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Background data (Chapter 10)

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Table 15: Biofuels in TJ - source materials[1]

Fuel type/ quota year / Source material	Bioethanol			Biomethane			Bio-methanol[2]	FAME			HVO			Vegetable oil		
	2015	2016	2017	2015	2016	2017	2015	2015	2016	2017	2015	2016	2017	2015	2016	2017
Waste/residues	156	118	46	1,251	1,373	1,615	0.04	20,549	32,422	31,508	227	269	80			
Barley	1,353	1,435	1,665													
Maize	10,313	9,983	14,369													
Palm oil								4,776	9,816	18,373	7,132	6,928	1,361			
Rapeseed								48,251	32,154	28,381				343	246	26
Rye	2,292	2,028	2,272													
Soya								164	46	62						
Sunflower								139	79	1,631						
Triticale	2,717	2,341	1,753													
Wheat	9,395	9,647	7,940													
Sugar cane	650	2,466	1,071													
Sugar beet	4,177	2,176	875													
Total	**31,053**	**30,195**	**29,991**	**1,251**	**1,373**	**1,615**	**0.04**	**73,878**	**74,517**	**79,955**	**7,359**	**7,197**	**1,442**	**343**	**246**	**26**

[1] Differences in sum totals are due to rounding
[2] No data for 2016 and 2017

Table 16: Biofuels in kt - source materials [1,2]

Fuel type/ quota year / Source material	Bioethanol			Biomethane			Bio-methanol[3]	FAME			HVO			Vegetable oil		
	2015	2016	2017	2015	2016	2017	2015	2015	2016	2017	2015	2016	2017	2015	2016	2017
Waste/residues	6	4	2	25	27	32	0.002	550	868	843	5	6	2			
Barley	51	54	63													
Maize	390	377	543													
Palm oil								128	263	492	164	159	31			
Rapeseed								1,291	860	759				9	7	1
Rye	87	77	86													
Soya								4	1	2						
Sunflower								4	2	44						
Triticale	103	88	66													
Wheat	355	365	300													
Sugar cane	25	93	40													
Sugar beet	158	82	33													
Total	**1,173**	**1,141**	**1,133**	**25**	**27**	**32**	**0.002**	**1,977**	**1,994**	**2,139**	**169**	**165**	**33**	**9**	**7**	**1**

[1] Differences in sum totals are due to rounding
[2] The conversion to tonnes was done on the basis of the quantities stated on the proofs
[3] No data for 2014 and 2016

Table 17: Biofuels in TJ - source materials and their origins[1]

Region/ Quota year / Source material	Africa			Asia			Australia			Europe			Central America			North America			South America		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
Waste/residues	191	252	287	2,755	6,641	6,947	36	47	46	17,711	23,888	23,412		12	11	1,211	2,876	1,983	279	467	562
Barley										1,353	1,435	1,665									
Maize										10,313	9,983	14,369									
Palm oil				11,907	16,435	17,464	1							309	2,270						
Rapeseed				47			448	341	333	48,097	32,059	28,075					0.1		2		
Rye										2,292	2,028	2,272									
Soya												35							164	46	27
Sunflower										139	79	1,631									
Triticale										2,717	2,341	1,753									
Wheat										9,240	9,647	7,940							155		
Sugar cane	74												253	464	324				323	2,002	746
Sugar beet										4,177	2,176	875									
Total	**265**	**252**	**287**	**14,709**	**23,075**	**24,411**	**485**	**388**	**379**	**96,038**	**83,636**	**82,027**	**253**	**785**	**2,606**	**1,211**	**2,876**	**1,983**	**924**	**2,515**	**1,335**

[1] Differences in sum totals are due to rounding

Table 18: Biofuels in kt - source materials and their origins[1][2]

Region/ Quota year	Africa			Asia			Australia			Europe			Central America			North America			South America		
Source material	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
Waste/residues	5	7	8	73	177	186	1	1	1	466	631	616		0.3	0.3	32	77	53	8	13	15
Barley										51	54	63									
Maize										390	377	543									
Palm oil				291	413	462	0.03							8	61						
Rapeseed				1			12	9	9	1,287	858	751							0.1		
Rye										87	77	86									
Soya												1							4	1	1
Sunflower										4	2	44									
Triticale										103	88	66									
Wheat										349	365	300							6		
Sugar cane	3												10	18	12				12	76	28
Sugar beet										158	82	33									
Total	8	7	8	366	590	648	13	10	10	2,894	2,534	2,503	10	26	73	32	77	53	30	90	44

[1] Differences in sum totals are due to rounding
[2] The conversion to tonnes was done on the basis of the quantities stated on the proofs

Table 19: Sum total of biofuels per source material[1]

Source material	In 2015 [TJ]	In 2016 [TJ]	In 2017 [TJ]	In 2015 [kt]	In 2016 [kt]	In 2017 [kt]
Waste/residues	22,183	34,183	33,249	586	906	879
Barley	1,353	1,435	1,665	51	54	63
Maize	10,313	9,983	14,369	390	377	543
Palm oil	11,908	16,744	19,734	291	422	523
Rapeseed	48,594	32,400	28,408	1,300	867	760
Rye	2,292	2,028	2,272	87	77	86
Soya	164	46	62	4	1	2
Sunflower	139	79	1,631	4	2	44
Triticale	2,717	2,341	1,753	103	88	66
Wheat	9,395	9,647	7,940	355	365	300
Sugar cane	650	2,466	1,071	25	93	40
Sugar beet	4,177	2,176	875	158	82	33
Total	**113,884**	**113,528**	**113,029**	**3,353**	**3,334**	**3,339**

[1] Differences in sum totals are due to rounding

Table 20: Emissions and emission savings of biofuels[1,2]

Type of biofuel	Emissions 2015 [t CO_{2eq}/TJ]	Emissions 2016 [t CO_{2eq}/TJ]	Emissions 2017 [t CO_{2eq}/TJ]	Savings 2015 [%]	Savings 2016 [%]	Savings 2017 [%]
Bioethanol	24.53	20.58	14.58	70.73	75.44	82.60
Biomethane	13.17	8.03	7.77	84.28	90.42	90.73
Biomethanol	22.6			73.03		
FAME	24.62	17.84	16.10	70.62	78.71	80.79
HVO	32.03	31.66	29.64	61.78	62.22	64.64
Vegetable oil	35.7	35.34	30.09	57.4	57.83	64.09
Weighted average value of all biofuels	**24.98**	**19.37**	**15.75**	**70.19**	**76.89**	**81.20**

Table 21: Emissions and emission savings of bioliquids[3]

Type of bioliquid	Emissions 2015 [t CO_{2eq}/TJ]	Emissions 2016 [t CO_{2eq}/TJ]	Emissions 2017 [t CO_{2eq}/TJ]	Savings 2015 [%]	Savings 2016 [%]	Savings 2017 [%]
from the pulp industry	1.58	1.73	1.80	98.26	98.1	98.02
FAME	46.47	45.25	37.18	48.93	50.27	59.14
HVO		44.5	44.50		51.1	51.10
Vegetable oil	36.9	34.26	33.73	59.45	62.35	62.93
UCO	14			84.62		
Weighted average value of all bioliquids	**5.88**	**5.65**	**5.99**	**93.54**	**93.79**	**93.41**

[1] Differences in sum totals are due to rounding
[2] Savings compared to 83.8 g CO_{2eq}/MJ as the reference value for fossil fuel
[3] Savings compared to 91 g CO_{2eq}/MJ as the reference value for fossil bioliquids for power generation

Table 22: Type of bioliquid [TJ][1]

Type of bioliquid	2015	2016	2017
from the pulp industry	28,981	28,163	27,279
FAME	36	35	829
HVO		1	30
Vegetable oil	3,967	3,812	3,149
UCO	8		
Overall result	**32,994**	**32,010**	**31,287**

Table 23: Bioliquid vegetable oil – source material [TJ][1]

Source material	2015	2016	2017
Palm oil	3,069	3,231	2,157
Rapeseed	898	580	992
Total	**3,967**	**3,812**	**3,149**

Table 24: Vegetable oils from palm oil according to origin (bioliquid) [TJ][1]

Origin	2015	2016	2017
Honduras		108	339
Indonesia	867	538	147
Colombia			8
Malaysia	2,202	2,585	1,663
Overall result	**3,069**	**3,231**	**2,157**

[1] Differences in sum totals are due to rounding

Table 25: Biofuels whose source materials originated in Germany [TJ][1]

Fuel type/ quota year / Source material	Bioethanol			Biomethane			FAME			Vegetable oil			Total		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
Waste/residues	27	56	0.1	1,250	1,373	1,602	5,647	6,862	6,360				6,924	8,291	7,962
Barley	1,268	1,335	1,468										1,268	1,335	1,468
Maize	158	134	71										158	134	71
Rapeseed							32,222	20,919	14,738	343	246	26	32,565	21,164	14,764
Rye	1,357	1,137	1,513										1,357	1,137	1,513
Sunflower							39						39		
Triticale	377	60	404										377	60	404
Wheat	1,327	1,641	1,327										1,327	1,641	1,327
Sugar beet	3,698	1,787	635										3,698	1,787	635
Total	**8,211**	**6,150**	**5,418**	**1,250**	**1,373**	**1,602**	**37,908**	**27,781**	**21,098**	**343**	**246**	**26**	**47,712**	**35,549**	**28,144**

[1] Differences in sum totals are due to rounding