions accounting of biofuels and bioliquids shall be carried out in accordance with the methodology in accordance with Article, 19 No. 1 letter b or c in conjunction with Appendix V of Directive 2009/28/EC, which corresponds to Article 8, paragraph 2 in conjunction with Annex 1 of the Biofuels Sustainability Ordinance. Once the upstream chain has communicated its own emissions, the calculation is made by the certified biofuel manufacturers and entered into the sustainability certificate. The fossil comparative value for the question of whether a biofuel is sustainable is 83.8 g CO_2 eq/MJ.

the publication of the Biomass Energy Sustainability Ordinance (BioSt-NachV) of 23 July 2009 and the Biofuels Sustainability Ordinance (Biokraft-NachV) of 30 September 2009 in the Federal Law Gazette. These two sustainability ordinances implement the Renewable Energy Directive and constitute some of the measures from the German government's National Action Plan and energy policy.
In the ILUC Directive, (Directive (EU) 2015/1513 of the European Parliament and of the Council of 9 September 2015 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources), European legislators introduced a ceiling of 7% for the proportion of biofuels produced from food crops (conventional biofuels) while reducing the time allowed for meeting the sustainability criterion of minimum emission savings of 50% and of 60% for new installations (these savings figures have been current since 1 January 2017)[5].

In Germany, the biofuel quota for energy was replaced by the greenhouse gas reduction quota on 1 January 2015. Since then, obligated parties have been required to ensure that the greenhouse gas emissions of the fossil petrol and diesel fuels they place on the market plus the greenhouse gas emissions of the biofuels they place on the market are reduced by a defined percentage vis-à-vis the reference value calculated individually in each case[6]. The required reduction vis-à-vis the reference value has been 4% since 2017 and 6% from 2020.

As a measure accompanying the introduction of the greenhouse gas reduction quota, the BLE regularly prepares evaluations for the Commission and the voluntary schemes as well as the national schemes. These evaluations provide the scheme in question with information about sustainability certificates with particularly low emission values as entered into Nabisy by the scheme's participants. If the emission value stated on the certificate is at least 10% below the "typical value" or a comparable value, it is described in the evaluation as a "particularly low emission value". The data provided by the BLE in this context should not be confused with the data used in this evaluation report. By providing these data, the BLE assists certification schemes in completing their own evaluations. The Commission receives a summary of the total number of relevant sustainability certificates in each of the schemes that the Commission recognises.

[5] Art. 17, paragraph 2 of Directive 2009/28/EC

[6] The reference value against which the greenhouse gas reduction has to be made shall be calculated by multiplying the baseline value by the energetic amount of fossil petrol and fossil diesel fuel placed on the market by the obligated party plus the energetic amount of biofuel placed on the market by the obligated party. The greenhouse gas emissions of fossil petrol and diesel fuels are calculated by multiplying the base value with the energy quantity of the fossil petrol and diesel fuels placed on the market by the obligated party. The greenhouse gas emissions of biofuels are calculated by multiplying the greenhouse gas emissions stated in certificates acceptable according to Section 14 of the Biofuels Sustainability Ordinance, in kilogram carbon dioxide equivalents per gigajoule, by the energy quantity of the biofuel placed on the market by the obligated party.

1.2 This report

As the competent authority, the BLE is obligated to submit an annual progress report to the federal government.

This report provides information about the use of sustainable biomass in Germany during the 2020 calendar/quota year. Details are provided about quantities of biofuels and bioliquids in a total of three sections. These are as follows:

- Biofuels recognised as counting towards the greenhouse gas reduction quota (chapter 6)
- Bioliquids registered for electricity generation and supply according to the German Renewable Energy Sources Act (EEG) (chapter 7)
- Biofuels and bioliquids not destined for energy use in Germany (chapter 8)

The data used for the evaluation report are provided by the government's Sustainable Biomass System database (Nabisy). This database records all biofuel and bioliquid quantities relevant for the German market. The primary sources of these data are the certified manufacturers of biofuels, who enter all of the data required for the issuing of a sustainability certificate. Following this, the biofuel is generally traded a number of times, with all economic operators along the chain also being certified parties and requiring a Nabisy account in order to receive or transfer the certificate, which is then referred to as a "partial sustainability certificate". The process is similar to online banking.

1.3 Summary of important results and events in 2020

- An application for recognition as part of the German greenhouse gas reduction quota was made for 168,098 TJ of biofuels [previous year: 123,619 TJ]. This equates to 4,617 kilotonnes (kt) of biofuel. Of these, approx. 40% (67,256 TJ) were made from EU source materials [previous year: just under 53% (64,903 TJ)].

- Source materials of all biofuel types were mainly palm oil (34.7% [previous year: 17.5%]), waste and residual materials (27.5%, [previous year: 29.4%]), rapeseed (16.8%, [previous year: 25.1%]), and maize (10.3% [previous year: 12.7%]).

- The largest proportion of biofuel – around 53% – was accounted for by biodiesel (FAME) with 89,429 TJ, [previous year 73%, 89,646 TJ].

- The proportion of HVO increased to 43,893 TJ (26.1%), [previous year 1,836 TJ].

- Bioethanol accounted for 29,528 TJ, [previous year 25%, 30,808 TJ] or just under 18%.

- The most frequently used source materials for biodiesel production was waste and residues, 32,975 TJ (37% [previous year 37%]), followed by rapeseed, 28,274 TJ (32% [previous year 33%]) and palm oil, 22,216 TJ (25% [previous year 25%]).

- The most frequently used source materials for bioethanol production was maize, 17,367 TJ (59% [previous year: 64%]) and wheat, 3,562 TJ (12% [previous year: 18%]).

- Palm oil use in biofuels increased in 2020 compared with the previous year (+139% [previous year: +29%]). In the last 10 years, the proportion of palm oil has thus increased from 10% (12,678 TJ) in 2011 to almost 35% (58,308 TJ) in 2020. In terms of volume, this results in an increase of 360%.

- The overall reduction in greenhouse gas emissions for all (pure) biofuels was 82.6% when compared with fossil fuels. This means that emissions totalling around 13.2 million tonnes of CO_2 equivalent were avoided by the use of biofuels instead of fossil fuels.

- 30,673 TJ of bioliquids were converted into electricity. EEG-based remuneration was applied for to compensate for feeding this electricity into the grid. 81% [previous year: 84%] are thick liquor from the pulp industry; 14% [previous year: 13%] consisted of vegetable oil.

- The overall reduction in greenhouse gas emissions for all (pure) bioliquids was 91.4% when compared with fossil fuels. This means that emissions totalling around 2.6 million tonnes of CO_2 equivalent were avoided by the use of bioliquids instead of fossil fuels [previous year: about 2.8 million t].

- Some 96,554 TJ of the biofuels and bioliquids, the sustainability information of which had been registered in Nabisy were retired to accounts

held by other states [previous year: approx. 77,220 TJ]. The corresponding sustainability certificates showed significantly higher emissions in comparison with the documents submitted in Germany.

- In the reporting year, the certification bodies recognised by the BLE (on the reporting date 31 December 2020: 22) carried out 3,353 (previous year 2,845) certifications worldwide within the scope of their recognition. Of these, 3,272 (previous year: 2,763) certifications were completed according to the requirements of the voluntary schemes and 81 (previous year: 82) according to the requirements of the two DE schemes. These certifications are subject to BLE surveillance.

1.4 Methodology

This Evaluation and Progress Report describes the existing processes and measures, and provides an analysis of the data available to the BLE. The Report also covers the circumstances that are relevant to implementation in Germany, such as the transposition of Directive 2009/28/EC in other Member States and the recognition of voluntary schemes by the European Commission.

The results of this analysis are presented, compared and explained from a number of perspectives.

The discussions that follow relate to the data as submitted by the economic operators to the BLE in its capacity as the competent authority according to section 66 Biokraft-NachV and Section 74 BioSt-NachV.

Data on the sustainability of biofuels and bioliquids supplied to the market must be entered into the government Sustainable Biomass System database (Nabisy) by economic operators insofar such data may be of relevance to the German market. If quantities are entered as a precautionary measure but ultimately not used for energy production in Germany, these data are retained within Nabisy without being allocated to Germany. The respective economic operator is responsible for the correct retirement posting of such data. The data entered are thus collected in an organised manner and documented systematically.

The information presented here is intended to be used by policy-makers and economic decision-makers as a basis for optimisation processes.

In addition, our analysis is also intended to assess the effectiveness of the measures taken – to the extent possible given the available data.

Where information is given on the number of Nabisy users or certifications, it should be noted that economic operators have been counted more than once in the event of these operators using separate certification schemes at the same time, and in the event of economic operators acting as both producer and supplier. No conclusions can therefore be drawn as to the actual number of companies participating in the measures.

Effectiveness is measured with reference to the following targets

- The increase in the proportion of “renewable energies” in Germany’s energy supply within the fuels sector and in electricity generation from liquid biomass
- The reduction in greenhouse gas emissions resulting from the use of sustainable biomass
- The development of more efficient processes and source materials for producing energy from biomass

Changes in these indicators over the relevant calendar year are analysed with reference to BioSt-NachV and Biokraft-NachV.

More specifically, areas of analysis include

- the effectiveness of the sustainability ordinances in terms of the targets pursued by the federal government

and

- the optimisation of the implementation of the requirements of the Renewable Energy Directive

among others.

Appropriate methods have been chosen for data collection, quantification and evaluation.

The following data are evaluated:

1. Sustainability certificates and sustainability sub-certificates for which crediting against the biofuel quota obligation was requested in the respective quota year.
- The vast majority of these are partial sustainability certificates, which are the result of multiple splits along the chain of stakeholders until the final end user. These certificates were identified on the basis of the use notes set by the biofuel quota office.

2. Sustainability certificates and sustainability sub-certificates from the 2020 calendar year that have been registered for remuneration under the EEG.
- These certificates were identified on the basis of the usage notes set by the grid operators and the BLE.

3. Sustainability certificates and partial sustainability certificates. that have not been used for energy purposes in Germany.
- These certificates were identified by the beneficiary account (charge-off account).

Data are considered and evaluated with regard to the type of fuel, its quantity, energy content, origin, the raw materials used in its production and, ultimately, the resulting emissions. A tabular format has been chosen in cases where presentation graphics did not appear appropriate.

The primary focus is the state of play as of 31 December 2020 along with a statistical comparison of the implementation of the measure over time (per year) in relation to the initial values.

In this context, the monitoring measures put in place by the BLE and/or administrative processes are also analysed, evaluated and optimised.

Differences in totals in this report are due to rounding.

2. Responsibilities of the BLE

In Germany, the BLE is the competent authority for the implementation of the sustainability criteria from the Renewable Energy Directive within the legal framework created by the sustainability ordinances.

In the field of sustainable bioenergy, the responsibilities of the BLE include:

- In the biofuel sector – making data available to the biofuels quota office and the main customs offices as required for recognising biofuels as contributors to the greenhouse gas reduction quota
- In the bioenergy sector – making data available to grid operators as required for EEG compensation and the payment of the renewable raw materials bonus for system operators
- In the emissions trading sector – making data available to the Emissions Trading Authority
- The management of data on the sustainability of biofuels and/or bioliquids in the web-based government Sustainable Biomass System database (Nabisy) and the issuing of partial sustainability certificates in response to applications from economic operators
- Periodic evaluation of sustainability ordinances and preparation of the annual progress report for the federal government
- Periodic preparation of reports on particularly low emissions from sustainability certificates for voluntary schemes, national schemes and for submission to the European Commission
- Recognition and surveillance activities for certification schemes and certification bodies according to the sustainability ordinances.

In accordance with Section 74 of BioSt-NachV and Section 66 of Biokraft-NachV, the BLE is required to complete the following periodic measures for the implementation of the sustainability ordinances:

- Conducting annual audits of the business premises of certification bodies (office audits) and risk-based random appraisals of the auditing activities of certification bodies (witness audits)
- Maintenance and enhancement of the BLE website by providing information and documents in German and English
- Maintenance and further development of a consistent system for the recognition of certification schemes and bodies, and for the surveillance of compliance with statutory requirements
- Maintenance and further development of the government's Nabisy database for documenting the type and origin of biofuels and sustainability certificates. Documentation and verification of information about the sustainability of biofuel supplies, data exchange with databases in other Member States.
- Maintenance and enhancement of the information register in accordance with Section 66 BioSt-NachV and Section 60 Biokraft-NachV
- Organisation of meetings of the Advisory Council on Sustainable Bioenergy
- Organisation of events with certification schemes, certification bodies and businesses, with the aim of exchanging knowledge and information
- Speaking at information events for influential stakeholders such as associations, certification schemes, certification bodies, representatives of the German states, and competent authorities of other Member States
- Attendance at various industry events and trade fairs
- Cooperation and coordination of implementation with the competent authorities of other Member States in REFUREC (Renewable Fuels Regulators Club), and as an observer in relevant working groups of CA-RES (Concerted Action – Renewable Energy Sources Directive)
- Training BLE Audit Service staff working as auditors in the area of sustainable biomass production
- Training Nabisy web application users

3. Certification schemes, voluntary schemes, and national schemes of other Member States

The Renewable Energy Directive and its national transposition by means of the sustainability ordinances require compliance with their provisions regarding the sustainability of biomass, and the biofuels and bioliquids produced from this biomass, by all economic operators along the entire value chain. The DE schemes, together with the voluntary schemes recognised by the European Commission or national schemes of other Member States, are tasked with substantiating and guaranteeing this compliance.

Certification schemes have organisational responsibility for ensuring compliance with the requirements of the Renewable Energy Directive (and of national legislation transposing this Directive) for the production and supply of biomass. Their scheme documents contain specifications for the further definition of the requirements, for the proof of their fulfilment, and for the control of this proof.

3.1 Certification schemes recognised by the BLE according to Section 33 numbers 1 and 2 BioSt-NachV and/or Biokraft-NachV

As of 31 December 2020, the BLE had received the following number of applications for the recognition of certification schemes:

Table 1: Applications for DE certification schemes

Total applications received by 31 December 2020	**4**
Of which rejected	1
Of which recognised	**3**
Of which recognition withdrawn	1
Currently recognised by the BLE[7]	**2**

The BLE has approved DE schemes for the following countries within the scope of their applications[8]:

- All member states of the European Union as well as
- Argentina, Australia, Belarus, Bolivia, Bosnia and Herzegovina, Brazil, Burkina Faso, Cambodia, Cameroon, Canada, Chile, China, Colombia, Costa Rica, Ecuador, Egypt, El Salvador, Ethiopia, Georgia, Ghana, Guatemala, Hong Kong, India, Indonesia, Israel, Ivory Coast, Kazakhstan, Kenya, Laos, Madagascar, Malaysia, Mauritius, Mexico, Moldova, Mozambique, Nicaragua, Norway, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Republic of Korea, Russia, Serbia, Singapore, South Africa, Sudan, Switzerland, Tanzania, Thailand, Togo, Turkey, Uganda, Ukraine, United Arab Emirates, United States, Uruguay, Uzbekistan, Venezuela, and Vietnam.

[7] ISCC System GmbH (Cologne) and REDcert GmbH (Bonn)
[8] This does not mean that all these countries allow the BLE to conduct on-site monitoring by means of a witness audit

3.2 Voluntary schemes according to Section 32, number 3 BioSt-NachV/Biokraft-NachV

According to Article 18, paragraph 4, sub-paragraph 2, sentence 1 of Directive 2009/28/EC, the European Commission may decide that voluntary national or international schemes in which standards are set for the production of biomass products contain accurate data for the purposes of Article 17, paragraph 2. Such data may be used as proof that consignments of biofuel comply with the sustainability criteria set out in Article 17, paragraphs 3 to 5 of the Directive. The recognition of such voluntary schemes is valid for no more than five years.

According to Section 41 BioSt-NachV and/or Biokraft-NachV, such voluntary schemes are deemed recognised in Germany for as long as and to the extent that they are recognised by the European Commission.

The list of currently recognised voluntary certification schemes is published on the European Commission website at:

https://ec.europa.eu/energy/en/topics/renewable-energy/biofuels/voluntary-schemes

3.3 National schemes of other member states

National schemes of other member states also have organisational responsibility for ensuring compliance with the requirements of the Renewable Energy Directive's sustainability criteria for the production and supply of biomass. These schemes set out the details of the requirements for proof of compliance with the criteria and how such proof is to be verified.

In 2020, only data from the national scheme from Austria were available in Nabisy. Companies based within the territory of Austria are obligated to register sustainability data in the Austrian elNa database.

3.4 Economic operators

In the area of sustainable bioenergy, all economic operators along the entire value chain operate according to the specifications of a certification scheme, a voluntary scheme or a national scheme of other Member States, with the exception of users (plant operators and parties obliged to provide evidence). In addition to the sustainability certificate, the latter must comply with other national provisions in order to receive compensation from the EEG and/or to have their product recognised as part of the biofuel quota.

Specifically, the following types of economic operators are distinguished:

Grower

Growers are agricultural businesses and establishments that grow and harvest biomass.

Primary distributor

Primary distributors are businesses and establishments (plants) that are the initial recipients of the biomass required for producing biofuels from those who grow and harvest the biomass, for the purpose of trading it further (e.g. agricultural trade).

Originator

Businesses or private homes where wastes and residues are generated.

Waste collectors

Waste collectors are businesses and establishments that initially collect the biomass required for producing biofuels, in the form of biogenic waste and residues from the businesses or private households where waste and residues are generated, for the purpose of trading this biomass onwards.

Conversion operator

Two distinct groups must be distinguished here:

a) Businesses and establishments that process biomass from sustainable cultivation, biogenic waste or residues and which supply the semi-finished

products to a further stage of processing for the purpose of biofuel or bioliquid production (e.g. oil mills, biogas plants, fat processing plants or other plants, the processing output of which is of insufficient quality for the final use of the product).

b) Businesses and establishments that process liquid or gaseous biomass and upgrade this to the quality required for final use. (Such as oil mills, esterification plants, ethanol plants, hydrogenation plants, or biogas upgrading plants.)

Businesses along the production and supply chain that require certification from the certification schemes are known as **interfaces**. In this context, primary distributors and waste collectors are the primary interface; conversion operators that process biomass to the quality required for final use are the **final interface**.

Suppliers and/or traders within the value chain

Suppliers are economic operators who act between the primary distributor and the conversion operators or between the final interfaces and the distributor of biofuels and/or the plant operator who feeds electricity generated from bioliquids into the grid. Where suppliers downstream of the final interface are not subject to customs monitoring, they must become participants in a DE certification scheme or a voluntary scheme that is recognised by the EU.

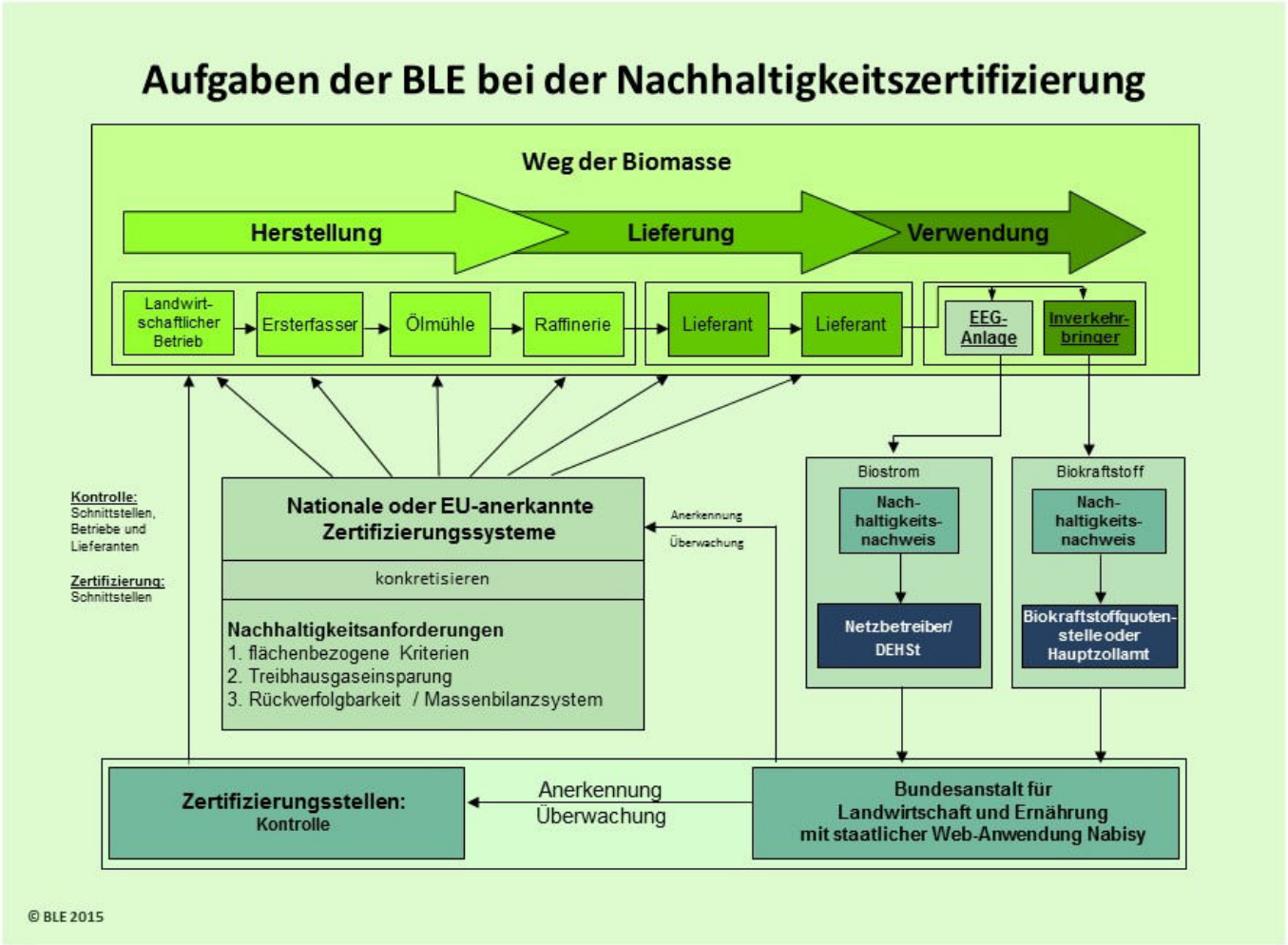
Plant operator

Plant operators are economic operators that, irrespective of ownership, use plants to generate electricity from renewable energy sources and feed this electricity into the grid. The plant operators receive EEG-based compensation from the grid operator following submission of the relevant sustainability certificate.

Parties obliged to provide evidence

Parties obliged to provide evidence are economic operators who, according to Section 37a German Federal Immission Control Act (Bundes-Immissionsschutzgesetz) are obligated to meet a certain minimum target for the reduction of greenhouse gas emissions on their sum total of taxed fuel in the course of a calendar year. To this end, these operators may place sustainable biofuels on the market.

Figure 1


Aufgaben der BLE bei der Nachhaltigkeitszertifizierung
Weg der Biomasse
Herstellung
Lieferung
Verwendung
Landwirt-schaftlicher Betrieb
Ersterfasser
Ölmühle
Raffinerie
Lieferant
Lieferant
EEG-Anlage
Inverkehr-bringer
Kontrolle: Schnittstellen, Betriebe und Lieferanten
Zertifizierung: Schnittstellen
Nationale oder EU-anerkannte Zertifizierungssysteme
konkretisieren
Nachhaltigkeitsanforderungen
1. flächenbezogene Kriterien
2. Treibhausgaseinsparung
3. Rückverfolgbarkeit / Massenbilanzsystem
Anerkennung
Überwachung
Biostrom
Nach-haltigkeits-nachweis
Netzbetreiber/ DEHSt
Biokraftstoff
Nach-haltigkeits-nachweis
Biokraftstoffquoten-stelle oder Hauptzollamt
Zertifizierungsstellen: Kontrolle
Anerkennung
Überwachung
Bundesanstalt für Landwirtschaft und Ernährung mit staatlicher Web-Anwendung Nabisy
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3.4.1 Scheme participants notified to the BLE

Alongside certification schemes recognised by the BLE, voluntary national or international schemes that set requirements for the production of biomass products are also deemed recognised by Germany under the sustainability ordinances without any further formalities as long as and to the extent that they are recognised by the European Commission. The same applies to national schemes of other Member States.

Registration is mandatory for participants in BLE-recognised certification schemes (DE schemes). As regards voluntary and national schemes, participants are taken into account only if these were notified to the BLE because the biofuels or bioliquids produced or traded by these participants are or may become relevant to the German market, and they require a Nabisy account. The majority of participants now take part in an EU-recognised voluntary scheme.

As of the reporting date 31 December 2020, 5,880 participants (previous year: 5,045) along the value chain who produced or traded biofuels or bioliquids were registered with the BLE.

The sum totals are derived from all participants notified to the BLE. In cases where a company acts in several roles simultaneously (e.g. as a producer of biofuel and as a supplier downstream of the final interface) or participates in more than one certification scheme, this company may be counted more than once.

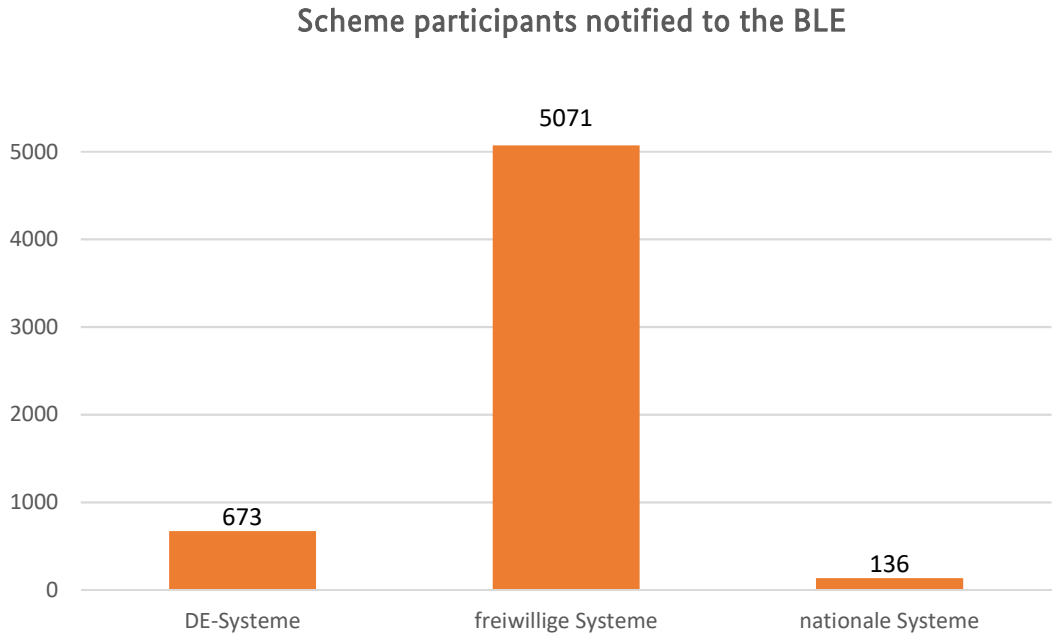

Figure 2

3.4.2 Suppliers subject to monitoring by German customs offices

Where suppliers downstream of the final interface are subject to customs monitoring in the sense of Section 17, paragraph 3, number 2 Biokraft-NachV, these suppliers are not required to be participants in a DE scheme or in a voluntary scheme recognised by the European Commission. To benefit from this exemption, a supplier's mass balance system must be subject to periodic audits by the main customs offices for reasons of tax monitoring according to the German Energy Tax Act (Energiesteuergesetz) or the monitoring of biofuel quota obligations according to the German Federal Immission Control Act. In such cases, these suppliers must use the Nabisy electronic database to document the receipt and transfer of the biofuels, stating the place, date, and information included on the sustainability certificate.

During the application process for access to Nabisy, the BLE obtains confirmation from the main customs office responsible for the supplier's place of business that the applicant is indeed subject to customs monitoring. Once this confirmation has been provided, the economic operator is granted a database account.

As of 31 December 2020, 238 suppliers subject to customs monitoring (previous year: 173) were registered in Nabisy.

3.4.3 Participants in national schemes from other Member States

Some of the participants registered in Nabisy participate in national schemes from other Member States. As of 31 December 2020, a total of 136 participants (previous year: 124) in the national systems from Austria, Slovakia, and Hungary were registered with the BLE.

4. Certification bodies

Certification bodies are independent natural or legal persons that issue certificates to economic operators along the value chain and monitor compliance with the requirements of the Renewable Energy Directive and of the national legislation enacted to transpose this directive as well as other requirements of the scheme used in all businesses along the value chain. Certificates certify that the specific requirements of the Renewable Energy Directive are met for the production of sustainable biofuels and/or bioliquids. In Germany, the BLE is the competent authority for the recognition and surveillance of certification bodies in the context of sustainable biomass production. This applies irrespective of whether the certification bodies act under DE schemes or under voluntary schemes because the surveillance duties of the BLE relate to all certification bodies that have their registered place of business in Germany.

According to Section 42, numbers 1 and 2 and Section 43 in conjunction with Section 56, of BioSt-NachV or Biokraft-NachV, the following number of applications for the recognition of certification bodies were submitted to the BLE by 31 December 2020:

Table 2: Applications for recognition as a certification body

Total applications (as of 31 December 2020)	**52**
Of which rejected	6
Of which permanently recognised	**45**
Of which provisionally recognised	**1**
Of which recognition withdrawn or expired because of inactivity of the certification bodies	24
Number of certification bodies permanently recognised as of 31 December 2020	**21**
Number of provisionally recognised certification bodies as of 31 December 2020	**1**

During the application process, certification bodies initially receive provisional recognition, which allows them to commence their certification activities. Only once the certification body's business premises have undergone a successful office audit conducted by the Audit Service of the BLE can this provisional recognition be replaced by a permanent one.

An up-to-date list of recognised certification bodies can be viewed at:

https://www.ble.de/EN/Topics/Climate-Energy/Sustainable-Biomass-Production/sustainable-biomass-production_node.html

.

BLE auditors conduct on-site audits concurrently with the certification audits of the certification bodies (witness audits) all over the world in countries that have given permission for the BLE to conduct these witness audits on their territory. These audits are intended to assess audits conducted under both the DE schemes and the voluntary schemes.
In 2020, the BLE monitored 111 (previous year: 106) of the certification audits carried out by the certification bodies. 51 of these audits concerned economic operators in Germany; the remaining 60 audits concerned economic operators in other countries within and outside Europe.

The Corona pandemic led to restrictions (e.g. entry bans, contact restrictions) from February 2020 onwards and thus had a considerable impact on the activities of the certification bodies and the surveillance measures of the BLE. In the process, a decision had to be made at short notice as to whether it would be possible to carry out on-site inspections in a modified manner or even at all.
Because the certification bodies carry out their activities according to the specifications of the certification system(s) applied, the specifications specified by the EU Commission in the context of the pandemic and implemented by the certification schemes were also decisive for the design of the audits and thus also for the performance of the witness audits.
The certification schemes allowed recertification audits as remote audits from February 2020 – initially for the Asian region and later for all other countries. Documents are to be provided by the companies in digital or analogue form or made available in real time using suitable conference technology (e.g. webinar) or remote access. An on-site inspection should then be carried out at a later date. Supporting the auditors by the BLE audit service was no longer possible from this point on.
Against the backdrop of the rapidly escalating pandemic, the BLE fulfilled its duty of care towards its employees. A concept that allowed a minimum level of control activity and thus the evaluation of the activities of a certification body without carrying out on-site inspections was created.
The witness audits were thus conducted predominantly as remote audits. The use of a secure data exchange portal (BSCW, Basic Support for Cooperative Work) as practised before proved to be quite helpful.

Table 3: Permanently recognised certification bodies

Recognised certification bodies	Permanently recognised on
SGS Germany GmbH, Germany	23 August 2010
DQS CFS GmbH, Germany	23 August 2010
TÜV SÜD GmbH, Germany	23 August 2010
GUT Certifizierungsgesellschaft mbH, Germany	23 August 2010
Global-Creative-Energy GmbH, Germany	30 August 2010
Control Union Certifications Germany GmbH	30 August 2010
Agrizert Zertifizierungs GmbH, Germany	29 September 2010
IFTA AG, Germany	1 December 2010
DEKRA Certification GmbH, Germany	1 December 2010
LACON GmbH, Germany	15 December 2010
ÖHMI Euro Cert GmbH, Germany	20 December 2010
QAL Umweltgutachter GmbH, Germany	20 December 2010
Agro Vet GmbH, Austria	21 December 2010
ASG cert GmbH, Germany	14 March 2011
TÜV Nord Cert GmbH, Germany	23 September 2011
proTerra GmbH, Germany	27 September 2011
ELUcert GmbH, Germany	17 April 2013
SC@PE international Ltd.	5 June 2014
DIN CERTCO Gesellschaft für Konformitätsbewertung mbH	4 February 2015
SicZert Zertifizierungen GmbH	26 March 2015
Alko-Cert GmbH	3 February 2017

4.1 International certifications according to DE scheme rules

In Germany, the implementation of Directive 2009/28/EC into national law requires the certification of certain economic operators, or interfaces, along the value chain for the production of biofuels and bioliquids. and include the primary distributors/waste collectors and all conversion operators. In addition, compliance assessments are made along the production and supply chain.

The certification bodies acting according to the requirements of the certification schemes recognised by the BLE (REDcert-DE and ISCC-DE) mainly carried out certifications in Germany and within the European Union.

A total of 81 certificates were issued in the reporting year according to DE scheme requirements (previous year: 82).

It can be assumed that the scheme participants certified here are mostly companies who operate exclusively within the German market. Accordingly, these companies do not necessarily require certification according to the requirements of a voluntary scheme. However, some overseas businesses were also awarded a certificate according to DE scheme requirements.

4.2 Certifications according to voluntary scheme requirements

The BLE is responsible for recognising and monitoring certification bodies who have their head office or a branch office in Germany and make certification decisions on these premises.

This is independent of the type of scheme (DE or voluntary) to which the company to be certified has obligated itself. All certificates are submitted to the BLE by the certification bodies. In the reporting year, 3,272 (previous year: 2,763) new and repeat certifications were reported for businesses certified under voluntary scheme requirements.

5. Nabisy government database and sustainability certificates

5.1 Sustainable biomass system (Nabisy)

According to Commission Decision 2011/13/EU of 12 January 2011, economic operators are required to submit to Member States certain types of information concerning the sustainability of each consignment of biofuels or bioliquids where this could become relevant for the market concerned.

Such submissions are completed electronically in Germany. For each consignment of biofuels or bioliquids, this information must be entered into the web-based Nabisy government database by the economic operators. Sustainability certificates and partial sustainability certificates contain the data required for fulfilling sustainability criteria entered into Nabisy and must be passed on along the supply chain.

In the year under review, movements were registered on 2,242 (previous year: 2,075) accounts. These accounts were all accounts of businesses from the final interface onwards because this is where the Nabisy system applies.

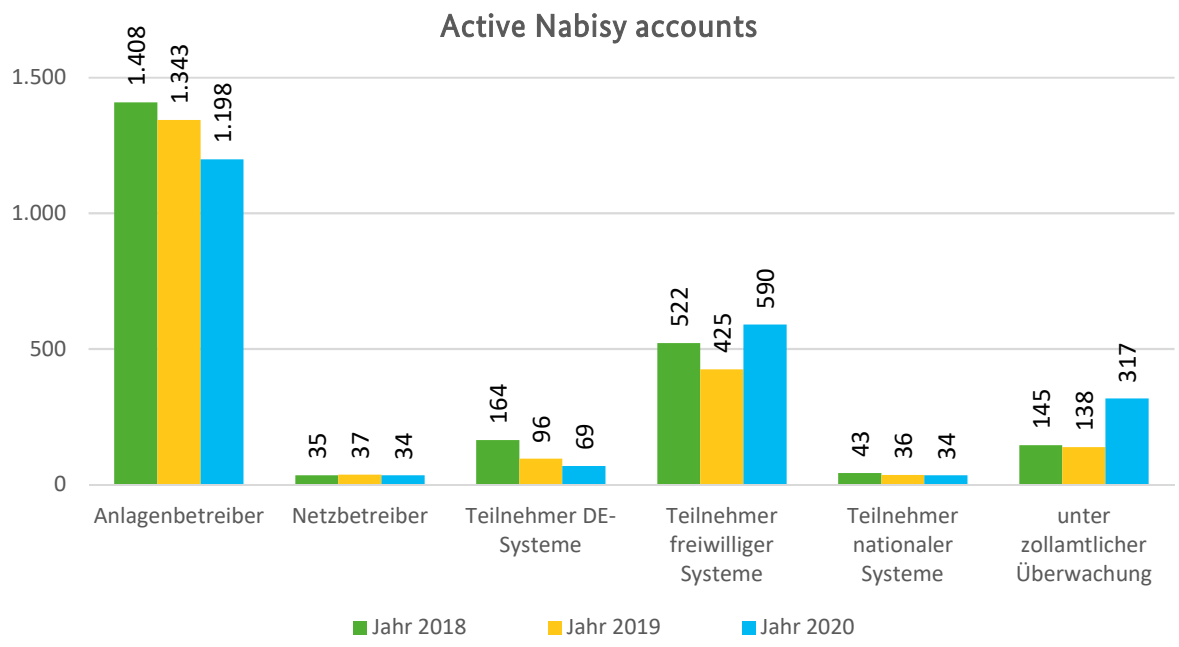

Figure 3: Active Nabisy accounts

Depending on their function, economic participants who have a corresponding Nabisy account are able to create sustainability certificates (final interfaces), transfer or split sustainability certificates or partial sustainability certificates (suppliers, plant operators) and issue where-used notices (grid operators). Economic operators have the option of applying to the BLE for a number of account logins according to their requirements.

The number of users with access as of 31 December 2020 is shown in the figure below.

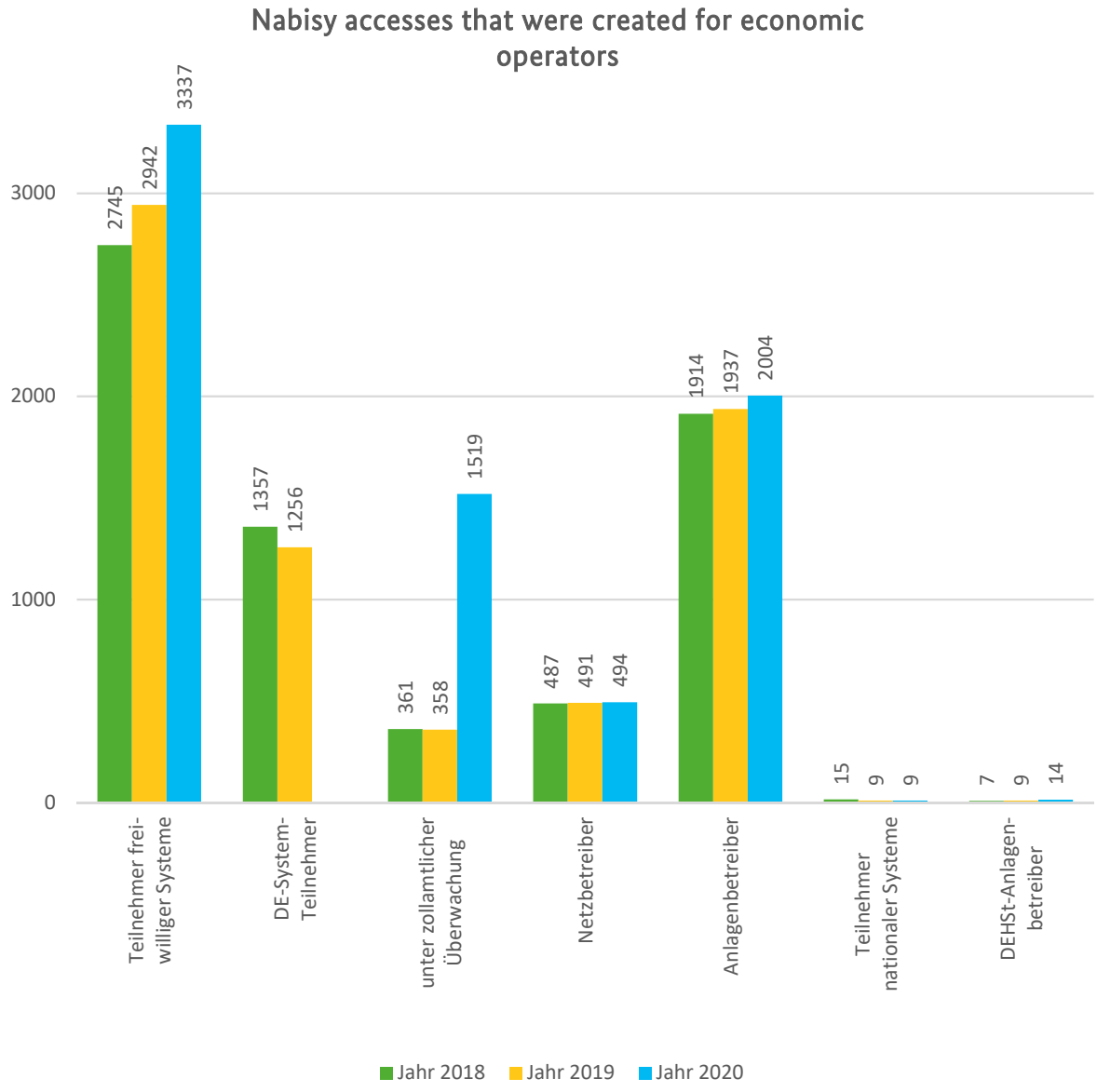

Figure 4: Nabisy accounts created for economic participants

5.2 Certificates

A sustainability certificate can be issued only by the manufacturer of a consignment of biofuels or bioliquids. This manufacturer is known as the “final interface”. By issuing the certificate in Nabisy, the manufacturer confirms that the consignment can be used on the German market. If a decision is made at a later stage in the value chain, e.g. by a supplier, that the product is to be used outside Germany, the relevant certificate must be retired by the party concerned to the retirement account of the state where the product is to be used.

Presentation of a sustainability certificate or partial sustainability certificate to the customs authorities is a requirement for biofuels recognised as part of the distributor’s greenhouse gas reduction obligation. Plant operators can claim compensation according to the German Renewable Energy Sources Act (EEG) and (where applicable) the NawaRo bonus for electricity produced from biomass and fed into the grid only if they present a sustainability certificate or partial sustainability certificate.

Sustainability certificates are issued by those certified economic operators (issuers) who upgrade liquid or gaseous biomass so that it is capable of meeting the quality requirements for its use as a biofuel or who manufacture bioliquids from the biomass used. In the sustainability ordinances, these economic operators are referred to as the “final interface”. This terminology is not used by the voluntary schemes. For this reason, this report refers in more general terms to economic operators who issue sustainability certificates.

A sustainability certificate identifies a certain quantity of biofuel or bioliquid as being sustainable. If biofuels and/or bioliquids are traded along the supply chain as far as a party obliged to provide evidence and/or plant operator, the quantities concerned are also passed on as necessary.

To represent these events, a sustainability certificate must therefore be split accordingly or transferred to a customer’s supplier account. This results in the creation of partial sustainability certificates.

Accordingly, Nabisy processes both sustainability certificates (“basic certificates” that can be issued only by manufacturers) and partial sustainability certificates (“subsequent certificates” that are generated by an action on the part of a supplier: transfer and splitting).

In 2020, 25,241 sustainability certificates (previous year: 21,736) were configured in Nabisy by 301 manufacturers worldwide. In the case of 39 of these manufacturers, these were “new plants” (initial commissioning after 5 October 2015), which are required to achieve minimum emission savings of 60% instead of 50%. Some of the 301 manufacturers mentioned above have several production sites.

Table 4: Sustainability certificates issued

Manufacturer location	Number of manufacturers	Number of sustainability certificates issued
Germany	116	13,217
European Union	91	10,200
Third countries	94	1,824
Total	**301**	**25,241**

Samples of a sustainability certificate (basic certificate) and a partial sustainability certificate (subsequent certificate) are shown below.

NACHHALTIGKEITSNACHWEIS

für flüssige Biomasse nach §§ 15 ff. Biomassestrom-Nachhaltigkeitsverordnung (BioSt-NachV) oder für Biokraftstoffe nach §§ 15 ff. Biokraftstoff-Nachhaltigkeitsverordnung (Biokraft-NachV)

Nummer des Nachweises: EU-BM-14-213-10000002-NNw-00000708

Schnittstelle:	Empfänger:	Zertifizierungssystem:
EU-BM-14-SSt-00000002	Lieferant/trader EU 3, Musterstadt, EU-BM-14-Lfr-10000003	Nabisy Test Voluntary Scheme, null, EU-BM-14

1. Allgemeine Angaben zur Biomasse / zum Biokraftstoff:

Art: 100,00% FAME — Anbauland / Entstehungsland*: PL

Menge: 111,221 m³ — Energiegehalt (MJ): 3.670.293

Die flüssige Biomasse / der Biokraftstoff ist aus Abfall oder aus Reststoffen hergestellt worden und die Reststoffe oder Abfälle
- stammen nicht aus der Land-, Forst- oder Fischwirtschaft oder aus Aquakulturen. ☐ ja ☒ nein
- stammen aus der Land-, Forst- oder Fischwirtschaft oder aus Aquakulturen. ☐ ja

2. Nachhaltiger Anbau der Biomasse bzw. nachhaltige Herstellung des Biokraftstoffs nach den §§ 4 – 7 BioSt-NachV / Biokraft-NachV:

Die Biomasse erfüllt die Anforderungen nach den §§ 4 – 7 BioSt-NachV / Biokraft-NachV ☒ ja ☐ nein

3. Treibhausgas-Minderung nach § 8 BioSt-NachV / Biokraft-NachV:

$E =$	e_{ec}	+	e_l**	+	e_p	+	e_{td}	+	e_u	-	e_{sca}	-	e_{ccs}	-	e_{ccr}	-	e_{ee}		(g CO2eq/MJ)
E =	19,9	+		+	11,2	+	1,0	+	0,0	-		-		-		-		=	32,1

** e_l beinhaltet den Bonus für die Umwandlung stark verschmutzter oder degradierter Flächen ☐ ja ☐ nein

THG-Minderung bei Verwendung

61,7% als Kraftstoff [83,8 (g CO2eq/MJ)] — 58,3% zur Wärmeerzeugung [77 (g CO2eq/MJ)]

64,7% zur Stromerzeugung [91 (g CO2eq/MJ)] — 62,2% Kraft-Wärme-Kopplung [85 (g CO2eq/MJ)]

Erfüllung der Minderung bei einem Einsatz in folgender Region (z. B. Deutschland, EU): Deutschland

Die Erstinbetriebnahme der Anlage zur Herstellung des Biokraft - oder Biobrennstoffs erfolgte nach dem 5. Oktober 2015 ☐ ja ☒ nein

Lieferung auf Grund eines Massenbilanzsystems nach § 17 BioSt-NachV / Biokraft-NachV:

☒ Die Lieferung ist in einem Massenbilanzsystem dokumentiert worden.
- ☐ Die Dokumentation erfolgt über die elektronische Datenbank der BLE
- ☒ Die Dokumentation erfolgte nach den Anforderungen des folgenden Zertifizierungssystems: REDcert GmbH
- ☐ Die Dokumentation erfolgt nach § 17 Abs. 3 Biokraft-NachV.

Der Nachhaltigkeitsnachweis wurde elektronisch erstellt und ist ohne Unterschrift gültig.

Ort und Datum der Ausstellung: Pritzwalk OT Falkenhagen, 11.04.2019

*** Hinweis:**

Dieser Nachweis wurde in der Web-Anwendung „Nabisy" erstellt. Er ist mit einer eindeutigen ID-Nummer versehen. Die Daten zur Nachhaltigkeit des Biokraft- oder Biobrennstoffs sind in der Nabisy-Datenbank gespeichert. Die Echtheit des Nachweises kann durch zuständigen Stellen in EU-Mitgliedsstaaten und Efta-Staaten überprüft werden.

Vordruck der Bundesanstalt für Landwirtschaft und Ernährung

Figure 5: Proof of sustainability

Bundesanstalt für
Landwirtschaft und Ernährung

Zusatzinformation zu **EU-BM-14-213-10000002-NNw-00000708**

Allgemeine Daten

Ausstellungsdatum	11.04.2019
Lieferdatum	31.03.2019
Empfänger	Lieferant/trader EU 3 Musterweg 3 10003 Musterstadt

Menge

Menge	111,221 m³
Energiegehalt	3.670.293 MJ

Art der Biomasse

Code / Kürzel	Attribut Annex IX*	Anteil (%)	Anbauland	ILUC
38260010-1 / Biodiesel_Raps	Conv	100,00	PL	55,00

* Hinweis: Adv - Fortschrittlich, Conv - Konventionell, - - Weder Adv noch Conv

Nicht zugeordnete Anbauländer

Zusatzinformationen zur THG Emission

Treibhausgas-Emissionen	32,1 g CO2eq/MJ	inkl. mittl. Schätzwert ILUC	87,1 g CO2eq/MJ

Figure 6: Sustainability certificate – page 2

NACHHALTIGKEITS-TEILNACHWEIS

für flüssige Biomasse nach §§ 15 ff. Biomassestrom-Nachhaltigkeitsverordnung (BioSt-NachV) oder für Biokraftstoffe nach §§ 15 ff. Biokraftstoff-Nachhaltigkeitsverordnung (Biokraft-NachV)

Nummer des Teilnachweises: EU-BM-14-Lfr-10000007-999-12345678-NTNw-10007199

Nummer des Basis-Nachweises: EU-BM-14-213-10000002-NNw-00000708

03/19-Musterstadt

Aussteller: BLE

Schnittstelle:	**Empfänger:**	**Zertifizierungssystem:**
EU-BM-14-SSt-00000002	Lieferant/trader EU 7, Musterstadt, EU-BM-14-Lfr-10000007	Nabisy Test Voluntary Scheme, null, EU-BM-14

1. Allgemeine Angaben zur Biomasse / zum Biokraftstoff:

Art: 100,00% FAME — Anbauland / Entstehungsland*: PL

Menge: 61,205 m³ — Energiegehalt (MJ): 2.019.765

Die flüssige Biomasse / der Biokraftstoff ist aus Abfall oder aus Reststoffen hergestellt worden und die Reststoffe oder Abfälle
- stammen nicht aus der Land-, Forst- oder Fischwirtschaft oder aus Aquakulturen. ☐ ja ☒ nein
- stammen aus der Land-, Forst- oder Fischwirtschaft oder aus Aquakulturen. ☐ ja

2. Nachhaltiger Anbau der Biomasse bzw. nachhaltige Herstellung des Biokraftstoffs nach den §§ 4 – 7 BioSt-NachV / Biokraft-NachV:

Die Biomasse erfüllt die Anforderungen nach den §§ 4 – 7 BioSt-NachV / Biokraft-NachV ☒ ja ☐ nein

3. Treibhausgas-Minderung nach § 8 BioSt-NachV / Biokraft-NachV:

$E =$	e_{ec}	+	e_l**	+	e_p	+	e_{td}	+	e_u	-	e_{sca}	-	e_{ccs}	-	e_{ccr}	-	e_{ee}		(g CO2eq/MJ)
E =	19,9	+		+	11,2	+	1,0	+	0,0	-		-		-		-		=	32,1

** e_l beinhaltet den Bonus für die Umwandlung stark verschmutzter oder degradierter Flächen ☐ ja ☐ nein

THG-Minderung bei Verwendung

61,7% als Kraftstoff [83,8 (g CO2eq/MJ)] — 58,3% zur Wärmeerzeugung [77 (g CO2eq/MJ)]

64,7% zur Stromerzeugung [91 (g CO2eq/MJ)] — 62,2% Kraft-Wärme-Kopplung [85 (g CO2eq/MJ)]

Erfüllung der Minderung bei einem Einsatz in folgender Region (z. B. Deutschland, EU): Deutschland

Die Erstinbetriebnahme der Anlage zur Herstellung des Biokraft - oder Biobrennstoffs erfolgte nach dem 5. Oktober 2015 ☐ ja ☒ nein

Lieferung auf Grund eines Massenbilanzsystems nach § 17 BioSt-NachV / Biokraft-NachV:

☒ Die Lieferung ist in einem Massenbilanzsystem dokumentiert worden.
- ☒ Die Dokumentation erfolgt über die elektronischen Datenbank der BLE
- ☐ Die Dokumentation erfolgte nach den Anforderungen des folgenden Zertifizierungssystems:
- ☒ Die Dokumentation erfolgt nach § 17 Abs. 3 Biokraft-NachV.

Letzter Lieferant (Name, Adresse): Lieferant/trader EU 3, Musterstadt

Der Nachhaltigkeits-Teilnachweis wurde elektronisch erstellt und ist ohne Unterschrift gültig. **Ort und Datum der Ausstellung:** Bonn, 23.04.2019

*** Hinweis:**

Dieser Nachweis wurde in der Web-Anwendung „Nabisy" erstellt. Er ist mit einer eindeutigen ID-Nummer versehen. Die Daten zur Nachhaltigkeit des Biokraft- oder Biobrennstoffs sind in der Nabisy-Datenbank gespeichert. Die Echtheit des Nachweises kann durch zuständigen Stellen in EU-Mitgliedsstaaten und Efta-Staaten überprüft werden.

Vordruck der Bundesanstalt für Landwirtschaft und Ernährung

Figure 7: Partial proof of sustainability

Bundesanstalt für
Landwirtschaft und Ernährung

Zusatzinformation zu **EU-BM-14-Lfr-10000007-999-12345678-NTNw-10007199**

Allgemeine Daten

Ausstellungsdatum	23.04.2019
Lieferdatum	31.03.2019
Empfänger	Lieferant/trader EU 7 Musterweg 7 10007 Musterstadt

Menge

Menge	61,205 m³
Energiegehalt	2.019,765 MJ

Art der Biomasse

Code / Kürzel	Attribut Annex IX*	Anteil (%)	Anbauland	ILUC
38260010-1 / Biodiesel_Raps	Conv	100,00	PL	55,00

* Hinweis: Adv - Fortschrittlich, Conv - Konventionell, - - Weder Adv noch Conv

Nicht zugeordnete Anbauländer

Zusatzinformationen zur THG Emission

Treibhausgas-Emissionen	32,1 g CO2eq/MJ	inkl. mittl. Schätzwert ILUC	87,1 g CO2eq/MJ

Figure 8 Partial sustainability certificate Page 2

6. Biofuels

The following shows the energy quantities (TJ) of biofuels in Germany for which crediting towards the 2020 greenhouse gas reduction quota was requested.

The data are based on the certificates in Nabisy that have been given where-used notices by the German Federal Revenue Administration.

Please note that the information given concerns only the quantities applied for and their energy content. No conclusions can be drawn on the basis of the available data as to whether all quantities and energy contents presented here are in fact recognised as part of the quota obligation.

In the reporting year 2020, a strong increase in the total volume of biofuels was recorded. Compared with the previous year, it increased by 36% to a new record since the introduction of quota imputation in Germany.

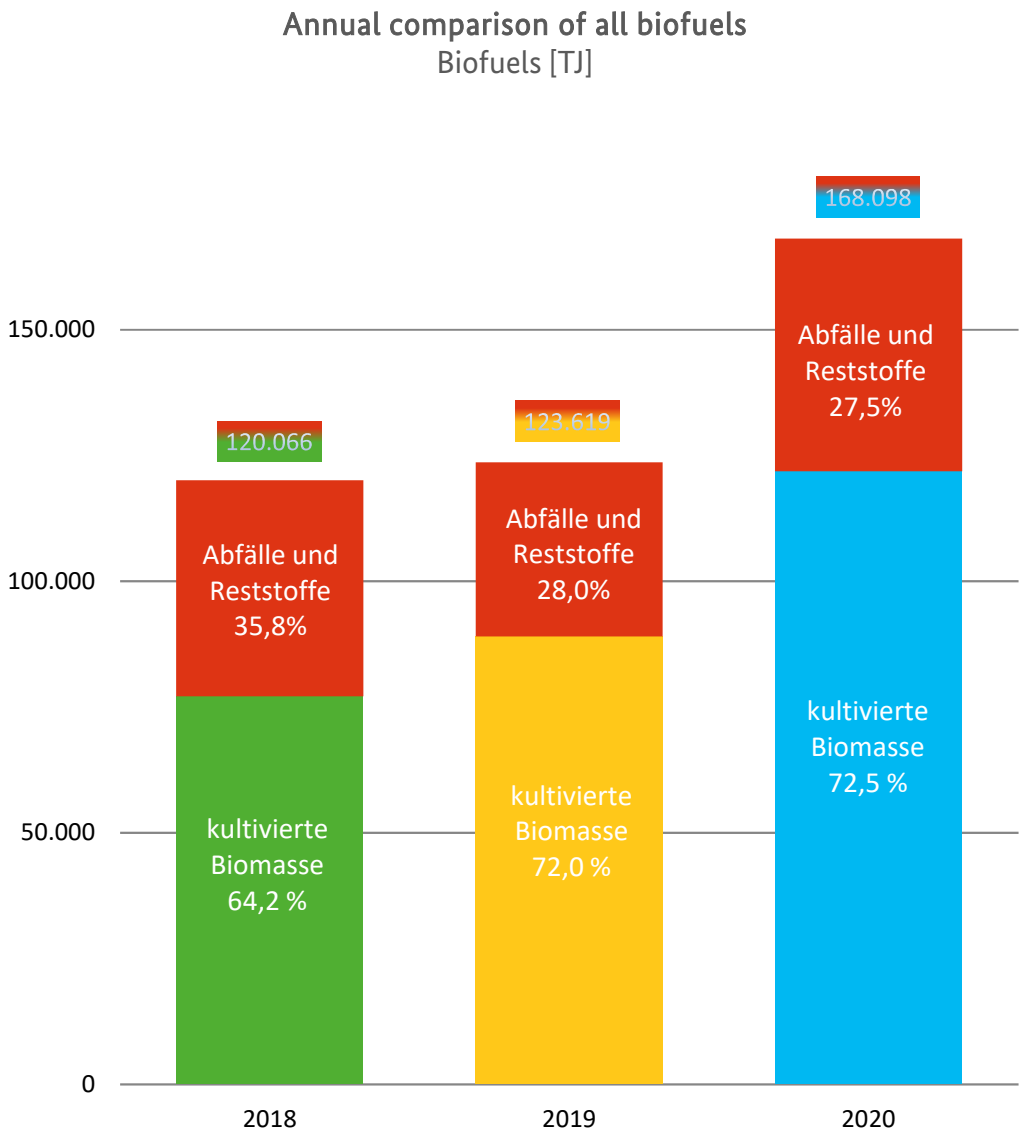

Figure 9 Annual comparison of all biofuels (including waste/residue)

6.1 Origin of source materials

The amount of biofuels whose source products come from Asia has more than doubled. The increase in volume is due to hydrogenated vegetable oils.

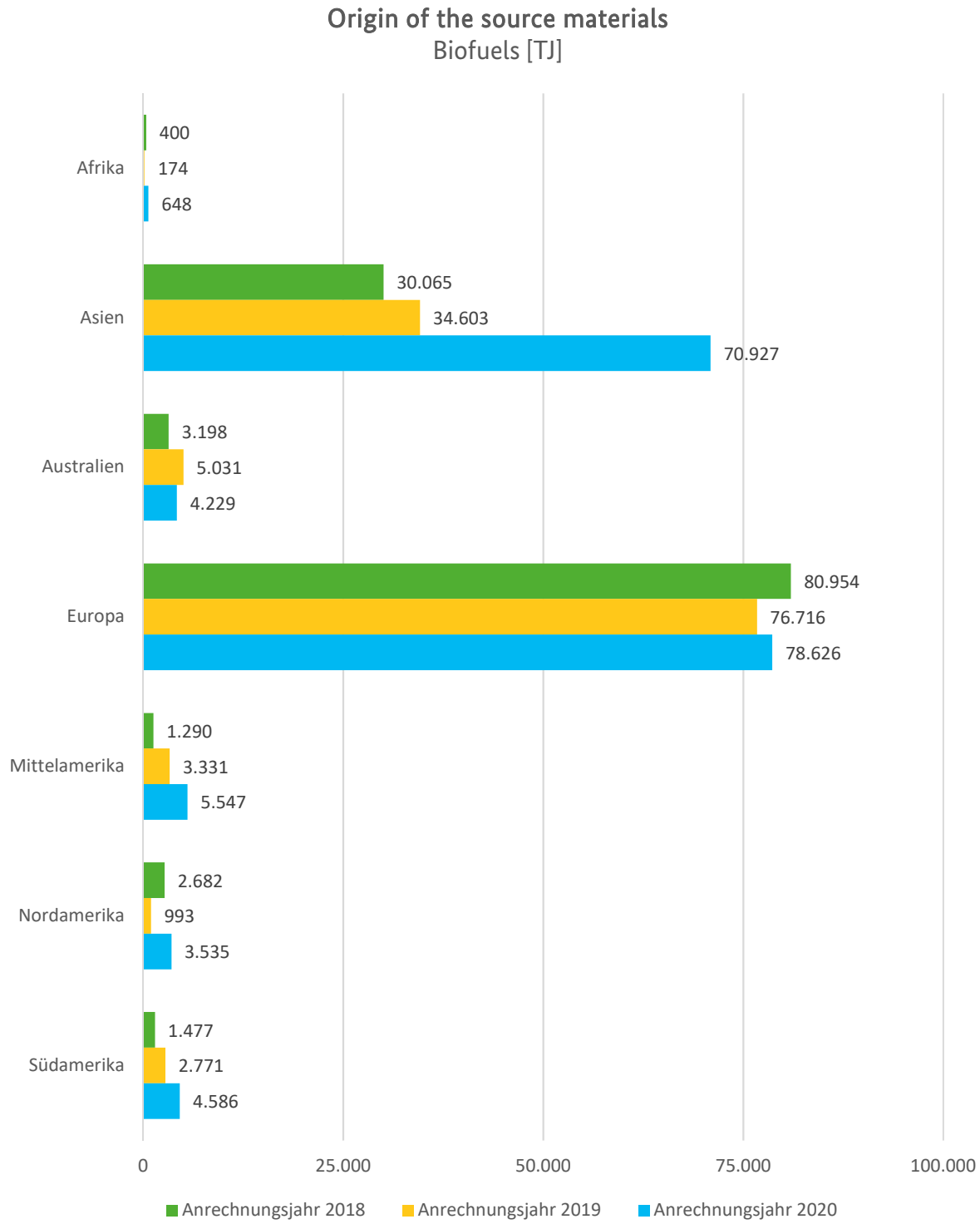

Figure 10: Origin of source materials worldwide

The volume originating from Europe increased slightly compared with the previous year.

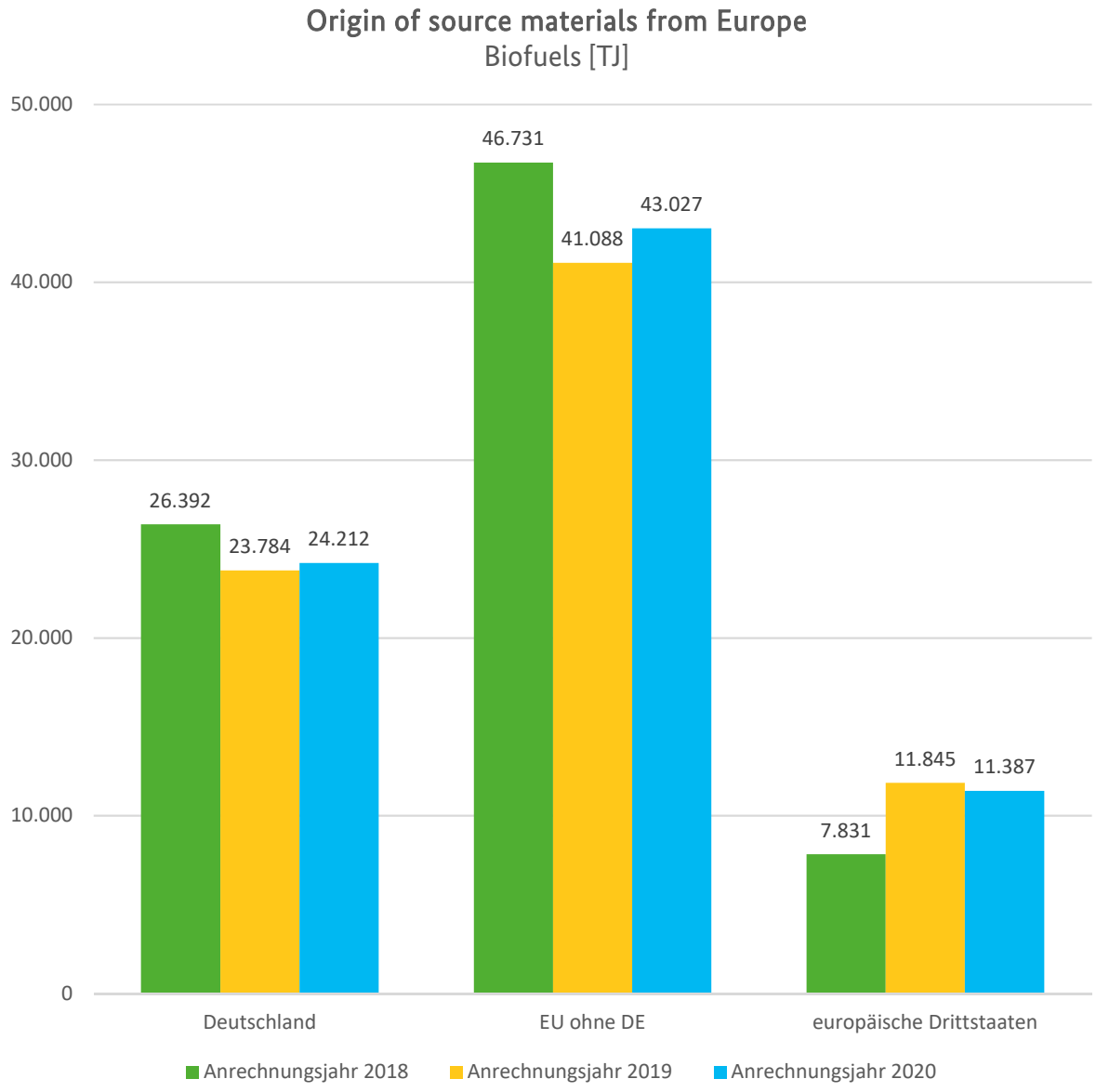

Figure 11 Origin of source materials from Europe

Just under 36% of biofuels from the European Union were grown or produced in Germany.

As of this reporting year, the UK is assigned to the European third countries for the first time. The relatively low imputation quantity originating from the former Member State did not lead to a visible shift.

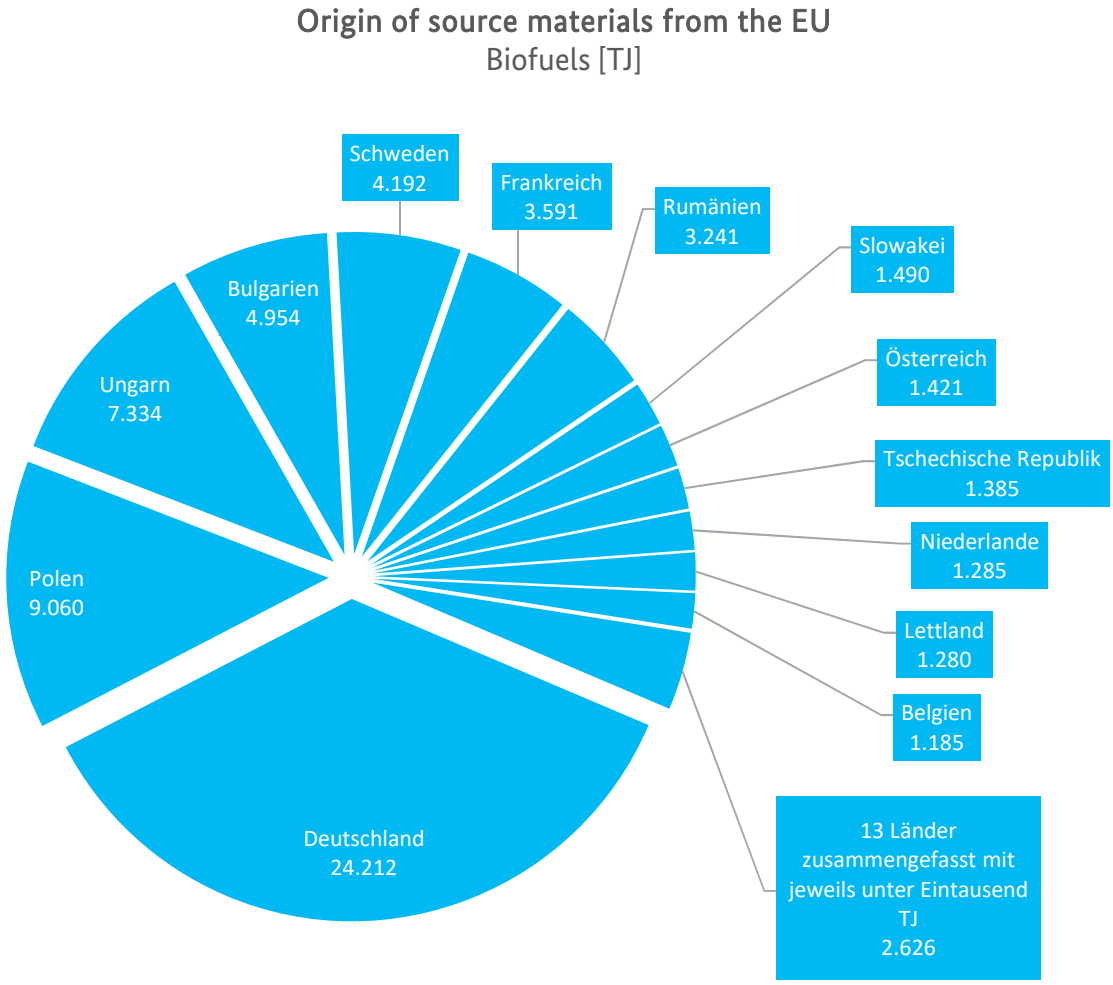

Figure 12: Origin of source materials from the EU in 2020

The proportions [in TJ] of the thirteen aggregated countries were split as follows:

Finland	773	Italy	429	Croatia	425	Greece	271
Spain	230	Lithuania	205	Denmark	181	Portugal	63
Slovenia	26	Cyprus	17	Estonia	6	Luxembourg	1
Ireland	0.02						

Source materials for biofuels originating from European third countries, mainly from Ukraine.

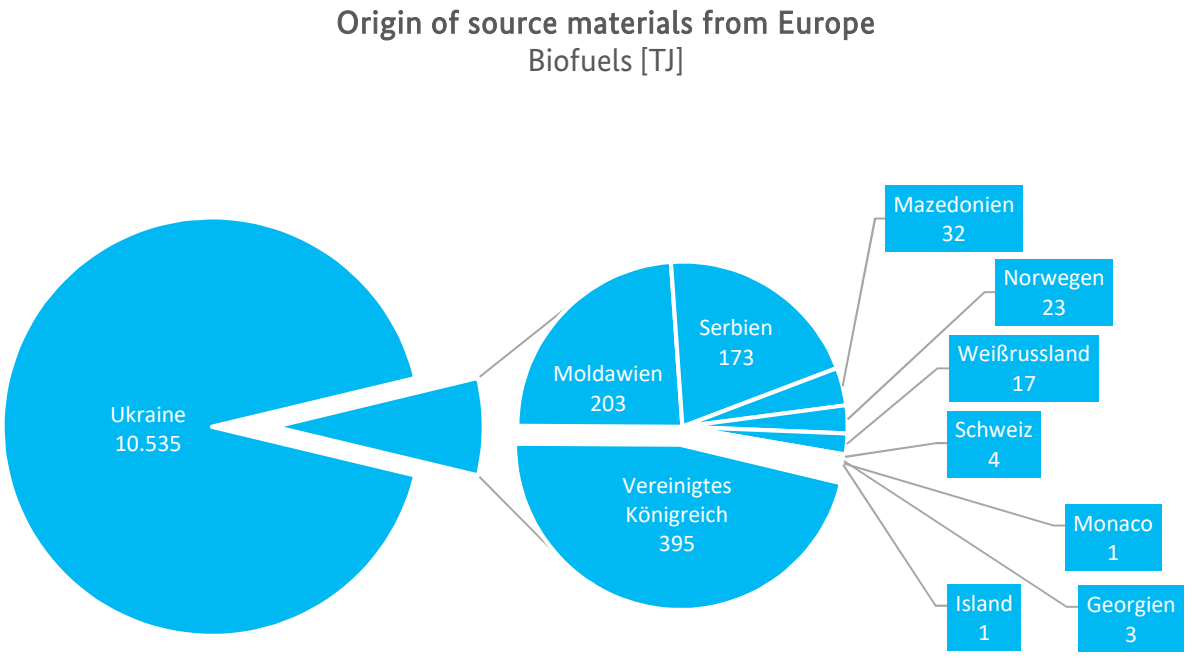

Figure 13 Origin of source materials from European third countries in 2020

6.2 Source materials by origin and type

Biofuels, the source materials of which originate in **Africa** were produced exclusively from wastes and residues for the second year in a row.

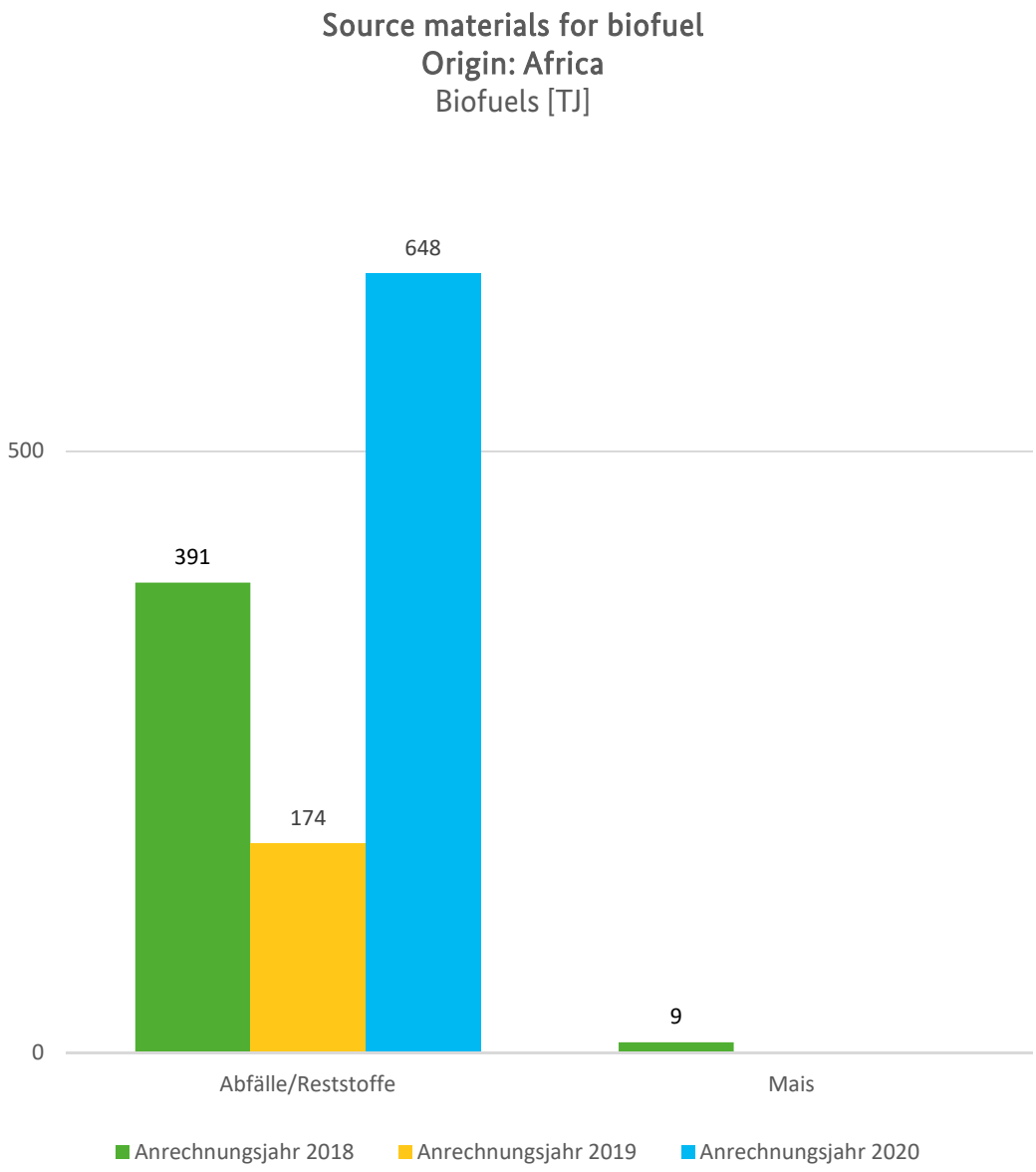

Figure 14 Source materials for biofuel originating in Africa

In the reporting year, the volume of biofuels with source materials originating in **Asia** more than doubled.

This was due to increases in the volumes from waste and residual materials (+36%) as well as palm oil (+147%)

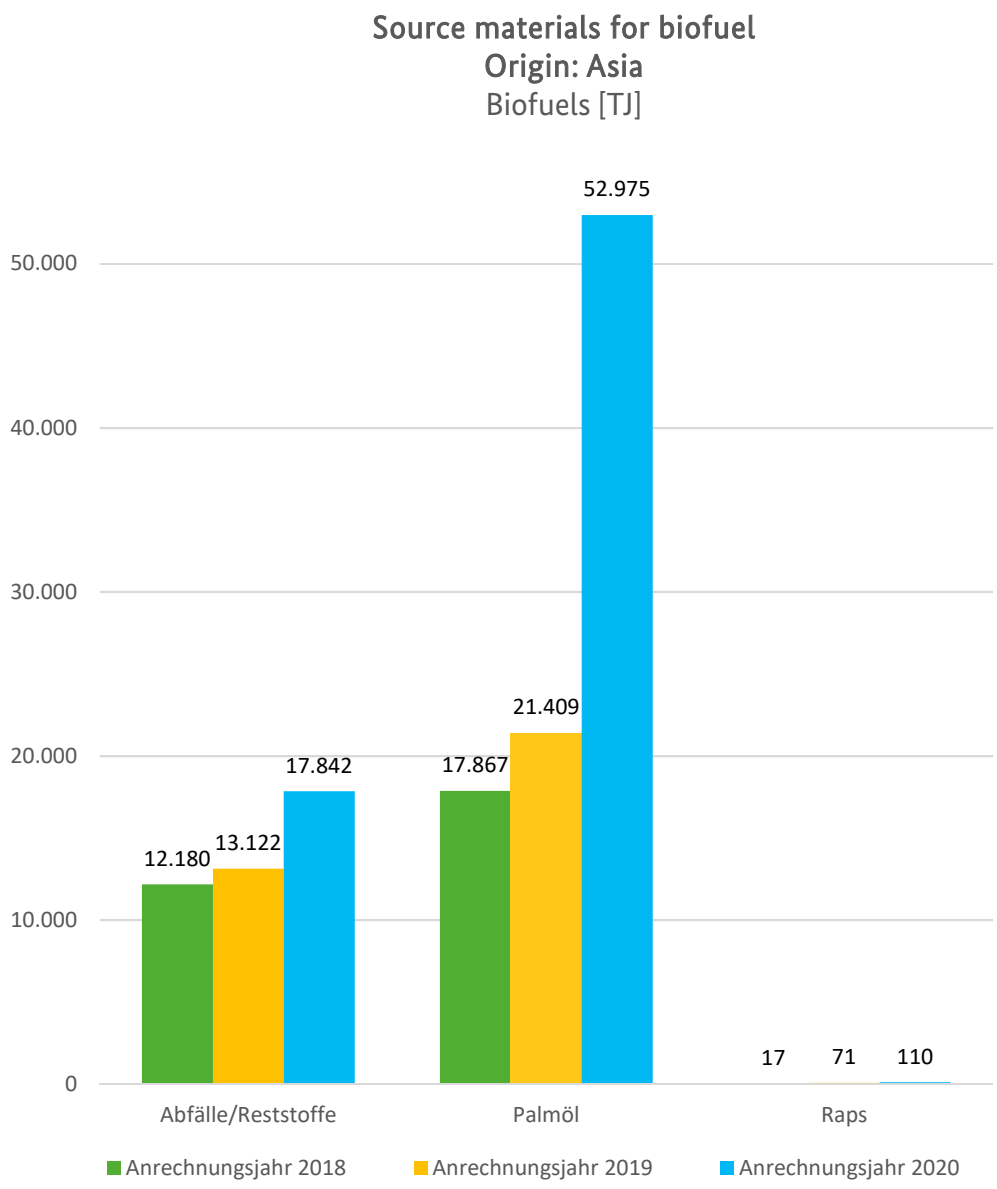

Figure 15 Source materials for biofuel originating in Asia

Biofuels, the source materials of which originated in **Australia** were produced mainly from rapeseed. The quantity applied for decreased by 16% in the reporting year.

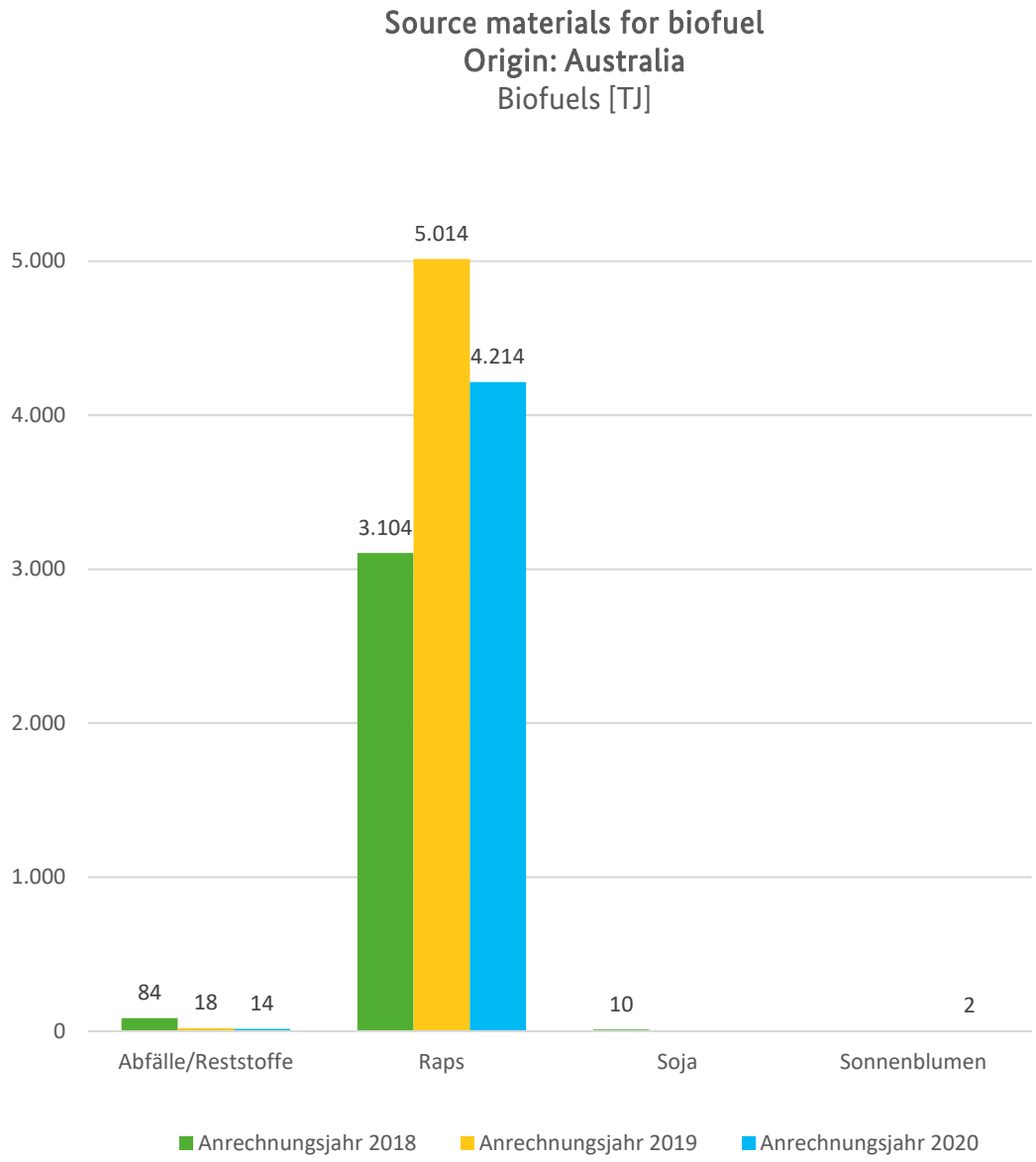

Figure 16: Source materials for biofuel originating in Australia

In the reporting year, the most important source materials originating from **Europe** were waste and residues. Their proportion increased by 27% and now accounts for about one third of the European total.

In contrast, the proportions of rapeseed (−10%) and maize (−11%) have decreased

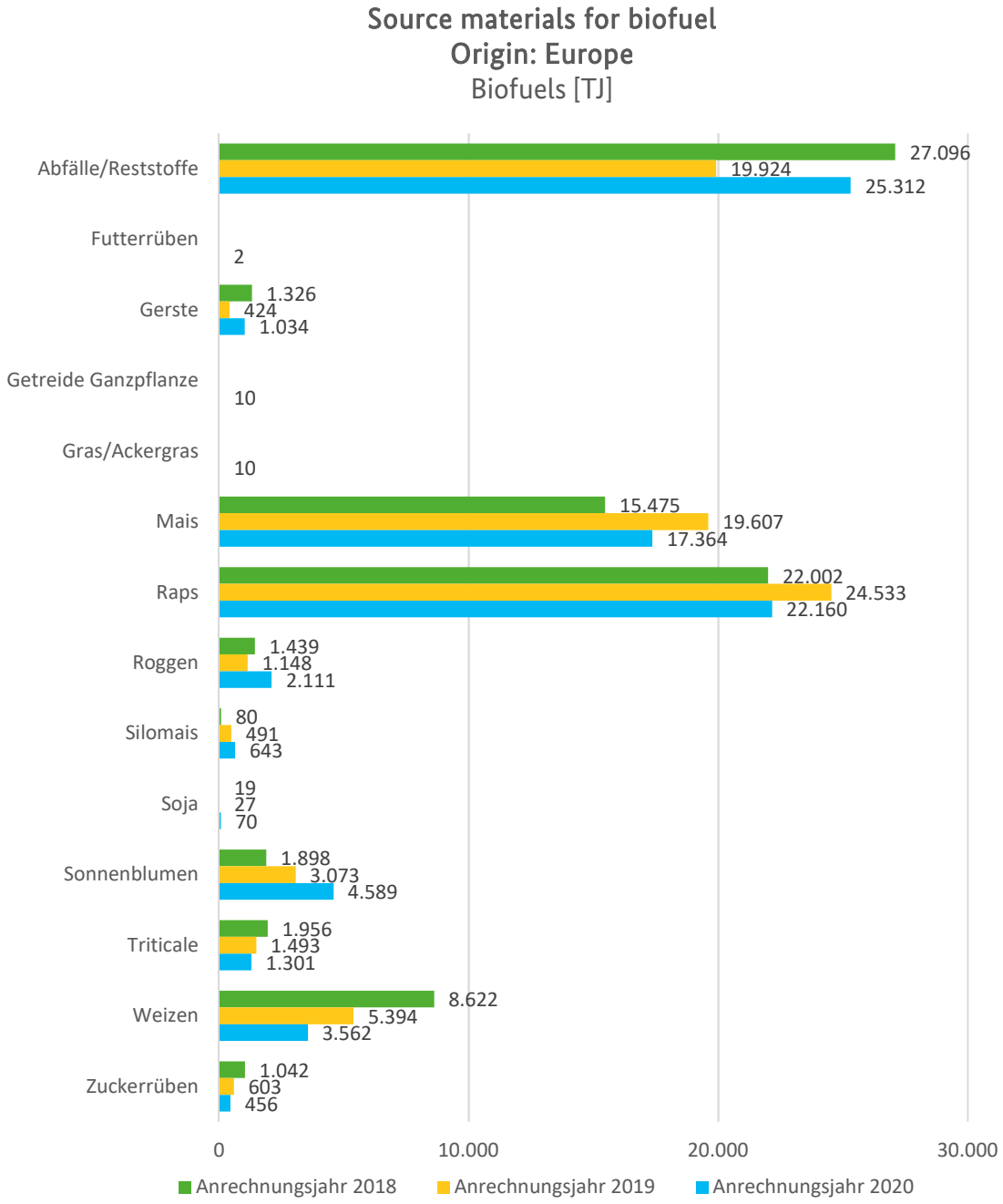

Figure 17: Source materials for biofuel originating in Europe

The total volume of biofuels with source materials originating in **Germany** remained almost constant in the reporting year. Only the individual source materials showed larger fluctuations (e.g. rapeseed (−17%) and waste/residuals (+37%))

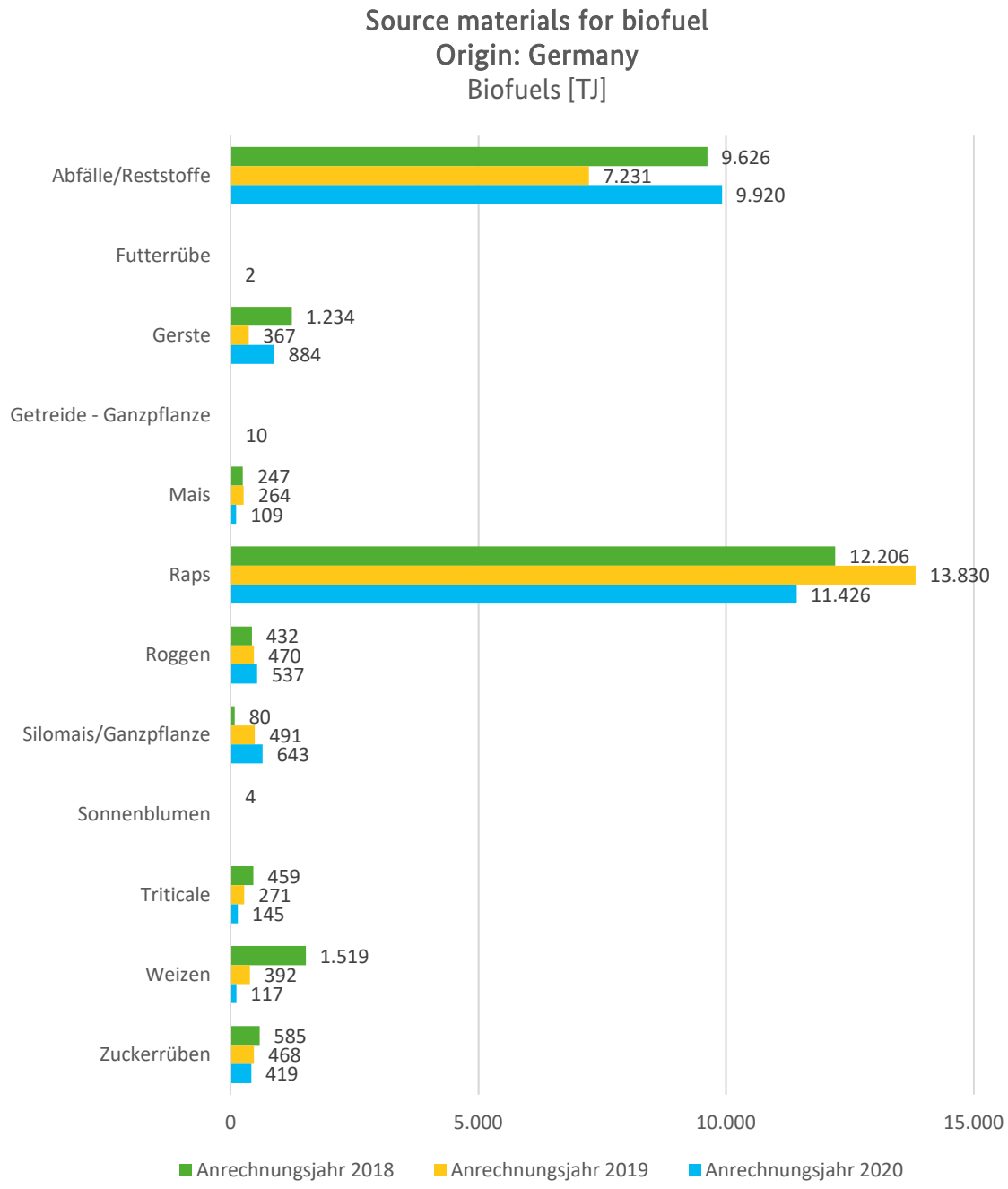

Figure 18: Source materials for biofuel originating in Germany

The proportion of biofuel from **Central America** produced from palm oil increased again in the reporting year. Countries of cultivation were Honduras and Guatemala.

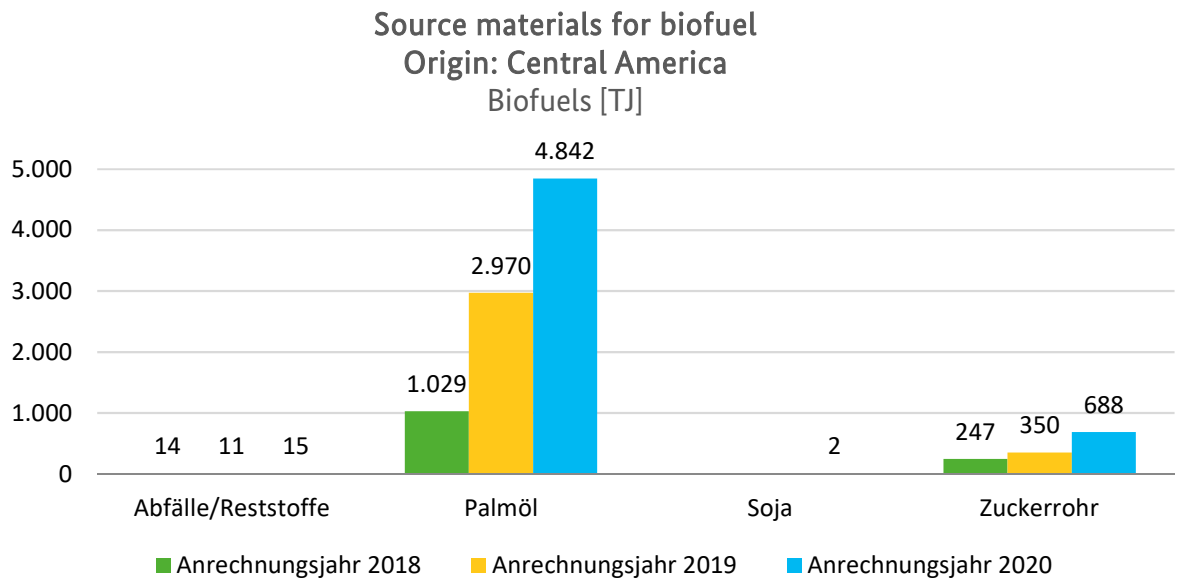

Figure 19 Biofuel source materials originating in Central America

Biofuels with source materials from **North America** were produced mainly from rapeseed (51.7%) and wastes and residues (47.6%). The proportion of Ethiopian mustard, also referred to as Abyssinian cabbage *(Brassica carinata*) originated in the US and remained at a low level despite a tripling.

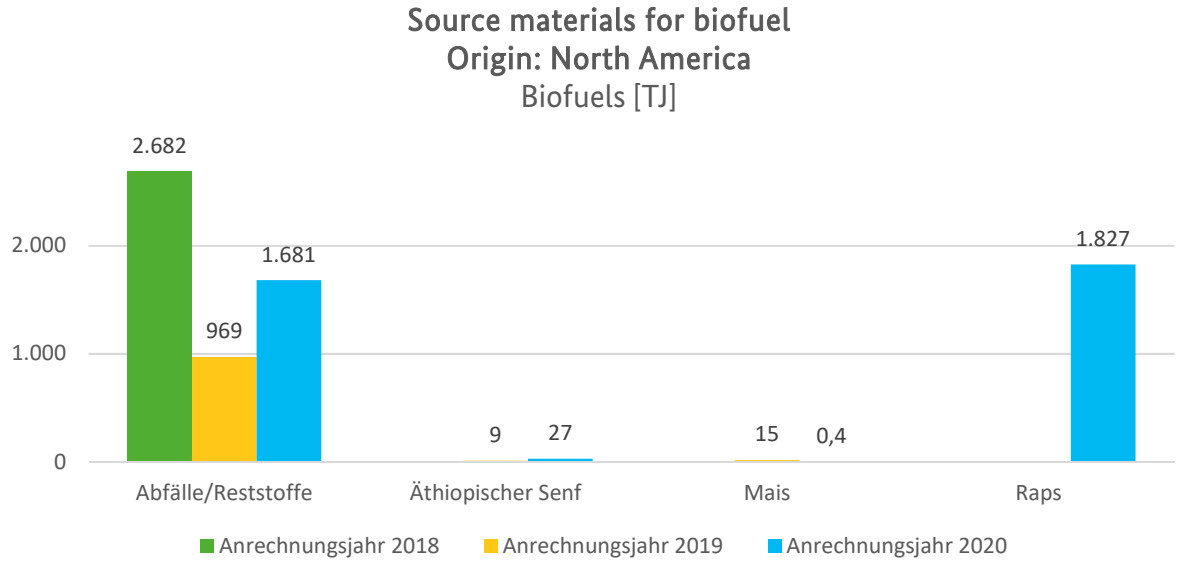

Figure 20: Source materials for biofuel originating in North America

The quantity of biofuels made from source materials originating in **South America** once again increased (+66%) in the reporting year.

The most important source materials so far – such as soy (+62%), sugar cane (+28%), and waste/residues (+98%) – have contributed to this.

However, the amount of palm oil, which was still insignificant in recent years, also contributed to this development. It is 12-fold higher in the reporting year than in the previous year.

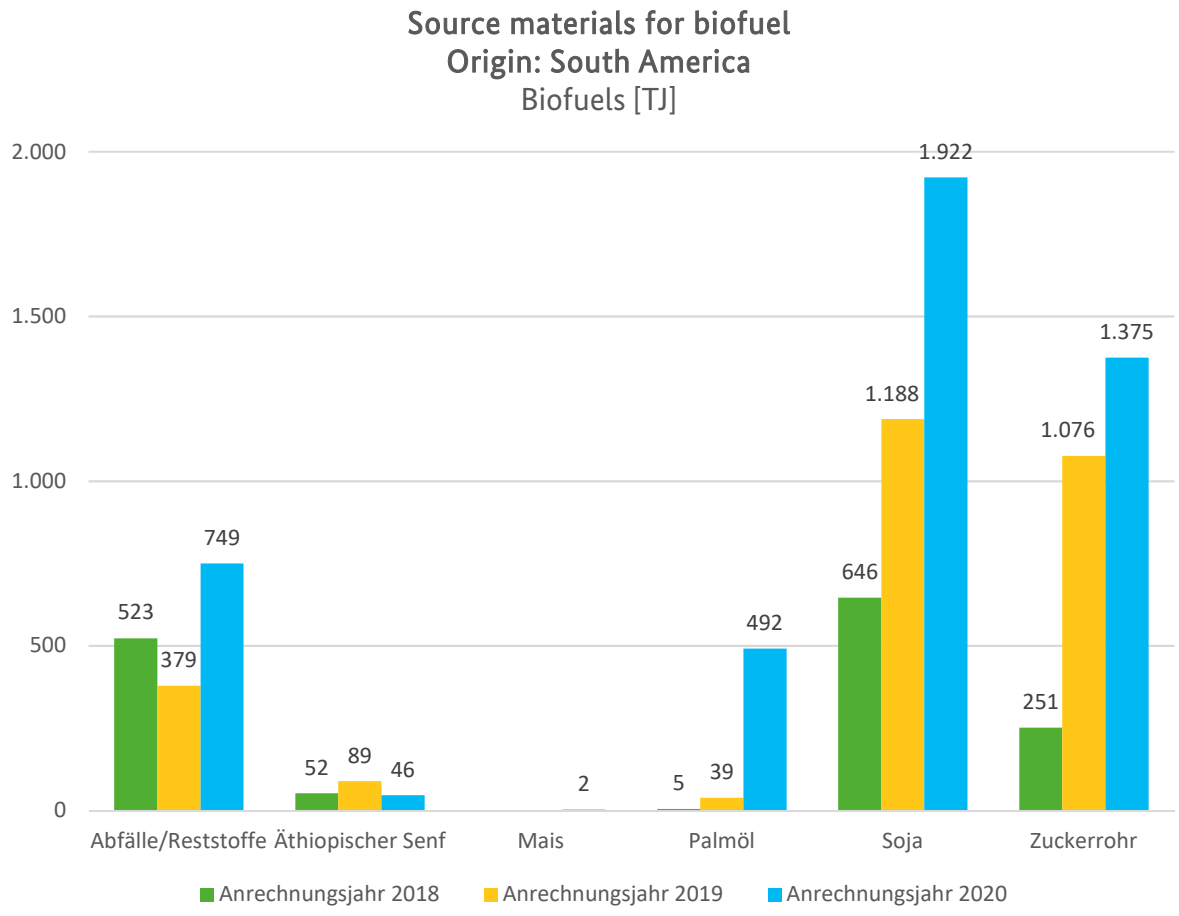

Figure 21: Source materials for biofuel originating in South America

6.3 Types of biofuels

FAME accounted for more than half (53%) of all biofuels for which a quota credit was requested. The surge in the amount of HVO catapults this biofuel (26%) to second place among biofuel types. For the first time, bioethanol accounts for only the third-largest proportion (18%).

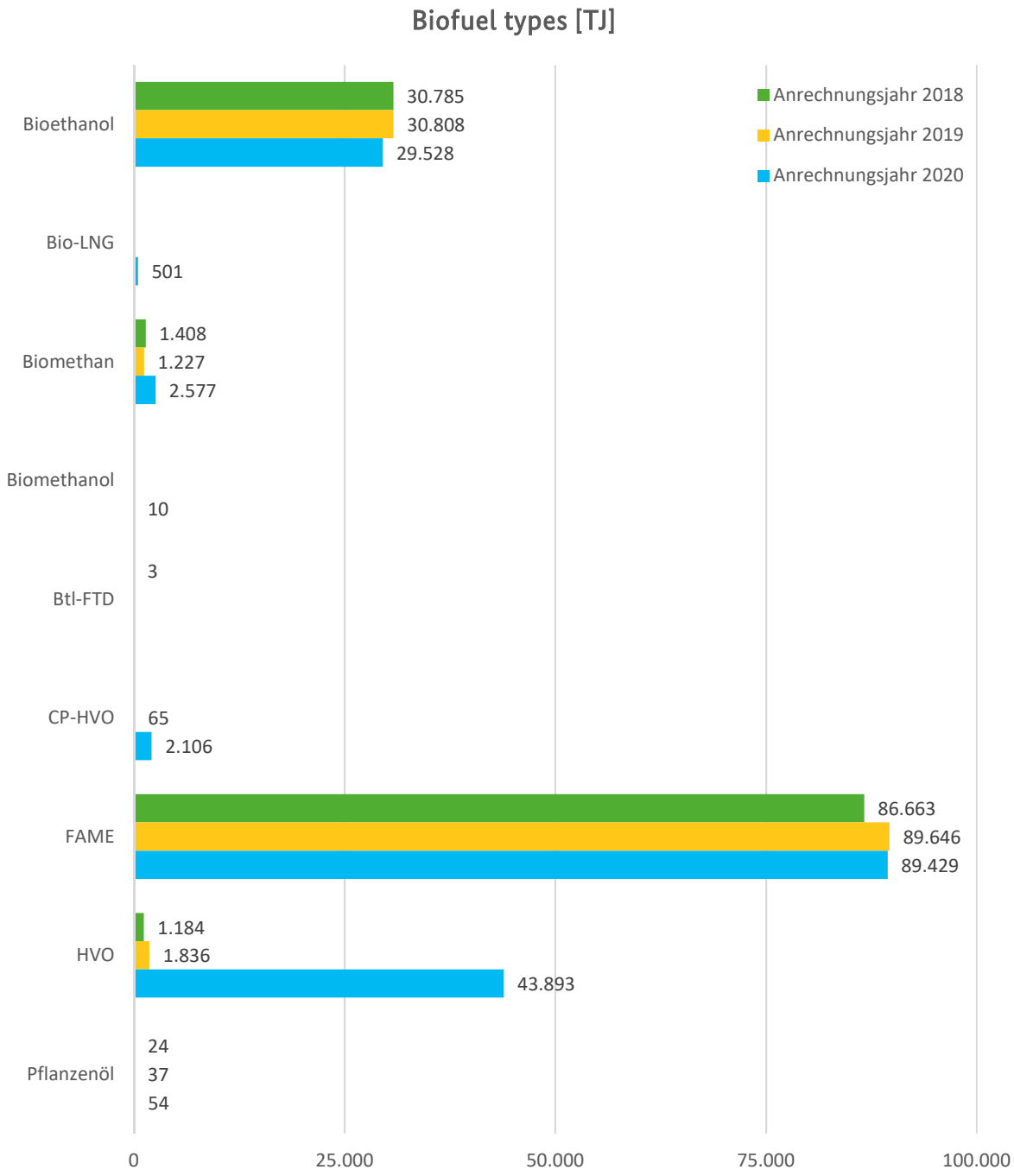

Figure 22: Biofuel types

The following figure shows the percentages for biofuel types in 2020.

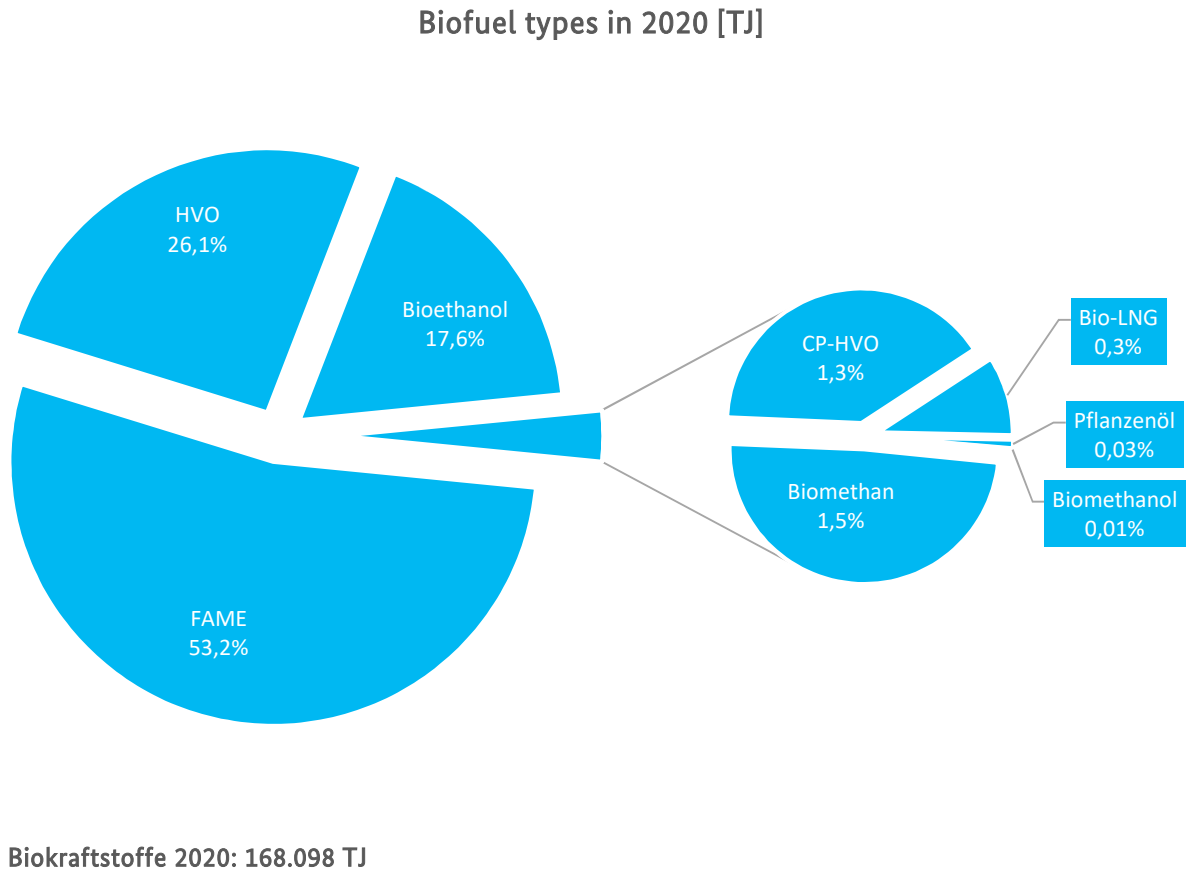

Figure 23: Types of biofuels in 2020

The total volume of **bioethanol** that came up for registration on the GHG quota in the reporting year was slightly lower. Although the volume decreased in the reporting year, maize remained by far the most important source product for bioethanol production. Wheat has also seen a decline but remains the second largest proportion in terms of volume

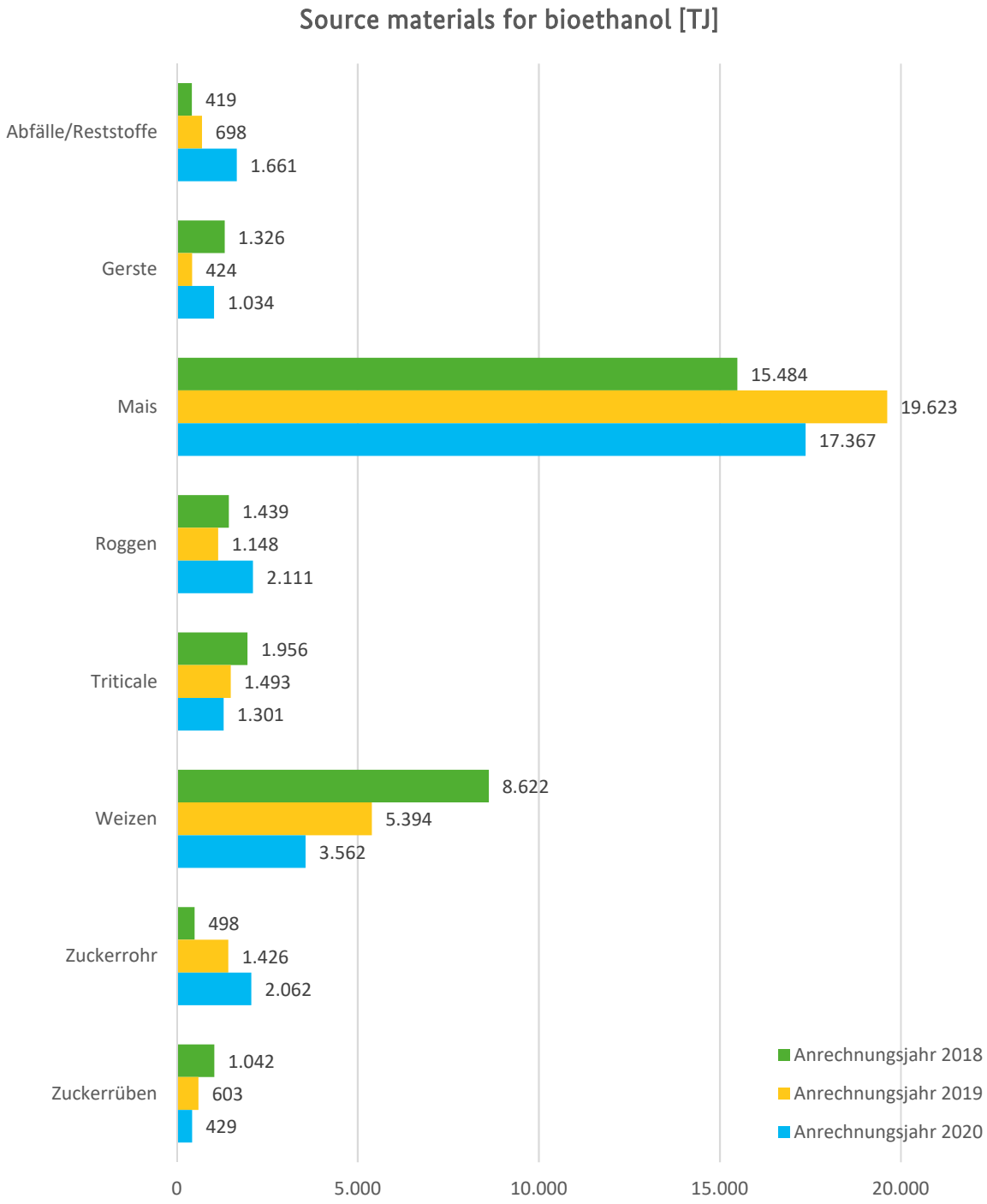

Figure 24: Source materials for bioethanol

The most important source material originating from **Germany** for the production of **bioethanol** in the reporting year was barley. Maize and wheat, which represent the largest proportions in relation to the total quantity, play a subordinate role here as the source material for bioethanol.

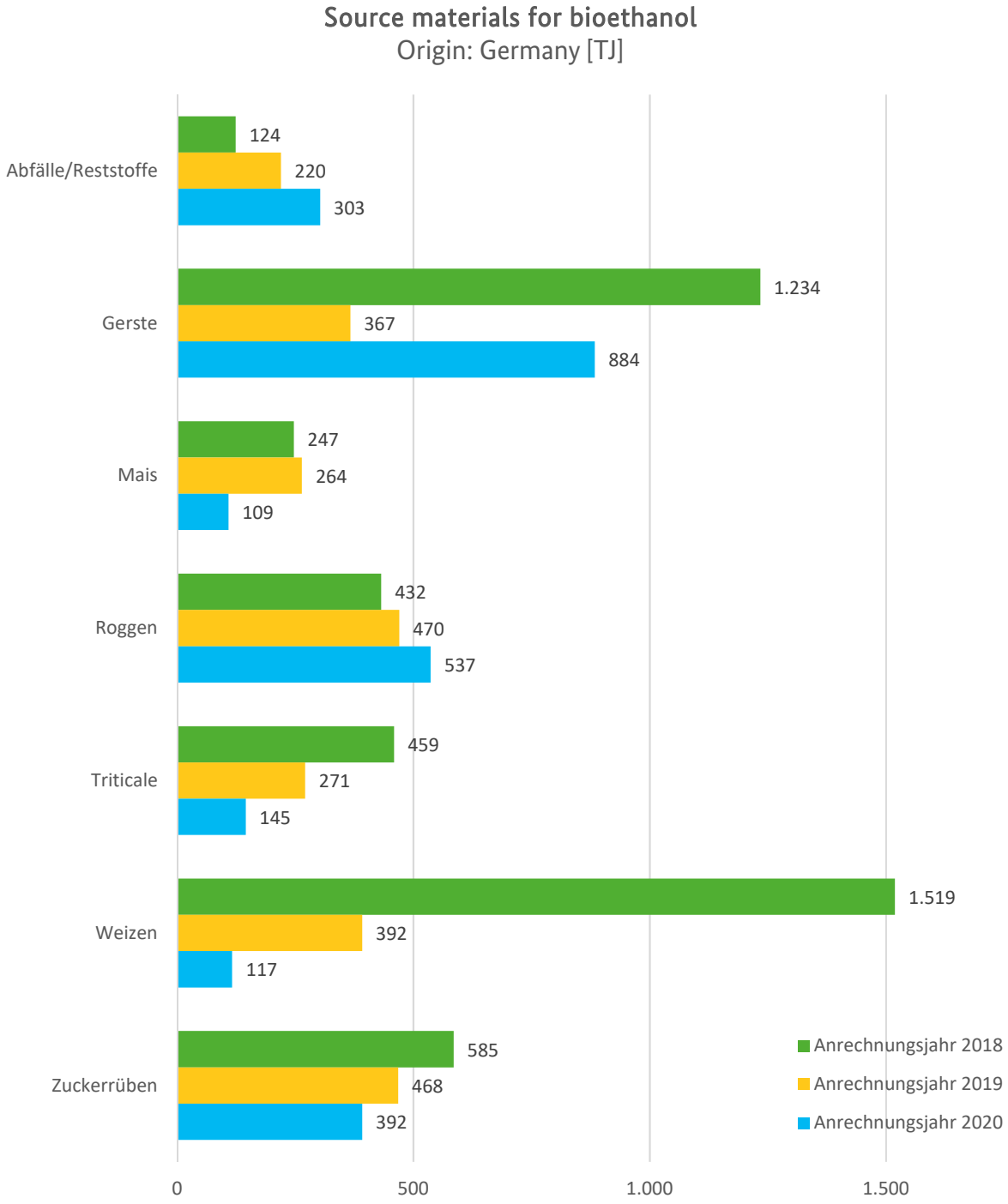

Figure 25: Source materials for bioethanol (origin: Germany)

The proportion of **FAME (biodiesel)** produced from waste and residues decreased slightly but remained the most important source material in terms of total volume. There were also slight declines in rapeseed and palm oil.

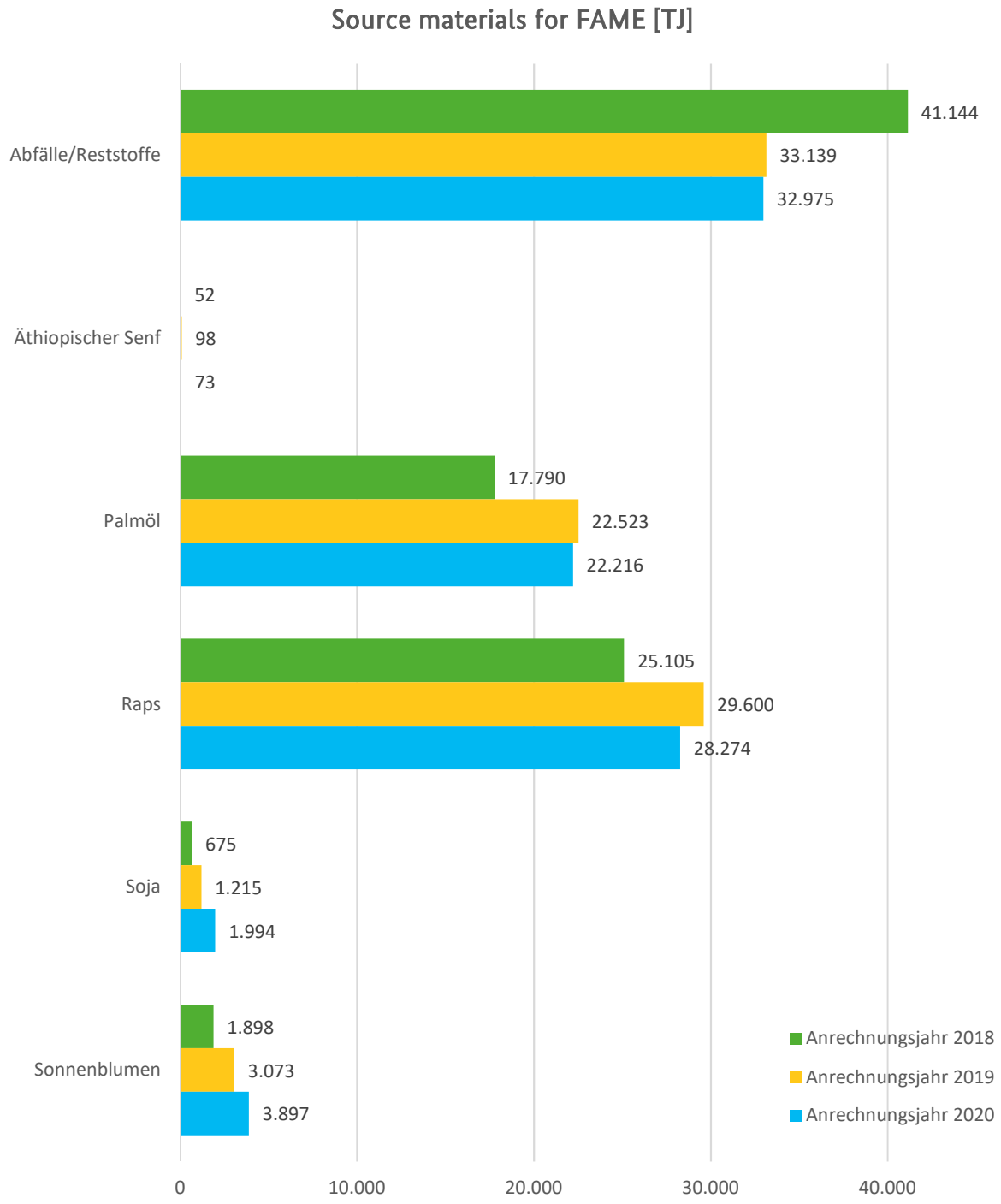

Figure 26: Source materials for FAME

Among the source materials for **biodiesel production** originating in **Germany** , rapeseed was the most important source materials with a proportion of about 60%; the rest originates from waste and residues.

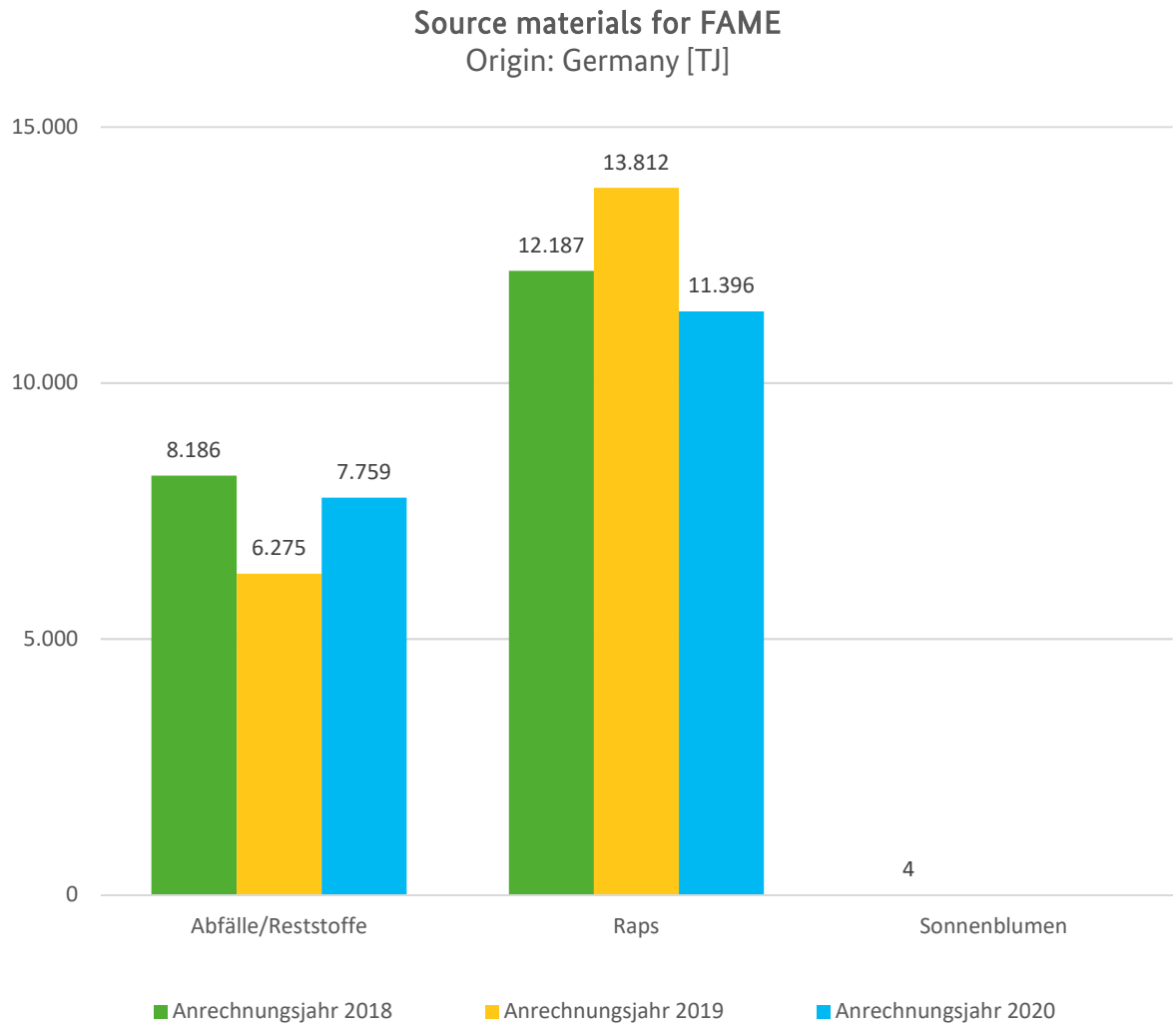

Figure 27: Source materials for FAME (origin: Germany

The amount applied for the greenhouse gas reduction quota as **hydrogenated vegetable oils (HVO)** has increased more than twentyfold in the reporting year. Both palm oil and waste and residues as source materials contributed to this increase.

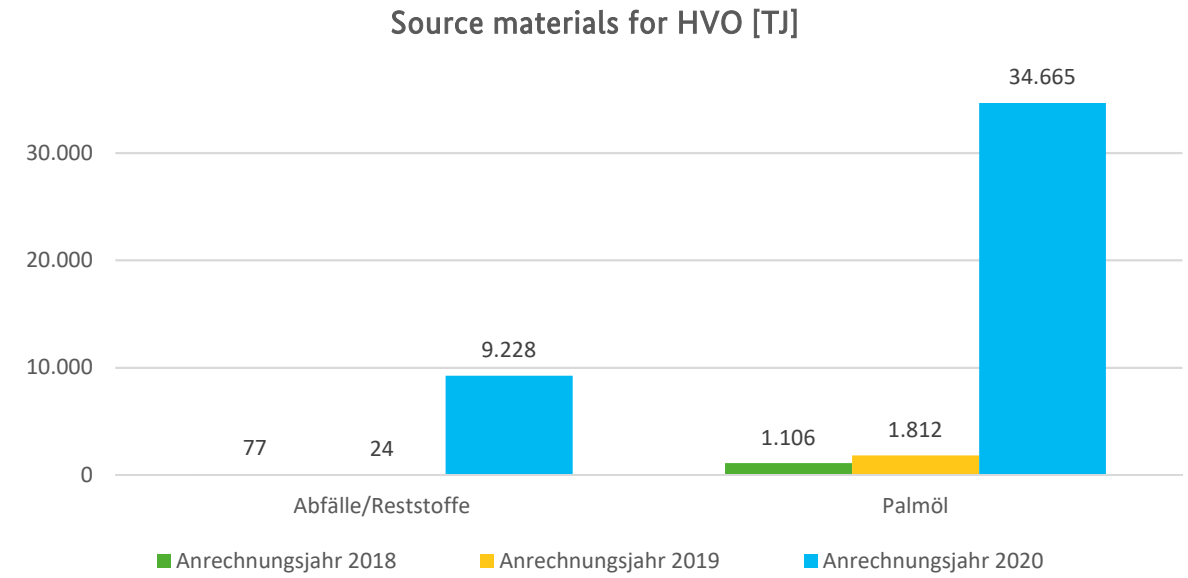

Figure 28: Source materials for HVO

The quantities of **CP-HVO** also increased many times over.

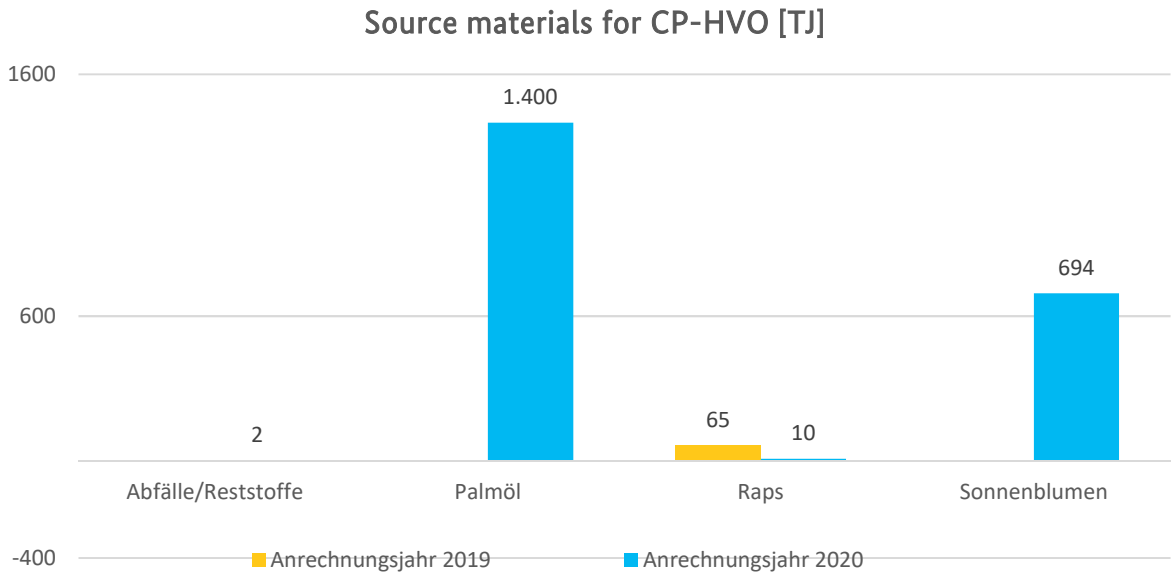

Figure 29 Source materials for CP-HVO

The **biomethane** applied for the German greenhouse gas reduction quota was produced mainly from waste and residual materials.

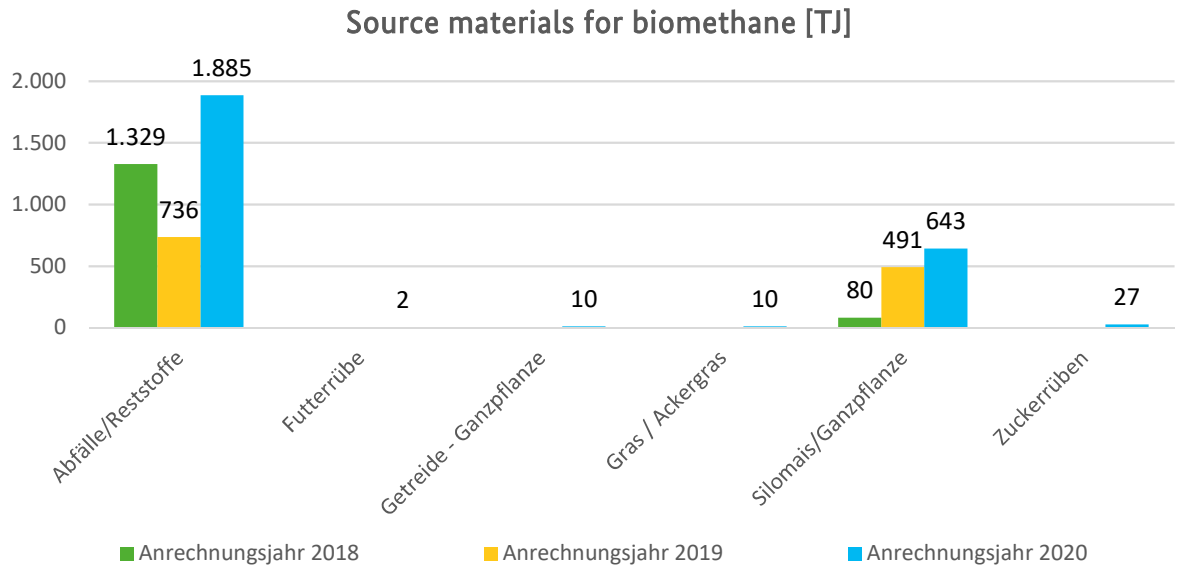

Figure 30: Source materials for biomethane

In terms of total volume, **vegetable oils** continue to be only of minor importance as biofuel.

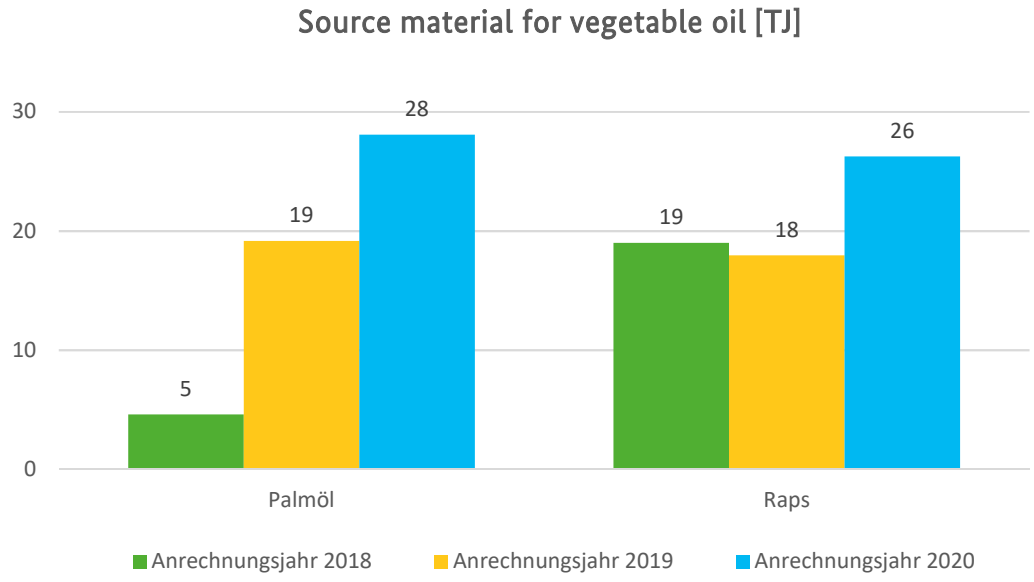

Figure 31: Source materials for vegetable oil

6.4 Greenhouse gas emissions and savings

One of the aims of the Renewable Energy Directive is the reduction of greenhouse gas emissions. According to Section 18 BioSt-NachV/Biokraft-NachV, data regarding emissions must be stated in CO_2 equivalents on sustainability certificates for the product.

The total emissions resulting from the production process of the final product must be accounted for when calculating emissions. These emissions are the greenhouse gas emissions named in the Renewable Energy Directive: carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4) expressed as CO_2 equivalent per energy unit. Emissions are calculated according to the prescribed method[9] by the certified economic operators who participate in the value chain.

The following figures show the emissions for the biofuels for which an application was made for recognition in terms of the biofuel quota.

In calculating the emission savings, the emissions generated during the entire production process of the biofuel were compared with the individual comparative values for fossil fuel in accordance with the 38th BImSchV.

Table5: Fossil fuel reference values

Type of fuel	Fossil comparative in accordance with the 38th BImSchV [g CO_2 eq/MJ]
Bioethanol	93.3
Bio-LNG	94.1
Biomethane	94.1
Biomethanol	93.3
BtL-FTD	95.1
CP-HVO	95.1
FAME	95.1
HVO	95.1
Vegetable oil	95.1

[9] cf footnote 4, page 7

The emission savings presented here are based on a comparison of pure biofuels with pure fossil fuels. Since the 2018 quota year, evidence of a saving of 50% compared with a fossil fuel has needed to be provided for a biofuel to be considered sustainable. A calculation of the total savings in the case of blended fuels in Germany would be based on the total emissions resulting from biogenic and fossil fuels.

The figure below illustrates the volume of emissions that would have resulted if fossil fuels had been used exclusively, instead of the given quantity of biofuel. In other words, the use of biofuels has resulted in savings of around 13.2 million tonnes of CO_2 equivalent.

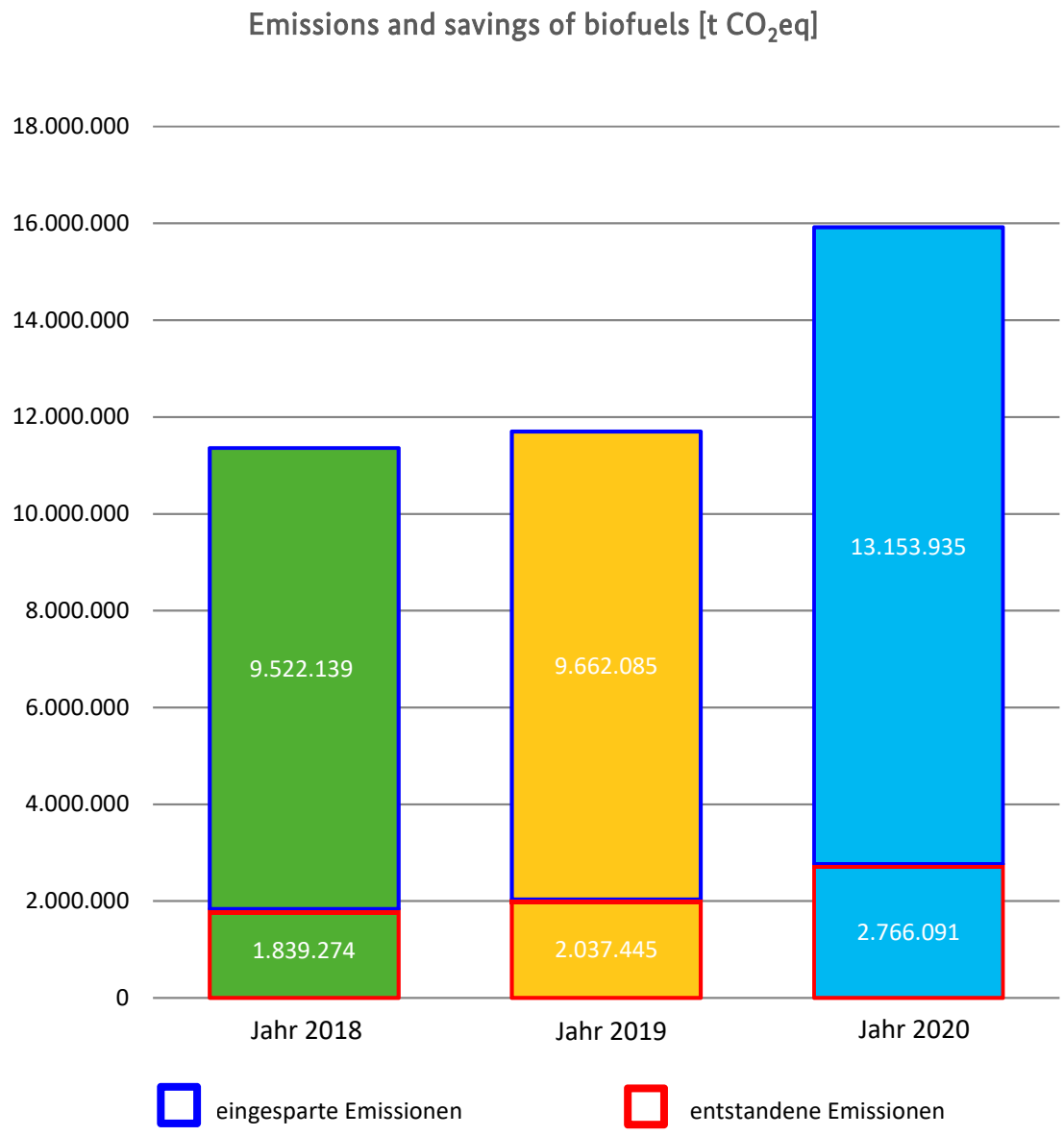

Figure 32 Emissions and emission savings of biofuels

In the reporting year, the biofuel placed on the market emitted an average of 16.46 t CO_2 eq per terajoule, representing an increase from previous years.

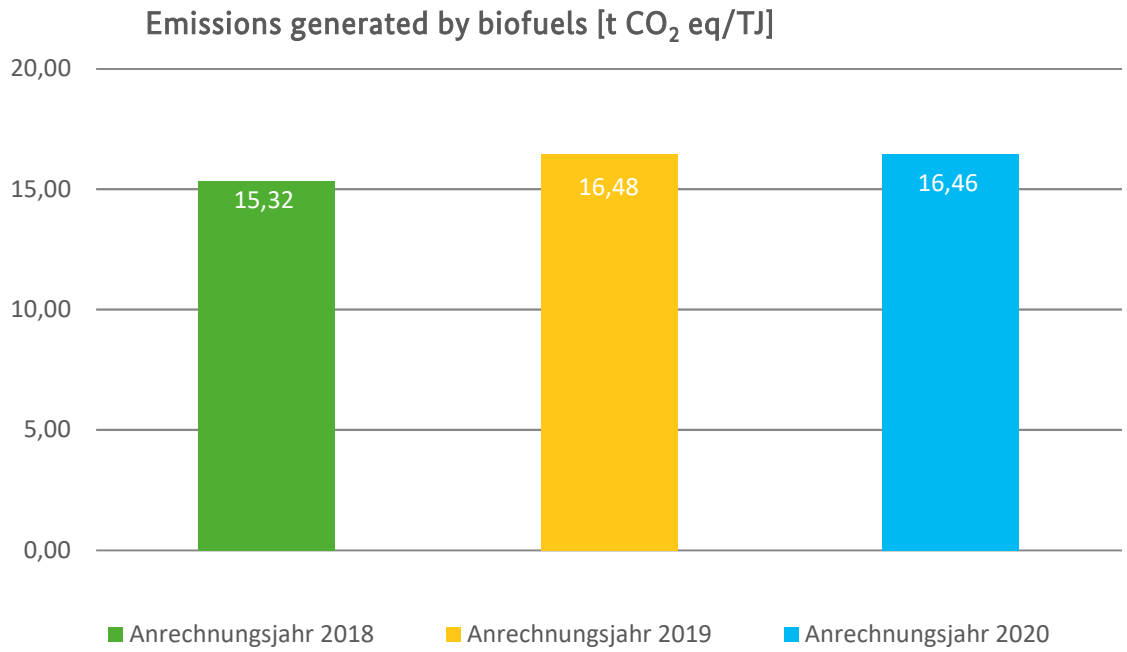

Figure 33: Emissions generated by biofuels

The average total emission saving of biofuels compared with fossil fuels remained almost the same.

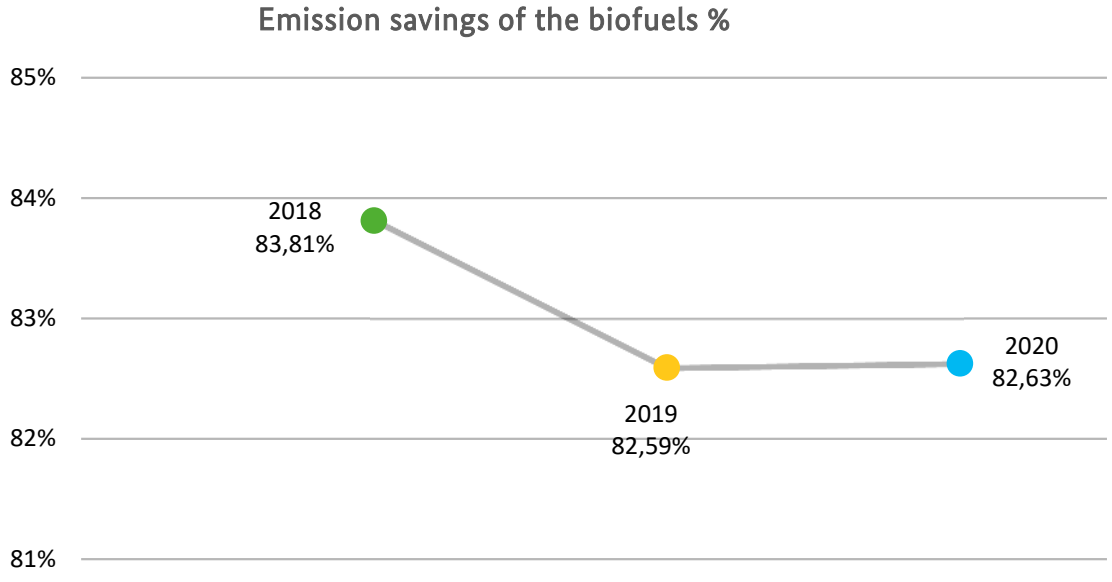

Figure 34 Emission savings of the biofuels

Biomethanol accounted for the highest average emissions of the biofuel types in the reporting year. Bioethanol achieved the best value.

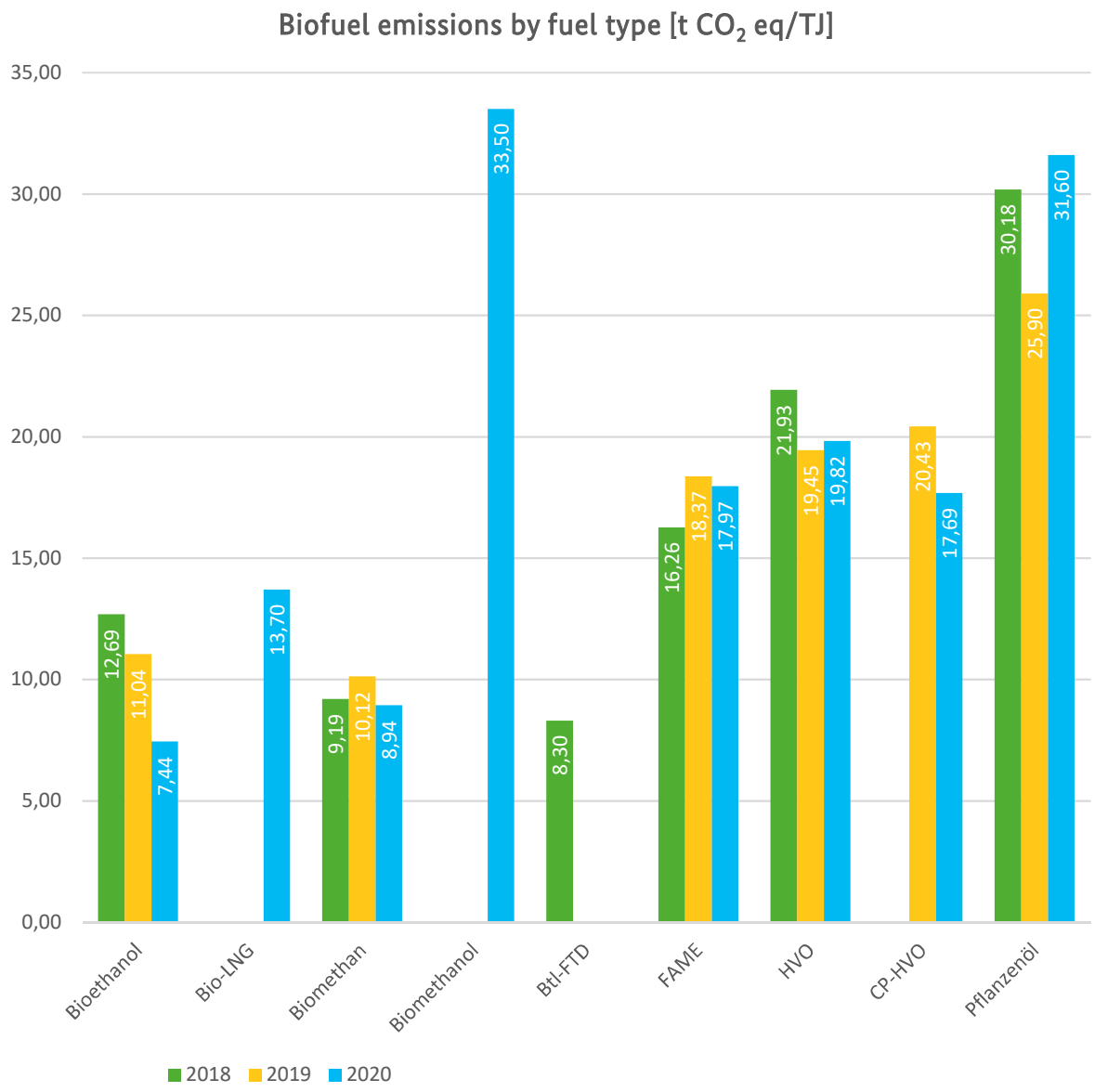

Figure 35 ***Biofuel emissions by fuel type***

Among the biofuels replacing petrol, bioethanol achieved the highest savings.

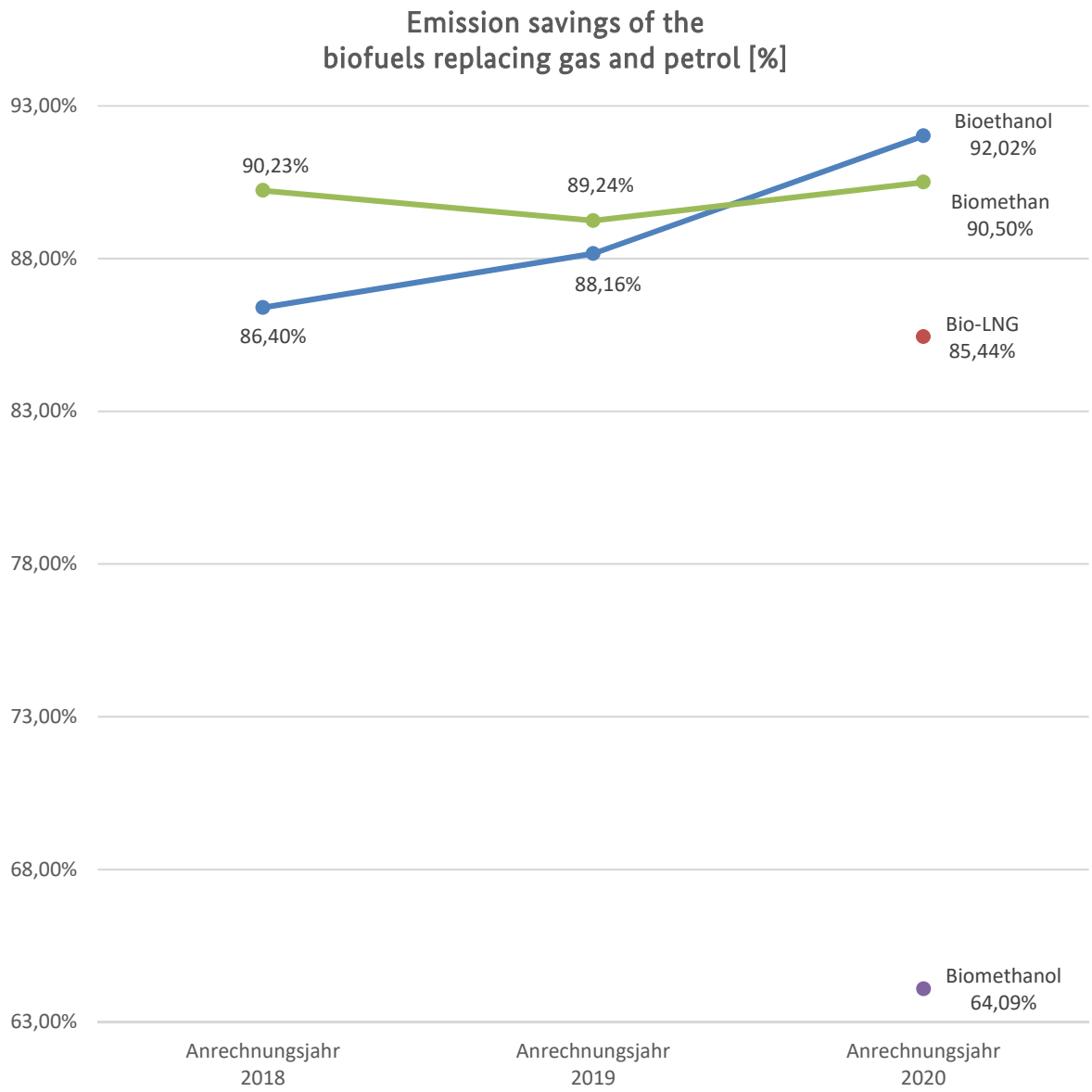

Figure 36 Emission savings of biofuels by fuel type (replacing petrol

The highest savings of biofuels replacing diesel in the quota year 2020 were achieved by CP-HVO.

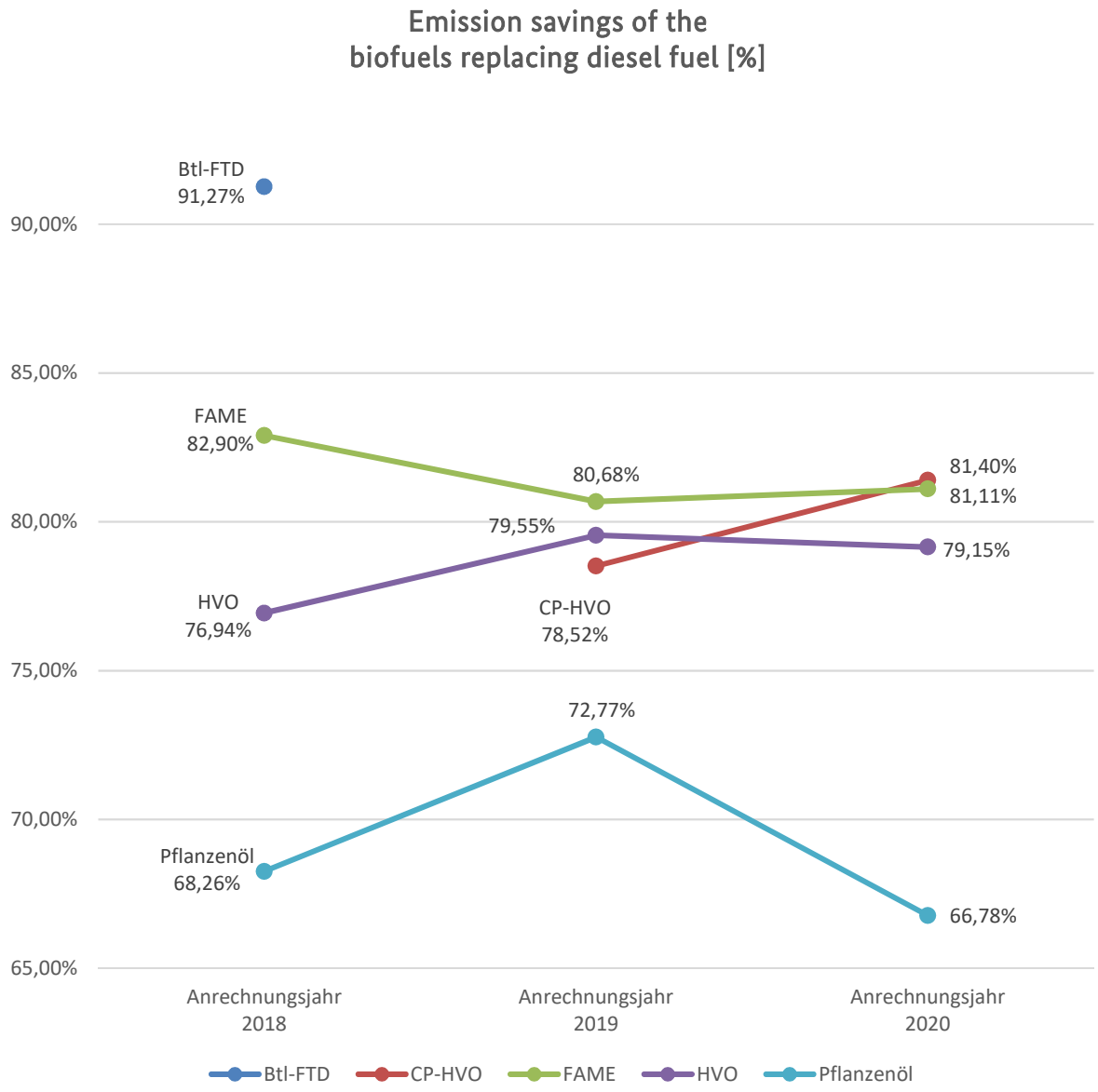

Figure 37: Emission savings of biofuels by fuel type (replacing diesel fuel)

Bioethanol produced from wheat achieved a saving of almost 97%.

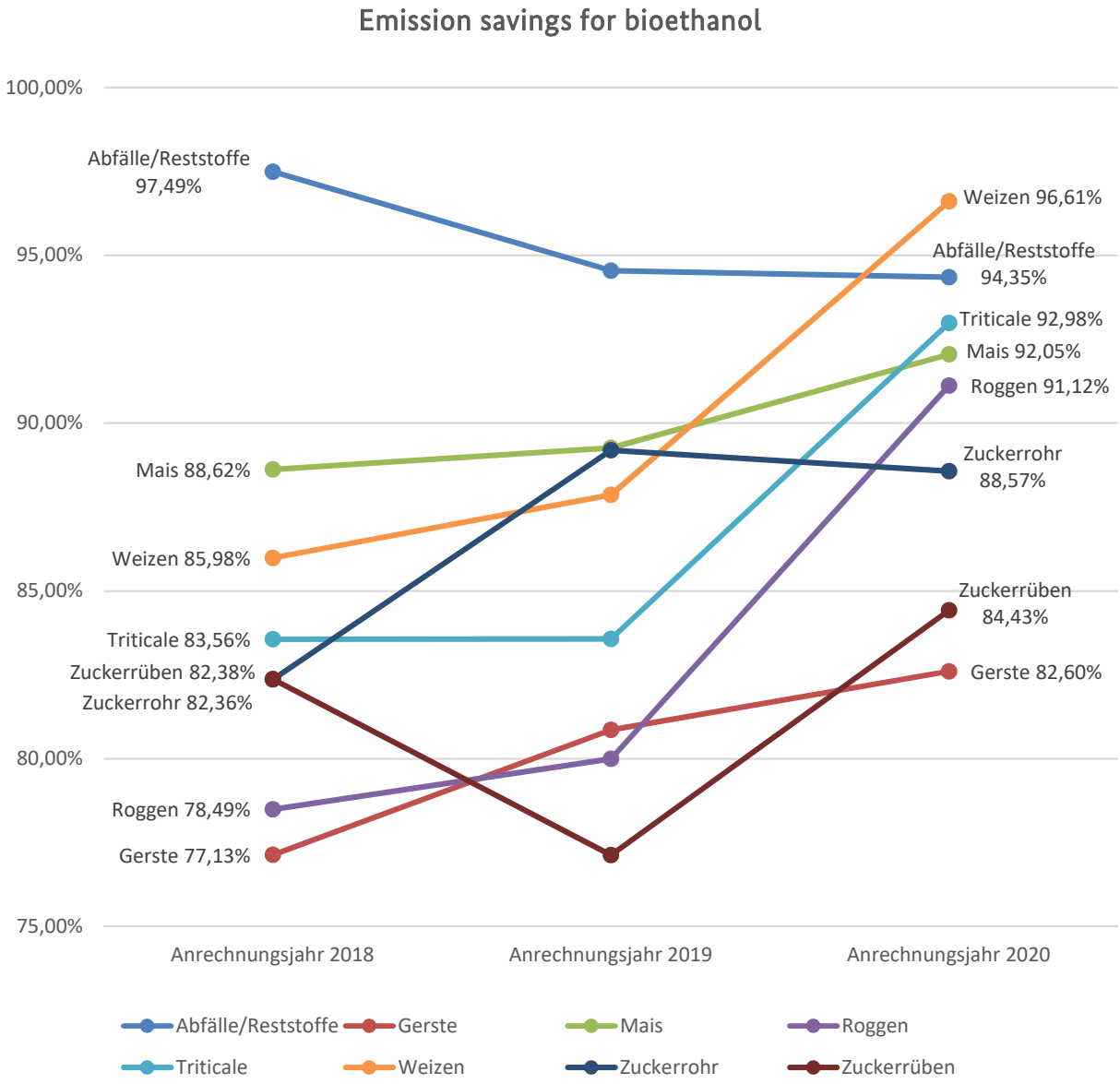

Figure 38 Emission savings for bioethanol

Compared with all other source products, biodiesel/FAME made from Ethiopian mustard once again achieved the highest emission savings in the reporting year by a considerably wide margin.

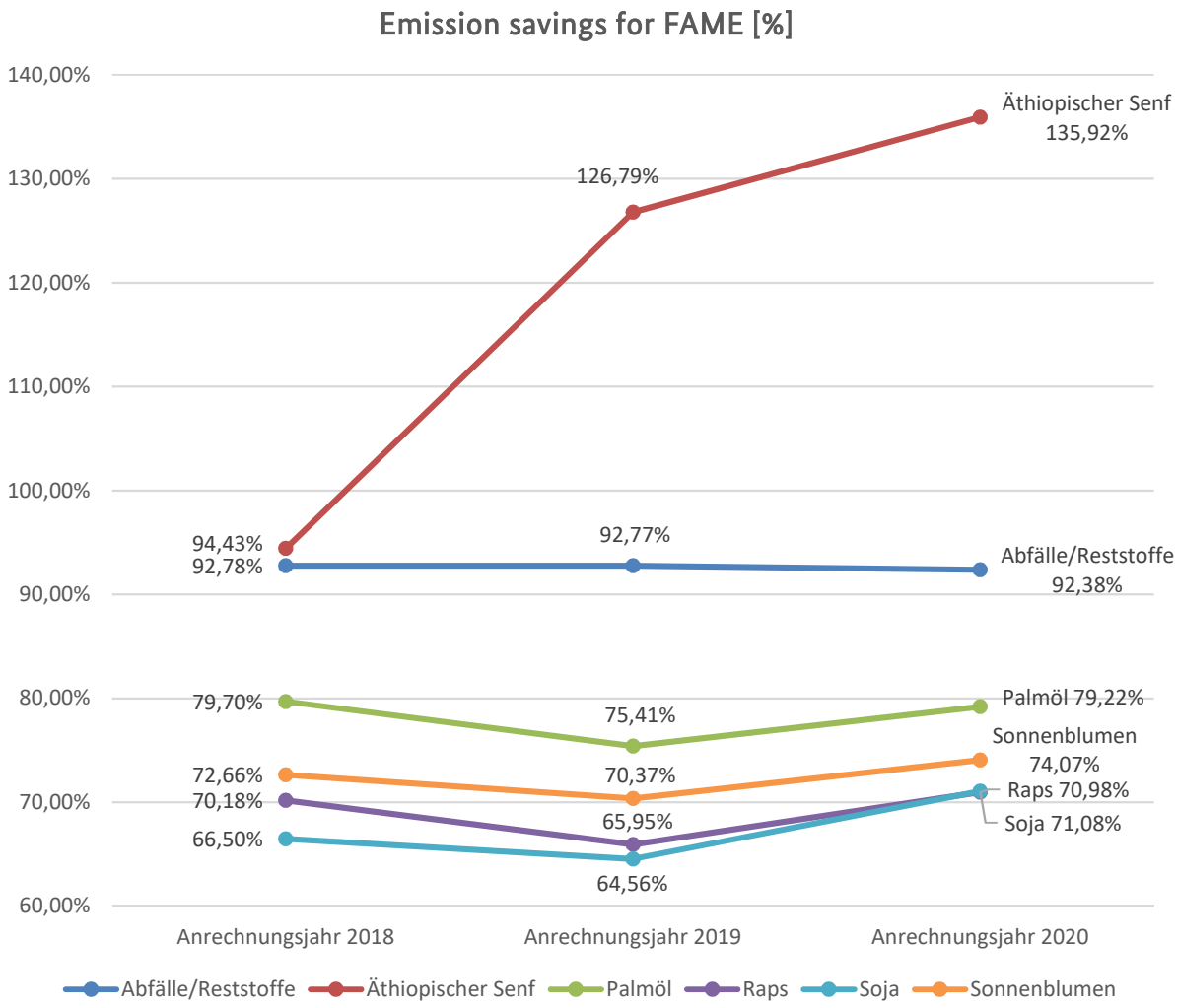

Figure 39: Emission savings for FAME

6.5 Emission savings of individual biofuel types per level of greenhouse gas mitigation

This section contains tabular representations of the emission savings for selected fuel types, source materials, and cultivation regions. Figures are shown as an energy percentage within GHG mitigation levels.

*Table 6: Emission savings for bioethanol by source material and GHG mitigation level – proportion in %**

GHG Saving ~ [%]	Wastes/ residues		Barley		Maize		Rye		Triticale		Wheat		Sugar cane		Sugar beet		Total	
	2019 698 TJ	2020 1,661. TJ	2019 424 TJ	2020 1,034. TJ	2019 19,623 TJ	2020 17,367. TJ	2019 1,148 TJ	2020 2,111. TJ	2019 1,493 TJ	2020 1,301. TJ	2019 5,394 TJ	2020 3,562. TJ	2019 1,426 TJ	2020 2,062. TJ	2019 603 TJ	2020 429. TJ	2019 30,808 TJ	2020 29,528. TJ
50–55																		
>55–60					0.10	0.05	0.24	0.04			0.05	1.03			1.29	4.95	0.10	0.20
>60–65					0.25	1.08					0.002				11.28	5.53	0.38	0.80
>65–70					0.64	0.42	2.44				0.19				23.35	7.57	0.99	0.46
>70–75			4.90		9.59	4.53	12.98		4.07	0.02	6.01	6.81		0.32	22.10	3.77	8.34	3.13
>75–80			81.56	100.00	8.29	3.30	28.15	22.33	15.67	6.05	43.30	81.76	1.13		0.03		15.84	12.53
>80–85	21.38	32.37			13.16	21.11	50.73	19.52	55.25	20.90	0.57	5.69	23.46	34.24	9.10	0.11	14.80	20.66
>85–90		54.87			11.45	20.48	5.46	16.35	22.04	39.71	4.16	1.86	22.91	64.03	32.86	78.07	11.00	26.99
>90–95	11.08	12.76			13.21	49.03		41.76		33.33		2.86	45.15	1.41			10.76	35.23
>95–100	63.21		2.60		41.95				0.26		19.08		7.35				31.88	
>100–105	4.33		10.12		1.37				1.97		25.40						5.65	
>105			0.82						0.75		1.23						0.26	
Total	One hundred percent																	

* Differences in totals are due to rounding

*Table 7: Emission savings for bioethanol by source material, origin, and GHG mitigation level – proportion in %**

GHG Saving ~ [%]	Maize								Wheat					
	Germany		EU		Third countries		Total bioethanol from maize		Germany		EU		Total bioethanol from wheat	
	Year 2019 264 TJ	Year 2020 109 TJ	Year 2019 9,211 TJ	Year 2020 9,287 TJ	Year 2019 10,147 TJ	Year 2020 7,971 TJ	Year 2019 19,623 TJ	Year 2020 17,367 TJ	Year 2019 392 TJ	Year 2020 117 TJ	Year 2019 5,002 TJ	Year 2020 3,445 TJ	Year 2019 5,394 TJ	Year 2020 3,562 TJ
50–55														
>55–60			0.04	0.06	0.15	0.02	0.10	0.05	0.51		0.01	1.27	0.05	0.11
>60–65			0.42	1.44	0.09	0.03	0.25	1.08			0.002		0.002	1.02
>65–70			0.47	0.35	0.81	0.69	0.64	0.42	2.60				0.19	0.40
>70–75	9.05		19.81	5.49	0.32	1.73	9.59	4.53	45.03	7.41	2.95	6.67	6.01	4.66
>75–80	1.31		17.60	4.37	0.01	0.10	8.29	3.30	51.87	92.22	42.63	79.28	43.30	7.86
>80–85	41.66	31.13	26.75	27.69	0.08		13.16	21.11		0.36	0.62	6.95	0.57	20.21
>85–90	47.91	56.06	22.91	25.21	0.09	4.03	11.45	20.48			4.49	2.30	4.16	19.40
>90–95		12.81	6.22	35.40	19.90	93.41	13.21	49.03				3.53		46.34
>95–100	0.07		2.85		78.55		41.95				20.57		19.08	
>100–105			2.92				1.37				27.39		25.40	
>105											1.33		1.23	
Total	One hundred percent													

* Differences in totals are due to rounding

Table 8: Emission savings for FAME by source material and GHG mitigation level – proportion in %[*]

GHG Saving ~ [%]	Wastes/residues		Ethiopian mus-tard		Palm oil		Rapeseed		Soy		Sunflower		Total	
	Year 2019 33,139 TJ	Year 2020 32,975. TJ	Year 2019 98 TJ	Year 2020 73 TJ	Year 2019 22,523 TJ	Year 2020 22,216 TJ	Year 2019 29,600 TJ	Year 2020 28,274 TJ	Year 2019 1,215 TJ	Year 2020 1,994 TJ	Year 2019 3,073 TJ	Year 2020 3,897 TJ	Year 2019 89,646 TJ	Year 2020 89,429 TJ
50–55														
>55–60					0.01	0.14	0.55	0.30	3.47	0.82			0.23	0.15
>60–65					0.03	0.05	4.03	3.33	14.41	4.95			1.54	1.18
>65–70	0.01				3.19	1.47	37.51	30.26	55.87	39.00	3.91	0.87	14.08	10.84
>70–75					12.63	8.62	55.13	57.01	10.03	34.73	67.47	68.04	23.82	23.90
>75–80					45.29	52.68	2.78	8.76	16.13	20.32	27.14	31.09	13.44	17.67
>80–85	0.40	0.003			37.69	29.96		0.00	0.10	0.17	1.49		9.67	7.45
>85–90	9.45	10.77			1.17	6.94							3.79	5.69
>90–95	70.87	77.45	12.30					0.11					26.21	28.59
>95–100	19.28	11.78				0.14		0.03					7.13	4.39
>100–105								0.07						0.02
>105			87.70	100.00				0.13					0.10	0.12
Total	One hundred percent													

[*] Differences in totals are due to rounding

*Table 9: Emission savings for FAME by source material, origin and GHG mitigation level – proportion in %**

GHG Saving ~ [%]	Wastes/residues								Rapeseed							
	Germany		EU		Third countries		Total FAME from wastes/residues		Germany		EU		Third countries		Total FAME from rapeseed	
	Year 2019 6,275 TJ	Year 2020 7,759 TJ	Year 2019 11,669 TJ	Year 2020 11,005 TJ	Year 2019 15,195 TJ	Year 2020 14,210 TJ	Year 2019 33,139 TJ	Year 2020 32,975 TJ	Year 2019 13,812 TJ	Year 2020 11,396 TJ	Year 2019 10,171 TJ	Year 2020 10,329 TJ	Year 2019 5,617 TJ	Year 2020 6,550 TJ	Year 2019 29,600 TJ	Year 2020 28,274 TJ
50–55																
>55–60									0.07	0.005	0.07	0.34	2.59	0.74	0.55	0.14
>60–65									0.76	0.51	8.88	5.84	3.31	4.28	4.03	1.54
>65–70			0.02				0.01		47.48	45.82	36.88	27.24	14.16	7.95	37.51	13.97
>70–75									51.33	52.64	51.33	61.50	71.37	57.52	55.13	26.32
>75–80									0.37	1.02	2.85	4.15	8.58	29.51	2.78	4.05
>80–85		0.01	0.01		0.86		0.40	0.003				0.01				0.002
>85–90	2.43	3.18	22.20	13.61	2.55	12.70	9.45	10.77								5.80
>90–95	95.58	69.95	77.38	84.38	55.67	76.18	70.87	77.45		0.01		0.30				41.75
>95–100	2.00	26.86	0.39	2.01	40.93	11.12	19.28	11.78				0.07				6.36
>100–105												0.19				0.03
>105												0.36				0.06
Total	One hundred percent															

* Differences in totals are due to rounding

Table 10: Emission savings for vegetable oil by source material and GHG mitigation level – proportion in %[*]*

GHG Saving ~ [%]	Palm oil		Rapeseed	
	Year 2019 19 TJ	Year 2020 28 TJ	Year 2019 18 TJ	Year 2020 26 TJ
50–55				
>55–60				
>60–65	14.32	71.24	20.67	51.65
>65–70	14.24	6.60	10.13	4.98
>70–75	9.46	19.26	69.19	43.36
>75–80	47.69	2.91		
>80–85	4.83			
>85–90	9.47			
>90–95				
>95–100			0.01	
>100–105				
>105				
Total	One hundred percent			

[*] Differences in totals are due to rounding

Table 11: Emission savings for biomethane by source material and GHG mitigation level – proportion in %[*]

GHG Saving ~ [%]	Wastes/residues		Fodder beet		Cereal whole plant		Grass/arable grass		Silage maize		Sugar beet		Total	
	Year 2019 736 TJ	Year 2020 1,885 TJ	Year 2019 -	Year 2020 2 TJ	Year 2019 -	Year 2020 10 TJ	Year 2019 -	Year 2020 10 TJ	Year 2019 491 TJ	Year 2020 643 TJ	Year 2019 -	Year 2020 27 TJ	Year 2019 1,227	Year 2020 2,577
50–55														
>55–60														
>60–65														
>65–70														
>70–75		0.02												0.01
>75–80	15.53	8.01				8.22		6.94	0.92	12.04			9.69	8.92
>80–85	15.25	3.06				19.35		93.06		19.61		22.05	9.15	7.81
>85–90	4.65	19.29		23.32		55.75			99.08	64.11		14.11	42.42	30.49
>90–95	20.46	22.05		76.68		16.68				4.24		63.84	12.28	17.98
>95–100	44.11	47.57											26.47	34.79
>100–105														
>105														
Total	One hundred percent													

[*] Differences in totals are due to rounding

*Table 12: Emission savings for advanced wastes and residues by type and GHG reduction level – proportion in %**

GHG Saving ~ [%]	Advanced, according to 38th BImSchV, Annex 1[10]																					
	Number 2		Number 3		Number 4		Number 5		Number 6		Number 7		Number 9		Number 11		Number 15		Number 16		Total	
	Year 2019	Year 2020	Year 2019	Year 2020	Year 2019	Year 2020	Year 2019	Year 2020	Year 2019	Year 2020	Year 2019	Year 2020	Year 2019	Year 2020	Year 2019	Year 2020	Year 2019	Year 2020	Year 2019	Year 2020	Year 2019	Year 2020
	-	0.1 TJ	106 TJ	94 TJ	476 TJ	1,112 TJ	-	129 TJ	-	184 TJ	1 TJ	3,290 TJ	36 TJ	47 TJ	0.3 TJ	0.1 TJ	-	1,433 TJ	129 TJ	-	748 TJ	6,288 TJ
50–55																						
>55–60																						
>60–65				10.61																		0.02
>65–70																		0.002			0.01	0.00
>70–75		0.004										0.13		0.53								0.01
>75–80		0.04	100.00	89.39	0.06	1.94		9.78				2.54		37.29	100.00	100.00		0.002			0.33	0.51
>80–85		0.92						3.40		5.69	100.00	39.87						100.00	100.00		1.14	6.76
>85–90		13.39				1.38		12.71		17.72		34.61									9.15	14.17
>90–95		73.63			31.67	27.35				60.27		22.85	100.00	62.18							68.60	66.21
>95–100		11.14			68.27	69.33		74.11		16.33											20.68	11.57
>100–105																					0.09	
>105		0.87																				0.75
Total	One hundred percent																					

* Differences in totals are due to rounding

[10] See Page 99, Table31

*Table 13: Emission savings for non-advanced wastes and residues by type and GHG reduction level – proportion in %**

GHG Saving ~ [%]	non-advanced according to 38th BImSchV, Annex 1[11]					
	Used edible oils		Other		Total	
	Year 2019 27,206 TJ	Year 2020 29,286 TJ	Year 2019 6,644 TJ	Year 2020 10,688 TJ	Year 2019 33,849 TJ	Year 2020 39,974 TJ
50–55						
>55–60						
>60–65						
>65–70			0.03		0.01	
>70–75		0.01				0.004
>75–80			0.12	0.14	0.02	0.04
>80–85	0.01	0.05	3.95	3.30	0.79	0.92
>85–90	10.72	12.19	3.76	16.68	9.36	13.39
>90–95	66.31	82.17	82.87	50.24	69.56	73.63
>95–100	22.96	5.58	8.81	26.40	20.18	11.14
>100–105			0.45		0.09	
>105				3.24		0.87
Total	One hundred percent					

* Differences in totals are due to rounding

[11] See Page 99, Table31

7. Bioliquids

The total quantity of bioliquids registered for electricity generation and feed-in according to the EEG decreased by around 7% in the reporting year.

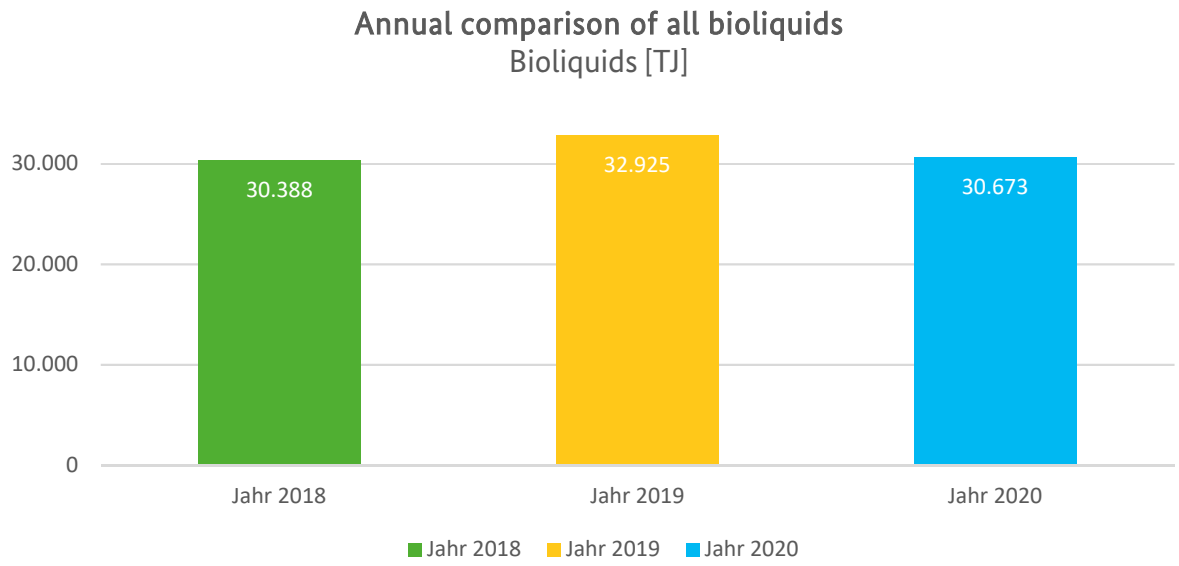

Figure 40 Annual comparison of all bioliquids

7.1 Types of bioliquids

The reduction in the total amount is due to the reduction in the use of bioliquids from the pulp industry.

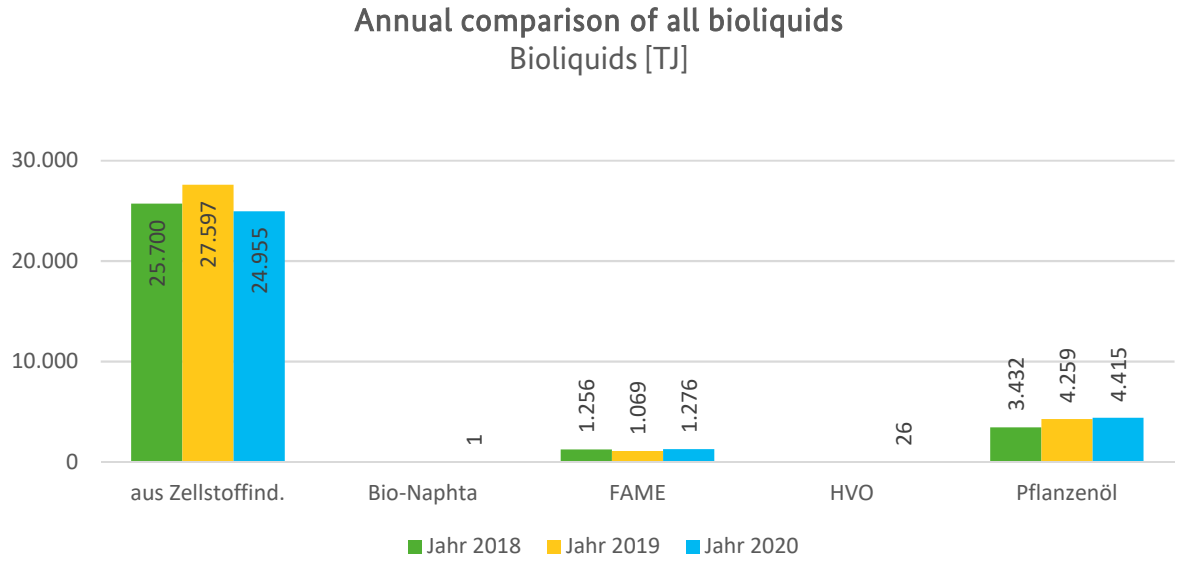

Figure 41 Bioliquid types

7.2 Source materials and origin of vegetable oils used as bioliquids

In the reporting year, more palm oil (+ 9%) was again used in the area of vegetable oils for electricity.

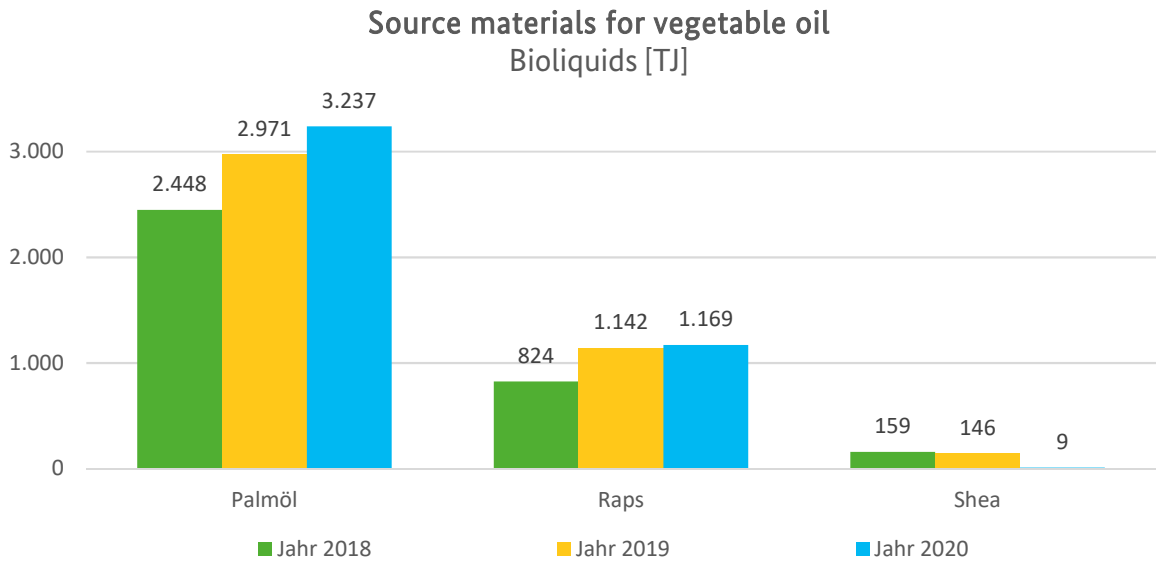

Figure 42 Source materials for vegetable oil

The increased total volume is based on the increased imputations from Indonesia (+49%) and Malaysia (+29%).

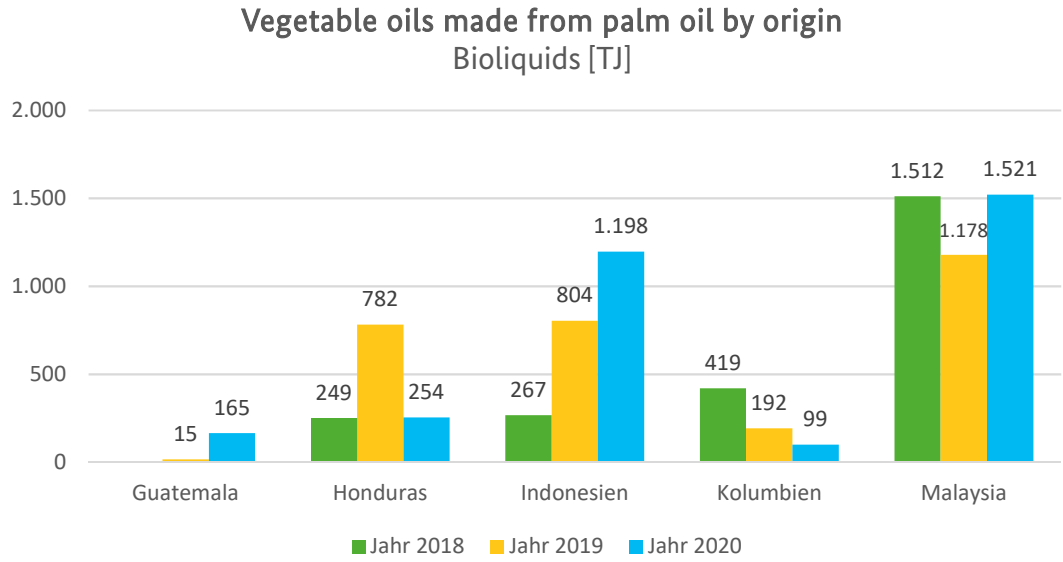

Figure 43 Vegetable oils made from palm oil by origin

7.3 Greenhouse gas emissions and savings

In calculating emission savings, the total emissions resulting from the production of the bioliquid[12] were compared with the reference value of 91 g CO_2eq/MJ applicable to fossil fuels used for generating electricity.

Due to the high proportion of very low-emission thick liquor from the pulp industry, overall savings in the bioliquids segment have traditionally been very high.

The emission savings presented here are based on the comparison of pure bioliquids with pure fossil fuels.

A saving of approx. 2.6 million tonnes of CO_2 equivalent was achieved by the use of bioliquids for electricity generation.

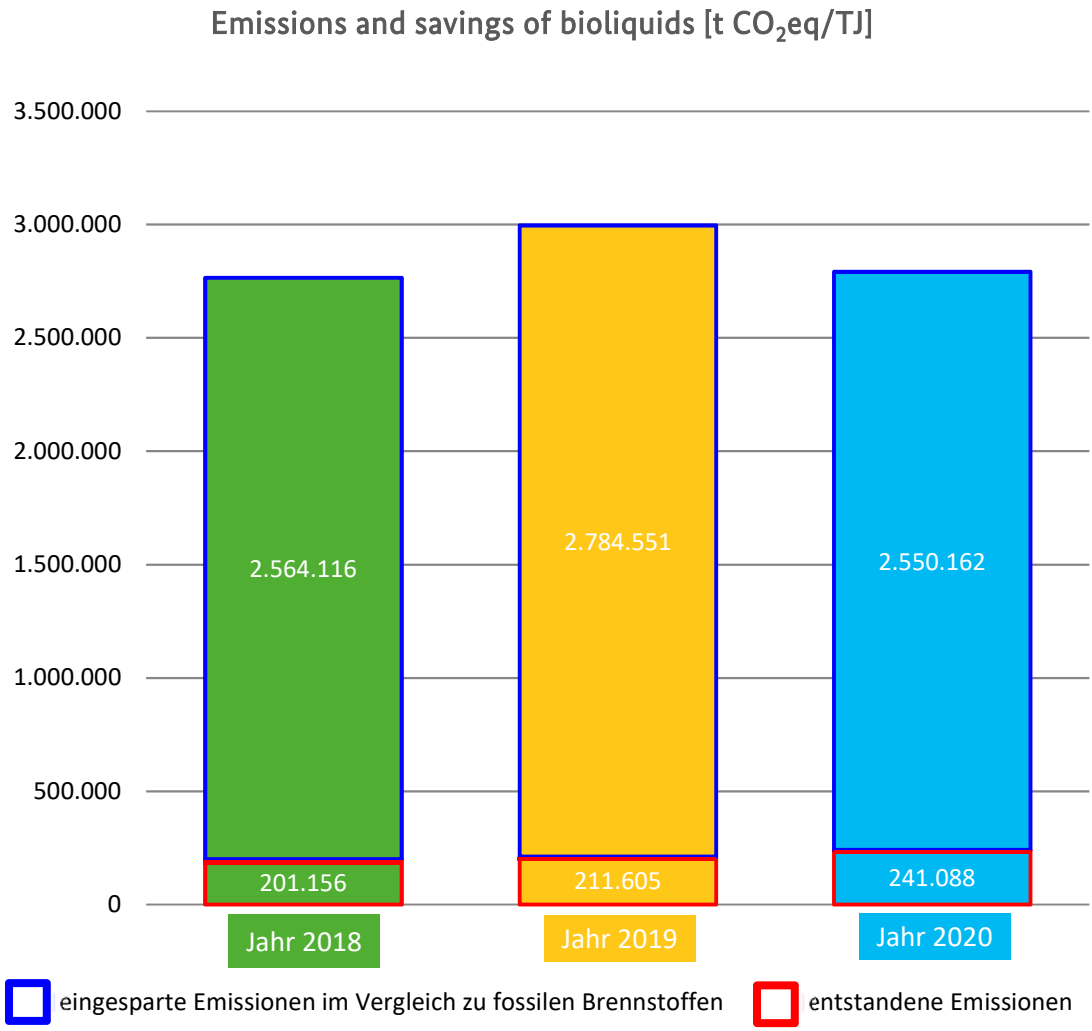

Figure 44: Emissions and emission savings of bioliquids

[12] Emissions are calculated by applying the same methodology as used for biofuels, cf. footnote 4

Average emissions increased by around 1.4 t CO_2 eq/TJ of bioliquid compared to the previous year.

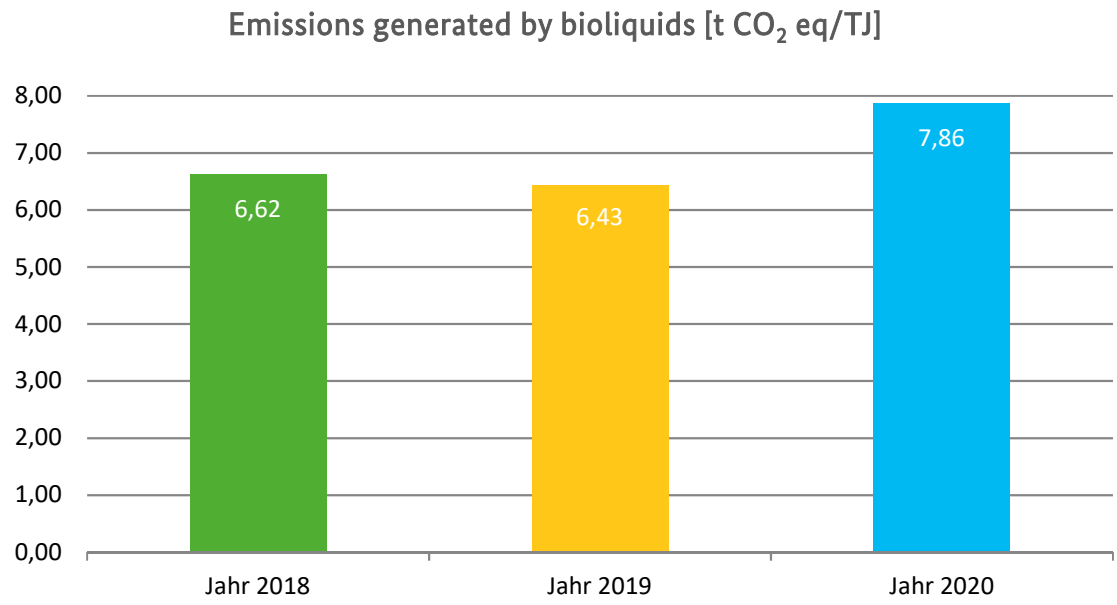

Figure 45 Emissions generated by bioliquids

The average emission savings thus decreased by 1.58 percentage points.

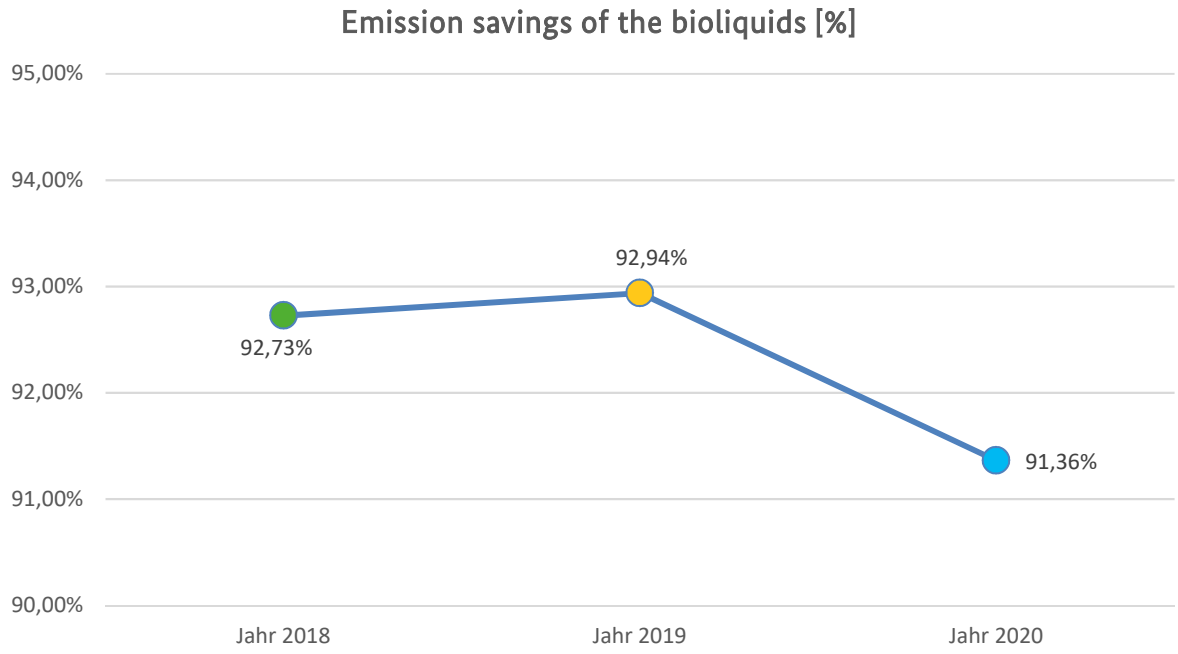

Figure 46 Emission savings of the bioliquids

Among the bioliquids, only FAME was able to show a more positive emissions balance compared with the previous year.

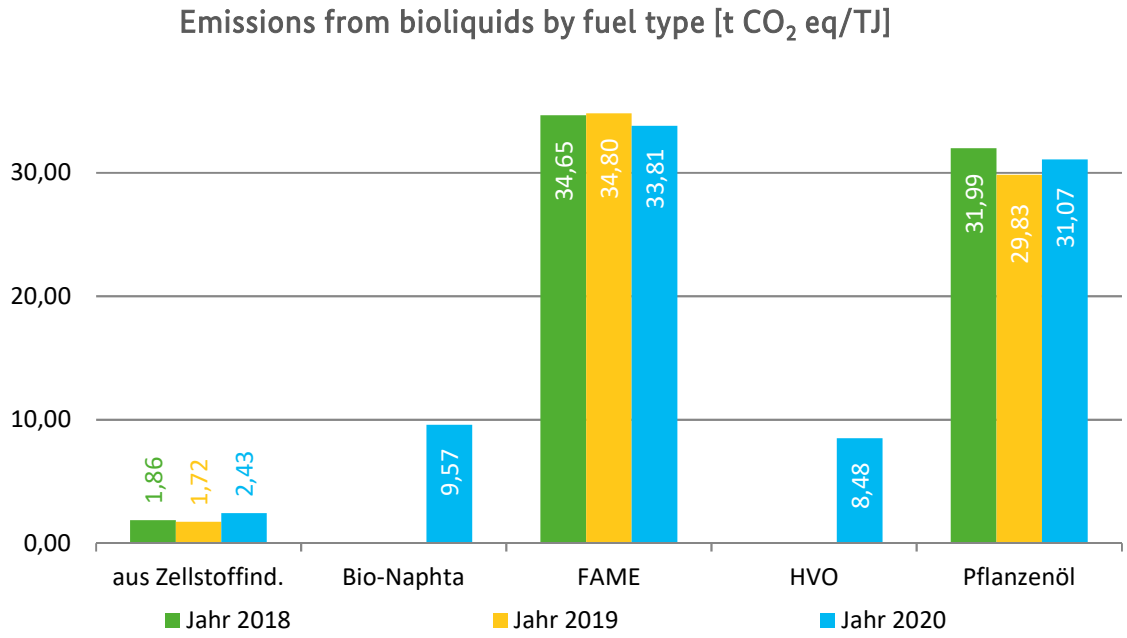

Figure 47 Emissions from bioliquids by bioliquid type

As in the previous year, bioliquids from the pulp industry achieved the best figure for savings. This year around 97%.

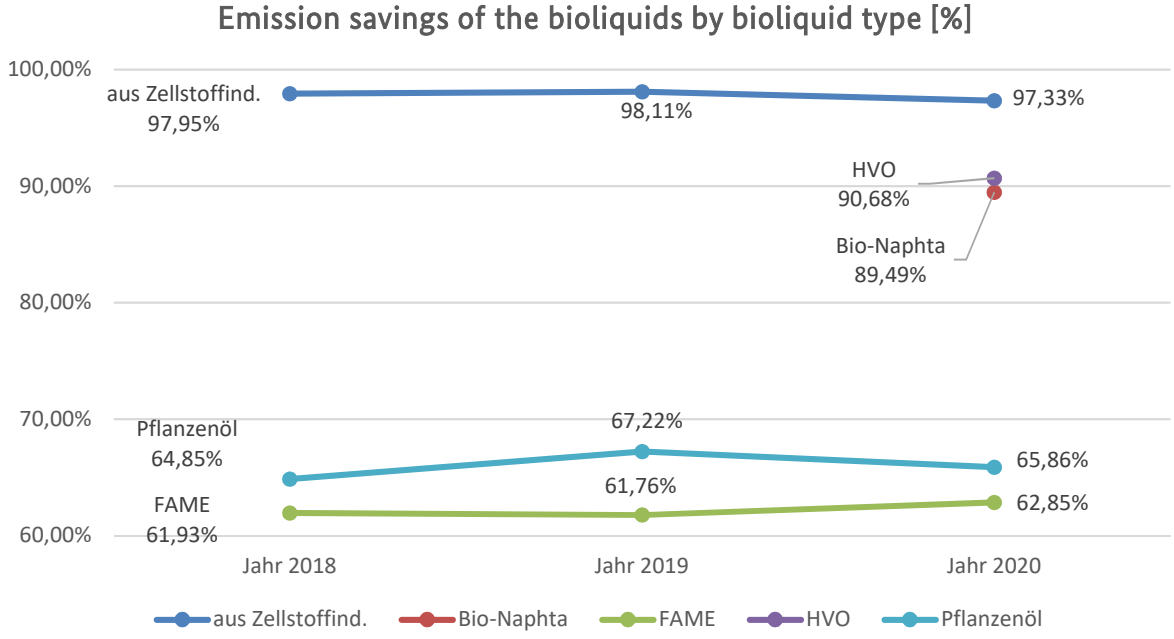

Figure 48 Emission savings of the bioliquids by bioliquid type

8. Retirement accounts

Retirement accounts for a number of purposes have been set up in Nabisy to allow economic operators to comply with mass-balancing regulations. These accounts are:

- Country accounts, if the goods leave Germany and the recipient is not registered in Nabisy

- Retirement accounts for other purposes (e.g. for use in the case of further conversion or other technical purposes)

- Shortfall on the reporting day in cases in which there is no physical sustainable good corresponding to the certificates in existence at the end of a mass-balancing period

8.1 Retirement to accounts of other Member States and third countries

Biofuels and bioliquids that are registered in the Nabisy database and exported to other countries must be retired to the account of the relevant country in Nabisy by the economic operators. In the reporting year, this method was used to transfer 96,554 TJ (previous year: 77,220 TJ) of biofuels and bioliquids to the accounts of EU Member States and non-EU countries.

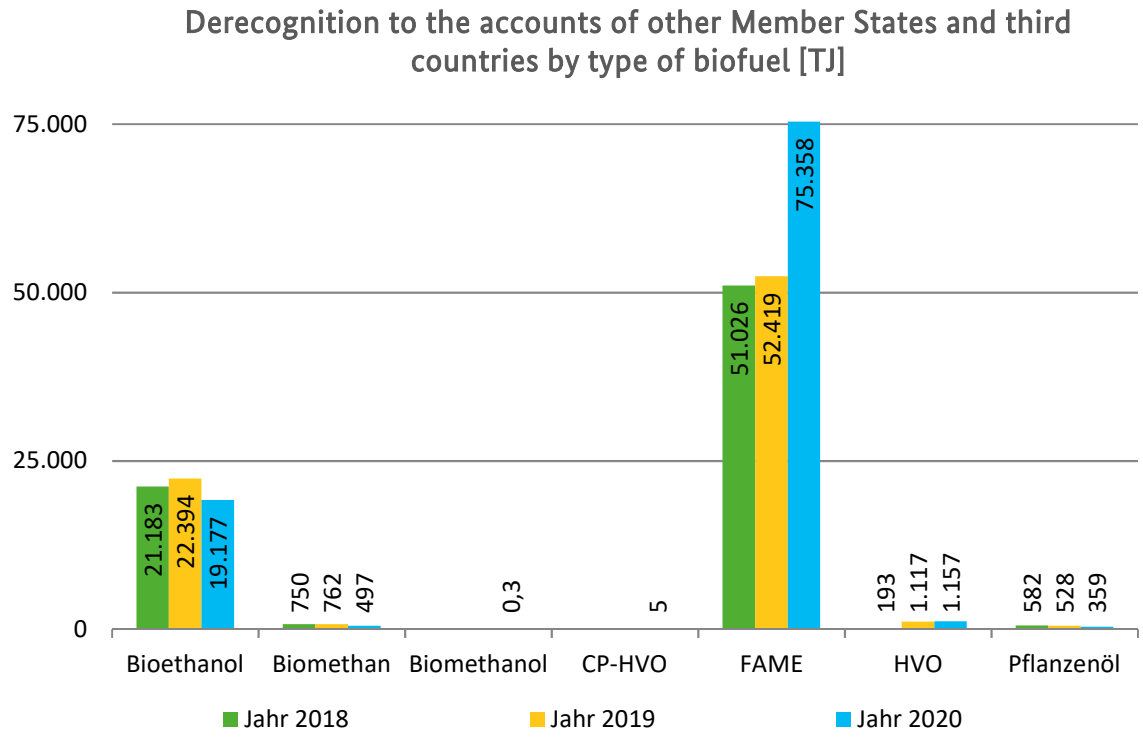

Figure 49 Derecognition to the accounts of other Member States and third countries by type

The following figure shows only those country accounts to which no less than 1,000 TJ were retired in at least one reference year. A complete list of the amounts retired can be found in Table14 on page 82.

The largest amounts of retired biofuels and bioliquids were transferred to the accounts of Austria (17%), Poland (15%), and the Netherlands (14%).

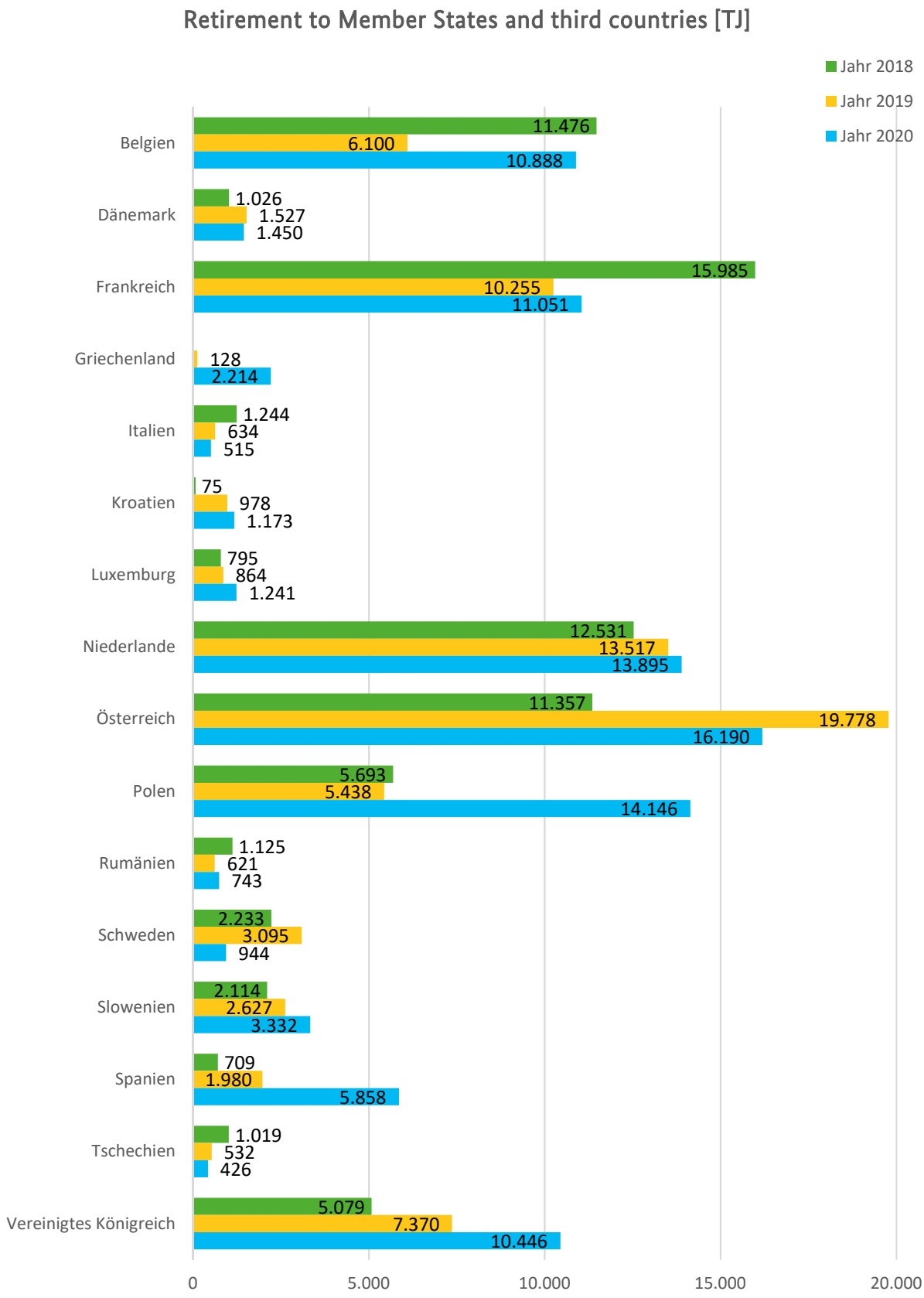

Figure 50 *Retirement to Member States and third countries*

*Table14: Retirement of biofuels and bioliquids [in TJ] to Member States and third countries in 2020**

Derecognition account	Waste and residues	Barley	Maize	Maize germ oil	Palm oil	Rapeseed	Rye	Soy	Sunflower	Triticale	Wheat	Sugar cane	Sugar beet	Total
Belgium	1,006		347		1,316	6,435		1,128	299		163	52	143	**10,888**
Bulgaria	0.4		89			130		4						**224**
Denmark	69		583			67					12		718	**1,450**
Estonia	290					56		13						**359**
Finland			24											**24**
France	578	72	1,507		200	5,879		1,897	405	10	328	93	83	**11,051**
Greece			1,477								165	311	260	**2,214**
Ireland	96		182											**278**
Italy			145			370								**515**
Croatia	89		1		84	717		181	89	0	13			**1,173**
Latvia								5						**5**
Lithuania			67			2					26			**95**
Luxembourg	233		178		240	399		64	64		28	9	26	**1,241**
Netherlands	8,589	137	2,751		0.1	90		165	0.1	1	1,153	292	717	**13,895**
Norway	18					56								**74**
Austria	1,073	27	867		454	11,123	29	1,975	303	39	42		257	**16,190**
Poland	29	41	179		144	13,100	63	449		33	31		77	**14,146**
Romania			170		31	508		5			29			**743**
Sweden			246		50						16	58	573	**944**
Switzerland	0.3	11	59								6		0.2	**77**
Slovakia	3		2			112								**117**
Slovenia	1,904		68	3	27	939		75	46	45	200		24	**3,332**
Spain	2,820		64		156	372		2,424	7	0.03			14	**5,858**
Czech Republic	31	16	26		15	255	4	16	4	20	39		0.4	**426**
Hungary	505				5	203		1	3		10		3	**731**
United Kingdom	8,630		795		53	152			32	3	230	270	282	**10,446**
Cyprus	59													**59**

* Differences in totals are due to rounding

Total	26,021	304	9,828	3	2,773	40,967	96	8,403	1,252	151	2,491	1,086	3,179	96,554

8.2 Emission savings for retirements to country accounts

Almost all of the quantities derecognised to country accounts had lower greenhouse gas savings than the quantities counted towards the German greenhouse gas reduction quota.

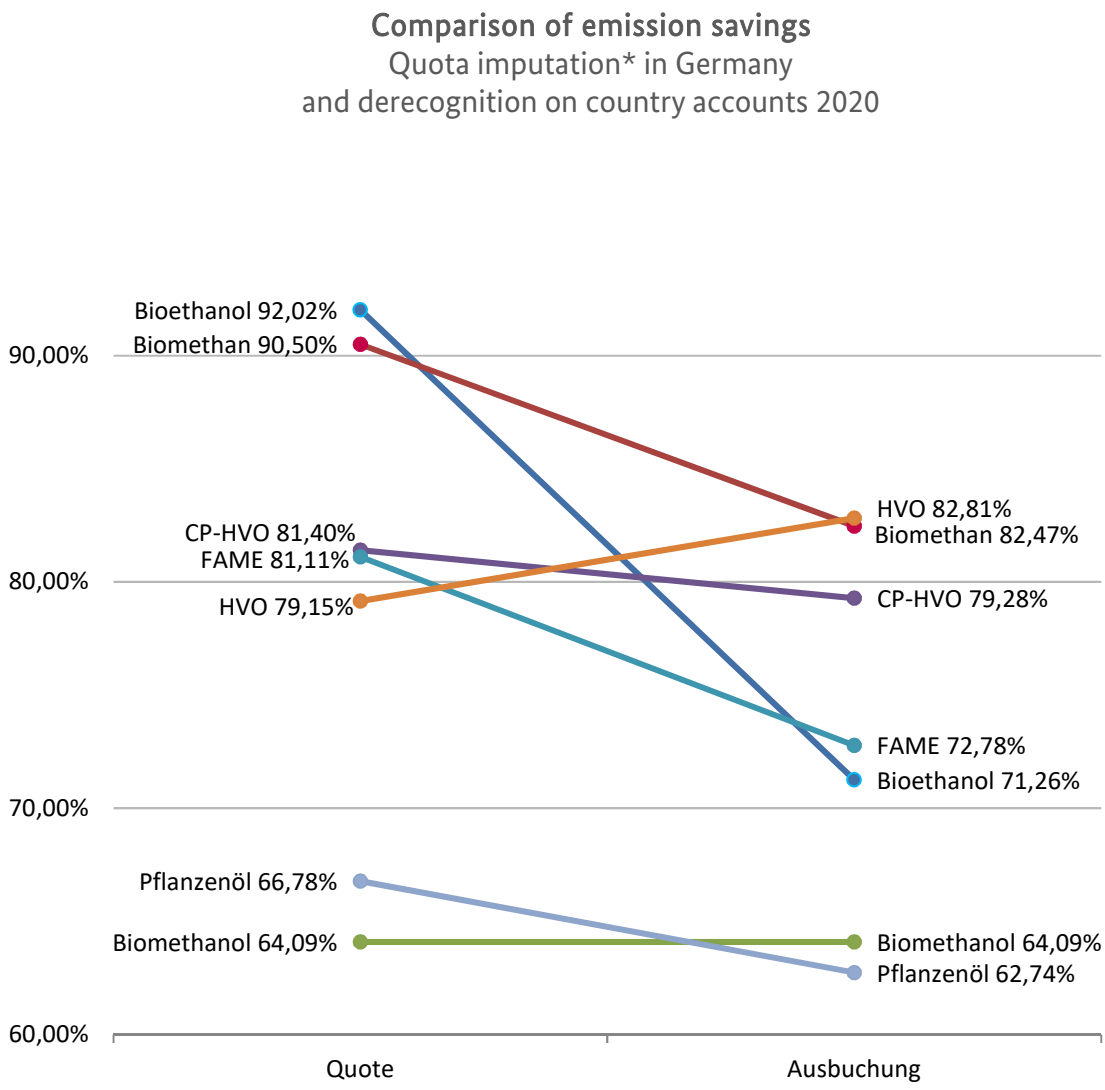

Figure 51: Comparison of emission savings

8.3 Retirements to other accounts

As well as the method of retirement to country accounts, the Nabisy electronic database also provides other retirement options for documented quantities that will not be (or have not been) used for the production of energy in Germany. The following figure shows recent changes for three of these other accounts.

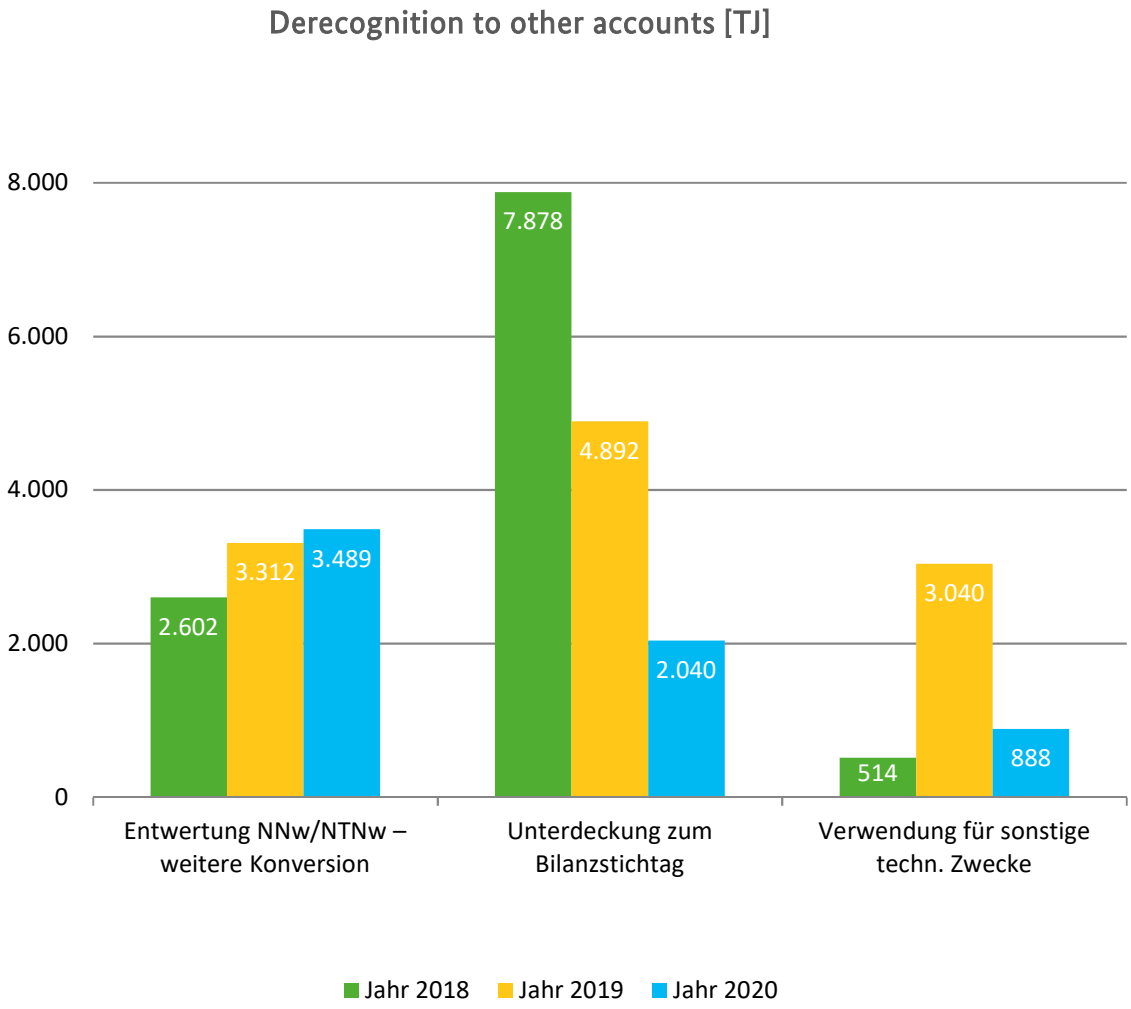

Figure 52 Retirements to other accounts

9. Outlook

Verifiers who placed fuels on the market in Germany in the reporting year 2020 had to save 6% of their life cycle greenhouse gas emissions compared with their individual reference value. The reference value increases to 7% from the quota year 2022 and will increase to 25% by 2030.

In order to meet the obligation to reduce greenhouse gas emissions, the blending of biofuels will continue to play an important role in addition to a number of other options.

Proof of compliance with the minimum proportion of advanced fuels can also be provided to the biofuel quota office via corresponding sustainability certificates from the state database Nabisy

The implementation of the revised Renewable Energy Directive (RL (EU) 2018/2001, RED II) into national law is carried out by adapting the Biomass Energy Sustainability Ordinance (BioSt-NachV) and the Biofuels Sustainability Ordinance (Biokraft-NachV).

Major innovations are the extension of the sustainability criteria to solid and gaseous biomass fuels for conversion into electricity, requirements for forestry biomass, and adjustments to the GHG calculation. This is accompanied by the obligation to certify a large number of new companies along the value chain.
On the other hand, the recognition of certification schemes by the BLE is no longer envisaged. The specification of the sustainability criteria is the responsibility of the voluntary certification schemes recognised by the EU Commission.

The BLE continues to be responsible for the recognition and monitoring of certification bodies under the sustainability ordinances. A significant increase in applications for recognition is expected here.

In addition, effects of the Corona pandemic on living and working areas are still to be expected
Since February 2020, there have been significant restrictions (e.g. entry bans, contact restrictions). These have had a considerable impact on the activities of the certification bodies and the surveillance measures of the BLE. It was no longer possible to carry out the event in the usual manner.
The control procedure adapted to this situation made it possible to evaluate the activity of certification bodies without carrying out on-site inspections. Controls were carried out mainly in the form of remote appraisals.
A procedure that has proven itself and also provides an adequate framework for controls in future crisis situations.

The implementation of the new legal basis and the resulting transitional regulations – also against the backdrop of the ongoing pandemic – will continue to pose major challenges for all involved in the coming year.

10. Background data

*Table 15: Biofuels in TJ – source materials**

Fuel type/ quota year / Source material	Bioethanol Figure 24, p. 50			Bio-LNG	Biomethane Figure 29, p. 54			Bio-metha-nol	BtL-FTD	FAME Figure 26, p. 52			HVO Figure 28, p. 54			CP-HVO Figure 28, p. 54		Vegetable oil Figure 31, p. 55		
	2018	2019	2020	2020	2018	2019	2020	2020	2018	2018	2019	2020	2018	2019	2020	2019	2020	2018	2019	2020
Wastes/residues	419	698	1,661	501	1,329	736	1,885	10	3	41,144	33,139	32,975	77	24	9,228		2			
Ethiopian mustard										52	98	73								
Cereal whole plant	1,326	424	1,034																	
Fodder beet							10													
Grass/arable grass							2													
Barley							10													
Maize	15,484	19,623	17,367																	
Palm oil										17,790	22,523	22,216	1,106	1,812	34,665	65	1,400	5	19	28
Rapeseed										25,105	29,600	28,274					10	19	18	26
Rye	1,439	1,148	2,111																	
Silage maize/whole plant					80	491	643			675										
Soy										1,898	1,215	1,994								
Sunflower											3,073	3,897					694			
Triticale	1,956	1,493	1,301																	
Wheat	8,622	5,394	3,562																	
Sugar cane	498	1,426	2,062																	
Sugar beet	1,042	603	429				27													
Total Figure 22, p. 48	**30,785**	**30,808**	**29,528**	**501**	**1,408**	**1,227**	**2,577**	**10**	**3**	**86,663**	**89,646**	**89,429**	**1,184**	**1,836**	**43,893**	**65**	**2,106**	**24**	**37**	**54**

* Differences in totals are due to rounding

Table 16: Biofuels in kt – source materials , [*]

Fuel type/ quota year / Source material	Bioethanol			Bio-LNG	Biomethane			Bio-methanol	BtL-FTD	FAME			HVO			CP-HVO		Vegetable oil		
	2018	2019	2020	2020	2018	2019	2020	2020	2018	2018	2019	2020	2018	2019	2020	2019	2020	2018	2019	2020
Wastes/residues	16	26	63	0.02	27	15	38	0.5	0.1	1,101	887	882	2	1	212		0.6			
Ethiopian mustard										1	3	2								
Cereal whole plant	50	16	39																	
Fodder beet							0.2													
Grass/arable grass							0.04													
Barley							0.2													
Maize	585	741	656																	
Palm oil										476	603	594	25	42	795	1	32	0.1	1	0.8
Rapeseed										672	792	757					0.2	1	0.5	0.7
Rye	54	43	80																	
Silage maize/whole plant					2	10	13													
Soy										18	32	53								
Sunflower										51	82	104					16			
Triticale	74	56	49																	
Wheat	326	204	135																	
Sugar cane	19	54	78																	
Sugar beet	39	23	16				1													
Total	**1,163**	**1,164**	**1,116**	**0.02**	**29**	**25**	**52**	**0.5**	**0.1**	**2,319**	**2,399**	**2,393**	**27**	**42**	**1,007**	**1**	**48**	**1**	**1**	**1**

[*] Differences in totals are due to rounding

*Table17: Biofuels in TJ - source materials and their origin**

Region/ Quota year / Source material	Africa Figure 14, p. 41			Asia Figure 15, p. 42			Australia Figure 16, p. 43			Europe Figure 17, p. 44			Central America Figure 19, p. 46			North America Figure 20, p. 46			South America Figure 21, p. 47		
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
Wastes/residues	391	174	648	12,180	13,122	17,842	84	18	14	27,096	19,924	25,312	14	11	15	2,682	969	1,681	523	379	749
Ethiopian mustard																	9	27	52	89	46
Barley										1,326	424	1,034									
Cereal whole plant												10									
Fodder beet												2									
Grass/arable grass												10									
Maize	9									15,475	19,607	17,364					15	0			2
Palm oil				17,867	21,409	52,975							1,029	2,970	4,842				5	39	492
Rapeseed				17	71	110	3,104	5,014	4,214	22,002	24,533	22,160						1,827			
Rye										1,439	1,148	2,111									
Silage maize/whole plant										80	491	643									
Soy							10			19	27	70			2				646	1,188	1,922
Sunflower									2	1,898	3,073	4,589									
Triticale										1,956	1,493	1,301									
Wheat										8,622	5,394	3,562									
Sugar cane													247	350	688				251	1,076	1,375
Sugar beet										1,042	603	456									
Total Figure 10, p. 37	**400**	**174**	**648**	**30,065**	**34,603**	**70,927**	**3,198**	**5,031**	**4,229**	**80,954**	**76,716**	**78,626**	**1,290**	**3,331**	**5,547**	**2,682**	**993**	**3,535**	**1,477**	**2,771**	**4,586**

* Differences in totals are due to rounding

*Table18: Biofuels in kt – source materials and their origin**

Region/ Quota year / Source material	Africa			Asia			Australia			Europe			Central America			North America			South America		
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
Wastes/residues	10	5	17	326	351	451	2	0	0	721	536	665	0		0	72	26	41	14	10	20
Ethiopian mustard																	0	1	1	2	1
Barley										50	16	39									
Cereal whole plant												0.2									
Fodder beet												0.04									
Grass/arable grass												0.2									
Maize	0.3									585	741	656		79			1	0.01			0.1
Palm oil				474	566	1,285							28		125				0.1	1	13
Rapeseed				1	2	3	83	134	113	589	656	593						49			
Rye										54	43	80									
Silage maize/whole plant										2	10	13									
Soy							0.3			1	1	2			0.04				17	32	51
Sunflower									0.0	51	82	120									
Triticale										74	56	49									
Wheat										326	204	135		13							
Sugar cane													9		26				9	41	52
Sugar beet										39	23	17		93							
Total	**11**	**5**	**17**	**800**	**919**	**1,739**	**86**	**135**	**113**	**2,490**	**2,368**	**2,368**	**37**	**185**	**152**	**72**	**27**	**91**	**42**	**86**	**137**

* Differences in totals are due to rounding

Table 19: Biofuels per source material[*]

Source material	Year 2018 [TJ]	Year 2019 [TJ]	Year 2020 [TJ]	Year 2018 [kt]	Year 2019 [kt]	Year 2020 [kt]
Wastes/residues	42,971	34,598	46,262	1,145	928	1,195
Ethiopian mustard	52	98	73	1	3	2
Barley	1,326	424	1,034	50	16	39
Cereal whole plant			10			0.2
Fodder beet			2			0.04
Grass/arable grass			10			0.2
Maize	15,484	19,623	17,367	585	741	656
Palm oil	18,901	24,418	58,308	502	646	1,423
Rapeseed	25,124	29,618	28,310	672	793	757
Rye	1,439	1,148	2,111	54	43	80
Silage maize/whole plant	80	491	643	2	10	13
Soy	675	1,215	1,994	18	32	53
Sunflower	1,898	3,073	4,591	51	82	120
Triticale	1,956	1,493	1,301	74	56	49
Wheat	8,622	5,394	3,562	326	204	135
Sugar cane	498	1,426	2,062	19	54	78
Sugar beet	1,042	603	456	39	23	17
Total	**120,066**	**123,619**	**168,098**	**3,538**	**3,632**	**4,617**

[*] Differences in totals are due to rounding

*Table 20: Biofuels, the source materials of which originate in Germany [TJ]**

Fuel type/ quota year / Source material	Bioethanol Figure 25, p. 51			Biomethane			CP-HVO	FAME Figure 27, p. 53			Vegetable oil			Total Figure 18, p. 45		
	2018	2019	2020	2018	2019	2020	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
Wastes/residues	124	220	303	1,316	736	1,858		8,186	6,275	7,759				9,626	7,231	9,920
Barley	1,234	367	884											**1,234**	**367**	884
Cereal whole plant						10										10
Fodder beet						2										2
Grass/arable grass																
Maize	247	264	109											247	264	109
Rapeseed							4	12,187	13,812	11,396	19	18	26	12,206	13,830	11,426
Rye	432	470	537											432	470	537
Silage maize/whole plant				80	491	643								80	491	643
Sunflower								4						4		
Triticale	459	271	145											459	271	145
Wheat	1,519	392	117											1,519	392	117
Sugar beet	585	468	392			27								585	468	419
Total	**4,601**	**2,452**	**2,487**	**1,396**	**1,227**	**2,540**	**4**	**20,377**	**20,087**	**19,155**	**19**	**18**	**26**	**26,392**	**23,784**	**24,212**

* Differences in totals are due to rounding

*Table 21: Biofuels from wastes and residues [TJ]**

Biofuels from wastes and residues -advanced in accordance with 38th BImSchV Annex 1 No.	2018	2019	2020
2 (Biomass proportion of mixed municipal waste)			0.1
3 (Biowaste from private households)	191	106	94
4 (proportion of biomass in industrial waste)	53	476	1,112
5 (straw)			129
6 (animal manure and sewage sludge)			184
7 (palm oil mill effluent and empty palm fruit bunches)	51	1	3,290
9 (crude glycerine)	0.3	36	47
11 (grape pomace and wine sediment)	1	0.3	0.1
15 (Biomass proportions of waste and residues from forestry)			1,433
16 (other non-food materials containing cellulose)	53	129	
Subtotal for advanced biofuels	**350**	**748**	**6,288**

Biofuels from wastes and residues -non-advanced in accordance with 38th BImSchV	2018	2019	2020
Used cooking oils	35,192	27,181	29,286
Other	7,429	6,668	10,688
Subtotal of non-advanced biofuels	**42,621**	**33,849**	**39,974**

Total waste and residues	42,971	34,598	46,262

* Differences in totals are due to rounding

*Table 22: Emissions and emission savings of biofuels**

Biofuel type	Emissions 2018 [t CO_2eq/TJ]	Emissions 2019 [t CO_2eq/TJ]	Emissions 2020 [t CO_2eq/TJ]	Savings 2018 [%]	Savings 2019 [%]	Savings 2020 [%]
	Figure 35, p. 60 and Figure 33, p. 59			Figure 36, p. 61 and Figure 34, p. 59		
Bioethanol	12.69	11.04	7.44	86.40	88.16	92.02
Bio-LNG			13.70			85.44
Biomethane	9.19	10.12	8.94	90.23	89.24	90.50
Biomethanol			33.50			64.09
BtL-FTD	8.30			91.27		
FAME	16.26	18.37	17.97	82.90	80.68	81.11
HVO	21.93	19.45	19.82	76.94	79.55	79.15
CP-HVO		20.43	17.69		78.52	81.40
Vegetable oil	30.18	25.90	31.60	68.26	72.77	66.78
Weighted average of all biofuels	**15.32**	**16.48**	**16.46**	**83.81**	**82.59**	**82.63**

* Differences in totals are due to rounding

*Table 23: Biofuel types [TJ]**

Figure 41, p. 74

Type of bioliquid	2018	2019	2020
From pulp industry	25,700	27,597	24,955
Bionaphtha			1
FAME	1,256	1,069	1,276
HVO			26
Vegetable oil	3,432	4,259	4,415
Total Figure 40, p. 74	**30,388**	**32,925**	**30,673**

*Table 24: Bioliquid in vegetable oil – source materials [TJ**

Figure 42, p. 75

Source material	2018	2019	2020
Palm oil	2,448	2,971	3,237
Rapeseed	824	1,142	1,169
Shea	159	146	9
Total	**3,432**	**4,259**	**4,415**

*Table 25: Bioliquid vegetable oils from palm oil – origin [TJ]**

Figure 43, p. 75

Origin	2018	2019	2020
Guatemala		15	165
Honduras	249	782	254
Indonesia	267	804	1,198
Colombia	419	192	99
Malaysia	1,512	1,178	1,521
Total	**2,448**	**2,971**	**3,237**

* Differences in totals are due to rounding

*Table 26: Emissions and emission savings of bioliquids**

Type of bioliquid	Emissions 2018 [t CO_2eq/TJ]	Emissions 2019 [t CO_2eq/TJ]	Savings 2020 [%]	Savings 2018 [%]	Savings 2019 [%]	Savings 2020 [%]
	Figure 47, p. 78 and Figure 45, p. 77			Figure 48, p. 78 and Figure 46, p. 77		
From pulp industry	1.86	1.72	2.43	97.95	98.11	97.33
Bionaphtha			9.57			89.49
FAME	34.65	34.80	33.81	61.93	61.76	62.85
HVO			8.48			90.68
Vegetable oil	31.99	29.83	31.07	64.85	67.22	65.86
Weighted average of all bioliquids	**6.62**	**6.43**	**7.86**	**92.73**	**92.94**	**91.36**

* Differences in totals are due to rounding

11. Conversion tables, abbreviations and definitions

Table 27: Conversion of energy units

Energy unit	Megajoule [MJ]	Kilowatt hour [kWh]	Terajoule [TJ]	Petajoule [PJ]
1 Megajoule [MJ]	1	0.28	0.000001	0.000000001
1 kilowatt hour [kWh]	3.60	1	0.0000036	0.0000000036
1 terajoule [TJ]	1,000,000	280,000	1	0.001
1 petajoule [PJ]	1,000,000,000	280,000,000	1,000	1

Table 28: Density/energy contents

Biofuel type/ type of bioliquid	Tonnes per cubic metre [t/m³]	Megajoules per kilo-gram [MJ/kg]
Bioliquid from pulp industry	1.32	7
Bioethanol	0.79	27
Bio-LNG	0.42	50
Biomethane	0.00072	50
Biomethanol	0.80	20
CP-HVO	0.78	44
FAME	0.883	37
HVO	0.78	44
Vegetable oil	0.92	37
UCO	0.92	37

Table 29: Abbreviations

Abbreviations	Meaning
36th BImSchV	Ordinance Implementing the Bundes-Immissionsschutzgesetz (Federal Immission Control Act) (Legislation used to implement the biofuel quota regulations in Germany)
38th BImSchV	Ordinance Implementing the Bundes-Immissionsschutzgesetz (Federal Immission Control Act) Legislation setting out additional provisions for greenhouse gas mitigation in relation to fuels
CHP	Combined heat and power (co-generation) plant
Biokraft-NachV	Biofuels Sustainability Ordinance (Biokraftstoff-Nachhaltigkeitsverordnung)
BioSt-NachV	Biomass Energy Sustainability Ordinance (Biomassestrom-Nachhaltigkeitsverordnung)
BtL-FTD	Biomass to liquid Fischer-Tropsch diesel
CP-HVO	Co-processing hydrotreated vegetable oil (hydrogenated vegetable oil)
DE scheme	Certification scheme recognised by the BLE according to Section 33, numbers 1 and 2 BioSt-NachV/Biokraft-NachV
EEG	Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz)
EU scheme	A voluntary scheme according to Section 32, number 3 BioSt-NachV/Biokraft-NachV
FAME	Fatty acid methyl ester (biodiesel)
HVO	Hydrotreated Vegetable Oil (hydrogenated vegetable oil)
LNG	Liquefied natural gas
Directive 2009/28/EC (Renewable Energy Directive)	DIRECTIVE 2009/28/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC
GHG	Greenhouse gas
UCO	Used cooking oil

Table 30: Explanation of terms

Term	Meaning
Bioliquid from pulp industry	Bioliquids from the pulp industry are energy- and lignin-rich by-products generated by the manufacture of cellulose in the paper industry.
Bioethanol	Bioethanol (ethyl alcohol) is obtained from renewable raw materials by distillation following alcoholic fermentation or by comparable biochemical methods.
Bio-LNG	Liquefied biomethane
Biomethane	Biogas is produced as a methane-rich gas from the fermentation of biomass.
Biomethanol	Like BtL fuel, methanol can be produced from a wide range of biomass types by means of synthesis gas. In addition, methanol can also be produced from the conversion of crude glycerine.
Blending	As used in this document, the addition of biofuels to fossil fuels (e.g. a maximum of 7% for diesel).
CP-HVO	HVO produced by common hydrotreatment with mineral-based oils as part of a refinery process
FAME	Fatty acid methyl ester (FAME), also known as biodiesel, is produced by the transesterification of fats and oils with methanol.
Fischer-Tropsch diesel ("BtL fuel")	A synthetic hydrocarbon (mixture) manufactured from biomass
HVO	Hydrotreated vegetable oil is vegetable oil converted to hydrocarbon chains in a hydrogenation plant by means of a chemical reaction using hydrogen.
Vegetable oil	Vegetable oil fuel can be obtained from rapeseed and other oil plants; unlike biodiesel, this fuel requires no chemical conversion.
UCO	UCO stands for used cooking oil. These oils can be used as a pure fuel or as a component of FAME.

Table31: Advanced biofuels

38th BImSchV	Directive 2009/28/EC
Annex 1 to Section 2, paragraph 6, No. 1 38th BImSchV Raw materials for the production of biofuels according to Section 2, paragraph 6, number 1	**APPENDIX IX, Part A Feedstocks and fuels, the contribution of which towards the target referred to in Article 3, paragraph 4, sub-paragraph 1 shall be considered to be twice their energy content:**
1. Algae cultivated on land in ponds or photobioreactors.	a) Algae if cultivated on land in ponds or photobioreactors.
2. Biomass proportion of mixed municipal waste, but not separated household waste subject to recycling targets in accordance with Article 11, paragraph 2, letter a of Directive 2008/98/EC.	b) Biomass proportion of mixed municipal waste, but not separated household waste subject to recycling targets in accordance with Article 11, paragraph 2, letter a of Directive 2008/98/EC.
3. Bio-waste within the meaning of Article 3, paragraph 4 of Directive 2008/98/EC from private households subject to separate collection within the meaning of Article 3, paragraph 11 of Directive 2008/98/EG.	c) Bio-waste within the meaning of Article 3, paragraph 4 of Directive 2008/98/EC from private households subject to separate collection within the meaning of Article 3, paragraph 11 of that Directive.
4. Biomass proportion of industrial waste not fit for use in the food or feed chain, including material from retail and wholesale as well as the agro-food, fish and aquaculture industry; but not the feedstocks listed in part B of Appendix IX of Directive 2009/28/EC.	d) Biomass proportion of industrial waste not fit for use in the food or feed chain, including material from retail and wholesale and the agro-food and fish and aquaculture industry, and excluding feedstocks listed in part B of this Appendix.
5. Straw.	e) Straw.
6. Animal manure and sewage sludge.	f) Animal manure and sewage sludge.
7. Palm oil mill effluent and empty palm fruit bunches.	g) Palm oil mill effluent and empty palm fruit bunches.
8. Tall oil pitch.	h) Tall oil pitch.
9. Crude glycerine.	i) Crude glycerine.
10. Bagasse (sugarcane pulp),	j) Bagasse;
11. Grape pomace and wine sediment.	k) Grape pomace and wine sediment.
12. Nut shells.	l) Nut shells.
13. Husks.	m) Husks.
14. Cobs cleaned of kernels of corn.	n) Cobs cleaned of kernels of corn.
15. Biomass proportions of wastes and residues from forestry and forest-based industries (i.e. bark, pre-commercial thinnings, saw dust, cutter shavings, black liquor, brown liquor, fibre sludge, lignin, and tall oil).	o) Biomass proportions of wastes and residues from forestry and forest-based industries (i.e. bark, branches, pre-commercial thinnings, leaves, needles, tree tops, saw dust, cutter shavings, black liquor, brown liquor, fibre sludge, lignin, and tall oil).
16. Other non-food cellulose-containing material.	p) Other non-food cellulose-containing material within the meaning of Article 2, paragraph 2, letter s.
Annex 1, continued	**APPENDIX IX, Part A, continued**

17. Other lignocellulose-containing material except saw logs and veneer logs.	q) Other lignocellulose-containing material within the meaning of Article 2, paragraph 2, letter r except saw logs and veneer logs.
	r) Renewable liquid and gaseous transport fuels of non-biological origin.
	s) Carbon capture and utilisation for transport purposes, if the energy source is renewable in accordance with Article 2, paragraph 2, letter a.
	t) Bacteria, if the energy source is renewable in accordance with Article 2, paragraph 2, letter a.