

**Published by**

Federal Office for Agriculture and Food  
Deichmanns Aue 29  
53179 Bonn, Germany

Telephone: +49 (0)228 99 6845 – 2550

Telefax: +49 (0)228 6845 – 3040

Email: [nachhaltigkeit@ble.de](mailto:nachhaltigkeit@ble.de)

Internet: <http://www.ble.de/Biomasse>

**Editor**

Federal Office for Agriculture and Food  
Unit 221 - General Matters of Group 22, Recognition and Accreditation  
Procedures, Sustainable Biomass

Background data of evaluation and progress report 2016 is protected by copyright. No part of this report may be translated, processed, duplicated or disseminated in any form without the explicit written consent of the Federal Office for Agriculture and Food.

**Layout**

Federal Office for Agriculture and Food

**Editorial status:**

**October 2017**

**Status of the data base excerpt:**

**May 2017**

## List of tables

Table 16: Biofuels in TJ - source materials .....	3
Table 17: Biofuels in kt - source materials.....	4
Table 18: Biofuels in TJ - source materials and their origin .....	5
Table 19: Biofuels in kt - source materials and their origin .....	6
Table 20: Sum total of biofuels according to source material .....	7
Table 21: Emissions and emission savings of biofuels .....	8
Table 22: Emissions and emission savings of bioliquids .....	8
Table 23: Bioliquid types [TJ].....	9
Table 24: Bioliquid vegetable oil in TJ - source materials .....	9
Table 25: Vegetable oils from palm oil according to origin (bioliquids) [TJ] .....	9
Table 26: Biofuels the source materials of which originate in Germany [TJ] .....	10

## 10. Background data

Table 1: Biofuels in TJ - source materials<sup>1</sup>

Fuel type/ quota year	Bioethanol			Biomethane			Bio- methanol <sup>2</sup>	FAME			HVO			Vegetable oil		
	2014	2015	2016	2014	2015	2016	2015	2014	2015	2016	2014	2015	2016	2014	2015	2016
Waste/residues	791	156	118	1,596	1,251	1,373	0.04	19,311	20,549	32,422		227	269			
Barley	1,082	1,353	1,435													
Maize	9,576	10,313	9,983	33												
Palm oil								3,276	4,776	9,816	14,646	7,132	6,928			
Rapeseed								52,339	48,251	32,154	7			151	343	246
Rye	3,231	2,292	2,028													
Soya								824	164	46						
Sunflower									139	79						
Triticale	1,094	2,717	2,341													
Wheat	9,012	9,395	9,647													
Sugar cane	627	650	2,466													
Sugar beet	6,987	4,177	2,176													
<b>Total</b>	<b>32,400</b>	<b>31,053</b>	<b>30,195</b>	<b>1,630</b>	<b>1,251</b>	<b>1,373</b>	<b>0.04</b>	<b>75,750</b>	<b>73,878</b>	<b>74,517</b>	<b>14,652</b>	<b>7,359</b>	<b>7,197</b>	<b>151</b>	<b>343</b>	<b>246</b>

<sup>1</sup> Discrepancies in the sum totals are due to rounding

<sup>2</sup> no data available for 2014 and 2016

Table 2: Biofuels in kt - source materials <sup>1,2</sup>

Fuel type/ quota year	Bioethanol			Biomethane			Bio- methanol <sup>3</sup>	FAME			HVO			Vegetable oil		
	2014	2015	2016	2014	2015	2016	2015	2014	2015	2016	2014	2015	2016	2014	2015	2016
Waste/residues	30	6	4	32	25	27	0.002	517	550	868		5	6			
Barley	41	51	54													
Maize	362	390	377	1												
Palm oil								88	128	263	336	164	159			
Rapeseed								1,400	1,291	860	0.2			4	9	7
Rye	122	87	77													
Soya								22	4	1						
Sunflower									4	2						
Triticale	41	103	88													
Wheat	341	355	365													
Sugar cane	24	25	93													
Sugar beet	264	158	82													
<b>Total</b>	<b>1,224</b>	<b>1,173</b>	<b>1,141</b>	<b>33</b>	<b>25</b>	<b>27</b>	<b>0.002</b>	<b>2,027</b>	<b>1,977</b>	<b>1,994</b>	<b>336</b>	<b>169</b>	<b>165</b>	<b>4</b>	<b>9</b>	<b>7</b>

<sup>1</sup> Discrepancies in the sum totals are due to rounding

<sup>2</sup> The conversion into tonnage was made on the basis of the quantities indicated in the certificates

<sup>3</sup> no data available for 2014 and 2016

Table 3: Biofuels in TJ - source materials and their origin<sup>1</sup>

Region/ Quota Year	Africa			Asia			Australia			Europe			Central America			North America			South America			
	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	
Source material																						
Waste/residues	75	191	252	2,403	2,755	6,641	16	36	47	17,357	17,711	23,888	3		12	1,678	1,211	2,876	167	279	467	
Barley										1,082	1,353	1,435										
Maize										8,464	10,313	9,983				1,146						
Palm oil				17,916	11,907	16,435		1							309				6			
Rapeseed				255	47		1,865	448	341	50,240	48,097	32,059						0.1	136	2		
Rye										3,231	2,292	2,028										
Soya							48			24						21			730	164	46	
Sunflower											139	79										
Triticale										1,094	2,717	2,341										
Wheat										9,010	9,240	9,647	2							155		
Sugar cane		74											229	253	464				398	323	2,002	
Sugar beet										6,987	4,177	2,176										
<b>Total</b>	<b>75</b>	<b>265</b>	<b>252</b>	<b>20,574</b>	<b>14,709</b>	<b>23,075</b>	<b>1,929</b>	<b>485</b>	<b>388</b>	<b>97,489</b>	<b>96,038</b>	<b>83,636</b>	<b>234</b>	<b>253</b>	<b>785</b>	<b>2,845</b>	<b>1,211</b>	<b>2,876</b>	<b>1,437</b>	<b>924</b>	<b>2,515</b>	

<sup>1</sup> Discrepancies in the sum totals are due to rounding

Table 4: Biofuels in kt - source materials and their origin<sup>12</sup>

Region/ Quota Year	Africa			Asia			Australia			Europe			Central America			North America			South America		
	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Waste/residues	2	5	7	64	73	177	0.4	1	1	463	466	631	0.1		0.3	45	32	77	4	8	13
Barley										41	51	54									
Maize										319	390	377				43					
Palm oil				423	291	413		0.03							8				0.1		
Rapeseed				7	1		50	12	9	1,344	1,287	858						0.003	4	0.1	
Rye										122	87	77									
Soya							1			1						1			20	4	1
Sunflower										4	2										
Triticale										41	103	88									
Wheat										340	349	365	0.1							6	
Sugar cane		3											9	10	18				15	12	76
Sugar beet										264	158	82									
<b>Total</b>	<b>2</b>	<b>8</b>	<b>7</b>	<b>494</b>	<b>366</b>	<b>590</b>	<b>51</b>	<b>13</b>	<b>10</b>	<b>2,935</b>	<b>2,894</b>	<b>2,534</b>	<b>9</b>	<b>10</b>	<b>26</b>	<b>89</b>	<b>32</b>	<b>77</b>	<b>43</b>	<b>30</b>	<b>90</b>

<sup>1</sup> Discrepancies in the sum totals are due to rounding

<sup>2</sup> The conversion into tonnage was made on the basis of the quantities indicated in the certificates

Table 5: Sum total of biofuels according to source material<sup>1</sup>

Source material	in 2014 [TJ]	in 2015 [TJ]	in 2016 [TJ]	in 2014 [kt]	in 2015 [kt]	in 2016 [kt]
Waste/residues	21,698	22,183	34,183	579	586	906
Barley	1,082	1,353	1,435	41	51	54
Maize	9,610	10,313	9,983	363	390	377
Palm oil	17,922	11,908	16,744	424	291	422
Rapeseed	52,496	48,594	32,400	1,405	1,300	867
Rye	3,231	2,292	2,028	122	87	77
Soya	824	164	46	22	4	1
Sunflower		139	79		4	2
Triticale	1,094	2,717	2,341	41	103	88
Wheat	9,012	9,395	9,647	341	355	365
Sugar cane	627	650	2,466	24	25	93
Sugar beet	6,987	4,177	2,176	264	158	82
<b>Total</b>	<b>124,582</b>	<b>113,884</b>	<b>113,528</b>	<b>3,624</b>	<b>3,353</b>	<b>3,334</b>

<sup>1</sup> Discrepancies in the sum totals are due to rounding

Table 6: Emissions and emission savings of biofuels<sup>1,2</sup>

Biofuel type	Emissions in 2014	Emissions in 2015	Emissions in 2016	Savings 2014	Savings 2015	Savings 2016
	[t CO <sub>2eq</sub> /TJ]	[t CO <sub>2eq</sub> /TJ]	[t CO <sub>2eq</sub> /TJ]	[%]	[%]	[%]
<b>Bioethanol</b>	38.06	24.53	20.58	54.58	70.73	75.44
<b>Biomethane</b>	20.66	13.17	8.03	75.34	84.28	90.42
<b>Biomethanol</b>		22.60			73.03	
<b>FAME</b>	41.36	24.62	17.84	50.65	70.62	78.71
<b>HVO</b>	45.87	32.03	31.66	45.26	61.78	62.22
<b>Vegetable oil</b>	36.15	35.70	35.34	56.86	57.40	57.83
<b>weighted average of all biofuels</b>	<b>40.75</b>	<b>24.98</b>	<b>19.37</b>	<b>51.36</b>	<b>70.19</b>	<b>79.89</b>

Table 7: Emissions and emission savings of bioliquids<sup>1,3</sup>

Bioliquid type	Emissions in 2014	Emissions in 2015	Emissions in 2016	Savings 2014	Savings 2015	Savings 2016
	[t CO <sub>2eq</sub> /TJ]	[t CO <sub>2eq</sub> /TJ]	[t CO <sub>2eq</sub> /TJ]	[%]	[%]	[%]
<b>From the pulp industry</b>	1.87	1.58	1.73	97.94	98.26	98.10
<b>FAME</b>	35.44	46.47	45.25	61.06	48.93	50.27
<b>HVO</b>			44.50			51.10
<b>Vegetable oil</b>	37.19	36.90	34.26	59.13	59.45	62.35
<b>UCO</b>	19.31	14.00		78.78	84.62	
<b>w. average of all bioliquids</b>	<b>5.55</b>	<b>5.88</b>	<b>5.65</b>	<b>93.90</b>	<b>93.54</b>	<b>93.79</b>

<sup>1</sup> Discrepancies in the sum totals are due to rounding

<sup>2</sup> Savings compared to the fossil fuel reference value of 83.8 g of CO<sub>2eq</sub>/MJ

<sup>3</sup> Savings compared to the reference value for fuels for electricity generation of 91 g of CO<sub>2eq</sub>/MJ



*Table 8: Bioliqid types [TJ]<sup>1</sup>*

<b>Bioliqid type</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>From the pulp industry</b>	27,568	28,981	28,163
<b>FAME</b>	76	36	35
<b>HVO</b>			1
<b>Vegetable oil</b>	3,125	3,967	3,812
<b>UCO</b>	22	8	
<b>Overall result</b>	<b>30,792</b>	<b>32,994</b>	<b>32,010</b>

*Table 9: Bioliqid vegetable oil in TJ - source materials<sup>1</sup>*

<b>Source material</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Palm oil</b>	2,329	3,069	3,231
<b>Rapeseed</b>	797	898	580
<b>Soya</b>	0.06		
<b>Total</b>	<b>3,125</b>	<b>3,967</b>	<b>3,812</b>

*Table 10: Vegetable oils from palm oil according to origin (bioliquids) [TJ]<sup>1</sup>*

<b>Origin</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Malaysia</b>	1,193	2,202	2,585
<b>Indonesia</b>	1,136	867	538
<b>Honduras</b>			108
<b>Overall result</b>	<b>2,329</b>	<b>3,069</b>	<b>3,231</b>

---

<sup>1</sup> Discrepancies in the sum totals are due to rounding

Table 11: Biofuels the source materials of which originate in Germany [TJ]<sup>1</sup>

source material \ Fuel type/ quota year	Bioethanol		Biomethane		FAME		Vegetable oil		Total	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Waste/residues	27	56	1,250	1,373	5,647	6,862			6,924	8,291
Barley	1,268	1,335							1,268	1,335
Maize	158	134							158	134
Rapeseed					32,222	20,919	343	246	32,565	21,164
Rye	1,357	1,137							1,357	1,137
Sunflower					39				39	
Triticale	377	60							377	60
Wheat	1,327	1,641							1,327	1,641
Sugar beet	3,698	1,787							3,698	1,787
<b>Total</b>	<b>8,211</b>	<b>6,150</b>	<b>1,250</b>	<b>1,373</b>	<b>37,908</b>	<b>27,781</b>	<b>343</b>	<b>246</b>	<b>47,712</b>	<b>35,549</b>

<sup>1</sup> Discrepancies in the sum totals are due to rounding