

## The result of support cumulation

*The costs of electricity generation in hydro power plants with investment aid in 2013*

	Position of costs	Installed capacity, MW <sub>el</sub>	
		0,15	0,3
1	Electricity price (EUR/MWh)	52	52
2	Produced electricity in year (MWh/year)	450	900
3	Annual depreciation expenses (EUR/year)	34 452	48 558
4	PMT (IRR=12%) in year	60 975	85 940
5	Annual total incomes from electricity selling at the market price (EUR/year) [1·2]	23 358	46 716
6	Total average production costs without depreciation (EUR/year)	10 885	21 770
7	<b>Total average production costs without depreciation (EUR/MWh<sub>a</sub>) [6/2]</b>	<b>24</b>	<b>24</b>
8	Electricity costs without depreciation exceeded over market price (EUR/year) [6-5]	-12 473	-24 946
9	Electricity costs without depreciation exceeded over market price (EUR/MWh) [7-1]	-28	-28
10	Total average production costs with depreciation but without cost of capital (EUR/year) [3+6]	45 337	70 328
11	<b>Total average production costs with depreciation but without cost of capital (EUR/MWh<sub>a</sub>) [10/2]</b>	<b>101</b>	<b>78</b>
12	Electricity costs with depreciation but without cost of capital exceeded over market price (EUR/year) [10-5]	21 979	23 612
13	Electricity costs with depreciation but without cost of capital exceeded over market price (EUR/MWh) [11-1]	49	26
14	Total average production costs with depreciation and cost of capital (EUR/year) [4+6]	71860	107710
15	<b>Total average production costs with depreciation and cost of capital (EUR/MWh<sub>a</sub>) [14/2]</b>	<b>160</b>	<b>120</b>
16	Electricity costs with depreciation and cost of capital exceeded over market price (EUR/year) [14-5]	48502	60994
17	Total average production costs with depreciation and cost of capital exceeded over market price (EUR/MWh <sub>el</sub> ) [15-1]	108	68
18	Price of MP (EUR/MWh)	Electricity from RES till 10 year starting from operation	195,73
		Electricity from RES after 10 year	156,58
19	Average revenue from selling electricity within MP taking into account 10% of subsidized energy tax (EUR/MWh)	Electricity from RES till 10 year starting from operation	166,37
		Electricity from RES after 10 year	133,1
20	Average additional investment support (EUR)	118 404	208 672
21	Average additional investment support (EUR/MWh <sub>el</sub> ) [20/(3*10years)]	26	23
22	Average electricity costs (with depreciation but without cost of capital) deducting received investment support (EUR/MWh <sub>el</sub> )	74	55

	[11-21]		
23	Exceedance of the average electricity costs (with depreciation but without cost of capital) deducting received investment support over market price (EUR/MWh <sub>el</sub> ) [22-1]	23	3
24	Average electricity costs (with depreciation and cost of capital) deducting received investment support (EUR/MWh <sub>el</sub> ) [15-21]	133	96
25	Exceedance of the average electricity costs (with depreciation and cost of capital) deducting received investment support over market price (EUR/MWh <sub>el</sub> ) [24-1]	81	45

We can conclude that the additional investment aid led to the overcompensation risk for supported hydro power plants.

*The costs of electricity generation in wind farm with investment aid in 2013*

	Position of costs	Installed capacity, MW <sub>el</sub>
		8,25
1	Electricity price (EUR/MWh)	52
2	Produced electricity in year (MWh/year)	16500
3	Annual depreciation expenses (EUR/year)	1 126 458
4	PMT (IRR=12%) in year	1 993 652
5	Annual total incomes from electricity selling at the market price (EUR/year) [1 · 2]	856 460
6	Total average production costs without depreciation (EUR/year)	281 729
7	Total average production costs without depreciation (EUR/MWh <sub>el</sub> ) [6/2]	17
8	Electricity costs without depreciation exceeded over market price (EUR/year) [6-5]	-574 731
9	Electricity costs without depreciation exceeded over market price (EUR/MWh) [7-1]	-35
10	Total average production costs with depreciation but without cost of capital (EUR/year) [6+3]	1 408 186
11	Total average production costs with depreciation but without cost of capital (EUR/MWh <sub>el</sub> ) [10/2]	85
12	Electricity costs with depreciation but without cost of capital exceeded over market price (EUR/year) [10-5]	551 726
13	Electricity costs with depreciation but without cost of capital exceeded over market price (EUR/MWh) [11-1]	33
14	Total average production costs with depreciation and cost of capital (EUR/year) [6+4]	2275380
15	Total average production costs with depreciation and cost of capital (EUR/MWh <sub>el</sub> ) [14/2]	138
16	Electricity costs with depreciation and cost of capital exceeded over market price (EUR/year) [14-5]	1418920
17	Electricity costs with depreciation and cost of capital exceeded over market price (EUR/MWh) [15-1]	86
18	Price of MP (EUR/MWh)	Electricity from RES till 10 year starting from operation 115.80

		Electricity from RES after 10 year	69.48
19	Average revenue from selling electricity within MP taking into account 10% of subsidized energy tax (EUR/MWh)	Electricity from RES till 10 year starting from operation	104.22
		Electricity from RES after 10 year	62.53
20	Average additional investment support (EUR)		1 680 767
21	Average additional investment support (EUR/MWh <sub>el</sub> ) [20/(3*10years)]		10
22	Average electricity costs (with depreciation but without cost of capital) deducting received investment support (EUR/MWh <sub>el</sub> ) [11-21]		75
23	Exceedance of the average electricity costs (with depreciation but without cost of capital) deducting received investment support over market price (EUR/MWh <sub>el</sub> ) [22-1]		23
24	Average electricity costs (with depreciation and cost of capital) deducting received investment support (EUR/MWh <sub>el</sub> ) [15-21]		128
25	Exceedance of the average electricity costs (with depreciation and cost of capital) deducting received investment support over market price (EUR/MWh <sub>el</sub> ) [24-1]		76

We can conclude that the additional investment aid gave an incentive for the merchants to start the electricity production in wind power plants.

*The costs of electricity generation in biogas cogeneration plants with investment aid in 2013*

	Position of costs	Installed power MWe		
		0,5	1	2
1	Electricity price (EUR/MWh)	52	52	52
2	Raw material price (equivalents of corn silage) (EUR/t)	36	36	36
3	Produced electricity in year without self-use (MWh/year)	3 680	7 360	14 720
4	Annual depreciation expenses (EUR/year)	187 819	324 415	512 234
5	PMT (IRR=12%) in year	332 410	574 163	906 573
6	Annual total incomes from electricity selling at the market price (EUR/year) [1 · 3]	191 017	382 033	764 066
7	Heat price (EUR/MWh)	28	28	28
8	Annual incomes from heat selling (EUR/year)	45 757	91 513	183 026
9	Annual total incomes from the market (EUR/year) [6+8]	236 773	473 546	947 092
10	Total average production costs without depreciation (EUR/year)	553 890	1 097 536	2 167 753
11	Total average production costs for electricity without depreciation taking into account the income from heat selling (EUR/MWh <sub>el</sub> )	138	137	135

# Annex V

	[(10-8)/3]				
12	Electricity costs without depreciation exceeded over market price (EUR/year) [10-9]		317 117	623 990	1 220 661
13	Electricity costs without depreciation exceeded over market price (EUR/MWh) [11-1]		86	85	83
14	Total average production costs with depreciation but without cost of capital (EUR/year) [10+4]		741 710	1 421 951	2 679 987
15	Total average production costs for electricity with depreciation but without cost of capital taking into account the income from heat selling (EUR/MWh <sub>a</sub> ) [(14-8)/3]		189	181	170
16	Electricity costs with depreciation but without cost of capital exceeded over market price (EUR/year) [14-9]		504 936	948 405	1 732 895
17	Electricity costs with depreciation but without cost of capital exceeded over market price (EUR/MWh) [15-1]		137	129	118
18	Total average production costs with depreciation and cost of capital (EUR/year) [10+5]		886 300	1 671 699	3 074 326
19	Total average production costs for electricity with depreciation and cost of capital taking into account the income from heat selling (EUR/MWh <sub>a</sub> ) [(18-8)/3]		228	215	196
20	Electricity costs with depreciation and cost of capital exceeded over market price (EUR/year) [18-9]		649 527	1 198 153	2 127 234
21	Electricity costs with depreciation and cost of capital exceeded over market price (EUR/MWh) [19-1]		177	163	145
22	Price of MP (EUR/MWh)	Electricity in cogeneration	194,39	188,84	170,79
		Electricity from RES till 10 year starting from operation	204,17	198,34	170,79
		Electricity from RES after 10 year	163,33	158,67	129,04
23	Average revenue from selling electricity within MP taking into account 10% of subsidized energy tax (EUR/MWh)	Electricity in cogeneration	165,23	160,52	145,17
		Electricity from RES till 10 year starting from operation	173,54	168,59	145,17
		Electricity from RES after 10 year	138,83	134,87	109,69
24	Average additional investment support (EUR)		751 276	1 297 660	2 048 936
25	Average additional investment support (EUR/MWh <sub>et</sub> ) [24/(3*10years)]		20	18	14

26	Average electricity costs (with depreciation but without cost of capital) deducting received investment support taking into account the income of heat (EUR/MWh <sub>el</sub> ) [15-25]	169	163	156
27	Exceedance of the average electricity costs (with depreciation but without cost of capital) deducting received investment support over market price (EUR/MWh <sub>el</sub> ) [26-1]	117	111	104
28	Average electricity costs (with depreciation and cost of capital) deducting received investment support taking into account the income of heat (EUR/MWh <sub>el</sub> ) [19-25]	208	197	183
29	Exceedance of the average electricity costs (with depreciation and cost of capital) deducting received investment support over market price (EUR/MWh <sub>el</sub> ) [28-1]	156	145	131

We can conclude that the additional investment aid gave an incentive for the merchants to start the electricity production in biogas cogeneration plants.

*The costs of electricity generation in biomass cogeneration plants with investment aid in 2013*

	Position of costs	Installed power, MWe		
		0,4	1	2
1	Electricity price (EUR/MWh)	51,91	51,91	51,91
2	Raw material price (wood chips) (EUR/m <sup>3</sup> loose)	11	11	11
3	Produced electricity in year without self-use (MWh/year)	2 200	5 500	11 000
4	Annual depreciation expenses (EUR/year)	320 975	498 290	694 986
5	PMT (IRR=12%) in year	568 074	881 894	1 230 016
6	Annual total incomes from electricity selling at the market price (EUR/year) [1 · 3]	114 195	285 487	570 973
7	Heat price (EUR/MWh)	17	17	17
8	Annual incomes from heat selling (EUR/year)	155 551	363 990	699 982
9	Annual total incomes from the market (EUR/year) [6+8]	269 746	649 477	1 270 955
10	Total average production costs without depreciation (EUR/year)	364 812	674 293	1 159 728
11	Total average production costs for electricity without depreciation taking into account the income from heat selling (EUR/MWh <sub>el</sub> ) [(10-8)/3]	95	56	42
12	Electricity costs without depreciation exceeded over market price (EUR/year) [10-9]	95 066	24 816	-111 227
13	Electricity costs without depreciation exceeded over market price (EUR/MWh) [11-1]	43	5	-10
14	Total average production costs with depreciation but without cost of capital (EUR/year) [10+4]	685 787	1 172 583	1 854 715



15	Total average production costs for electricity with depreciation but without cost of capital taking into account the income from heat selling (EUR/MWh <sub>el</sub> ) [(14-8)/3]		241	147	105
16	Electricity costs with depreciation but without cost of capital exceeded over market price (EUR/year) [14-9]		416 041	523 105	583 760
17	Electricity costs with depreciation but without cost of capital exceeded over market price (EUR/MWh) [15-1]		189	95	53
18	Total average production costs with depreciation and cost of capital (EUR/year) [10+5]		932 887	1 556 187	2 389 744
19	Total average production costs for electricity with depreciation and cost of capital taking into account the income from heat selling (EUR/MWh <sub>el</sub> ) [(18-8)/3]		353	217	154
20	Electricity costs with depreciation and cost of capital exceeded over market price (EUR/year) [18-9]		663 140	906 710	1 118 789
21	Electricity costs with depreciation and cost of capital exceeded over market price (EUR/MWh) [19-1]		301	165	102
22	Price of MP (EUR/MWh)	Electricity in cogeneration	202,45	188,84	170,79
		Electricity from RES till 10 year starting from operation	202,45	188,84	170,79
		Electricity from RES after 10 year	152,96	142,68	129,04
23	Average revenue from selling electricity within MP taking into account 10% of subsidized energy tax (EUR/MWh)	Electricity in cogeneration	172,08	160,52	145,17
		Electricity from RES till 10 year starting from operation	172,08	160,52	145,17
		Electricity from RES after 10 year	130,02	121,28	109,69
24	Average additional investment support (EUR)		1 283 899	1 993 159	2 779 946
25	Average additional investment support (EUR/MWh <sub>el</sub> ) [24/(3*10years)]		58	36	25
26	Average electricity costs (with depreciation but without cost of capital) deducting received investment support taking into account the income of heat (EUR/MWh <sub>el</sub> ) [15-25]		183	111	80
27	Exceedance of the average electricity costs (with depreciation but without cost of capital) deducting received investment support over market price (EUR/MWh <sub>el</sub> ) [26-1]		131	59	28
28	Average electricity costs (with depreciation and cost of capital) deducting received investment support taking into account the income of heat (EUR/MWh <sub>el</sub> ) [19-25]		295	181	128
29	Exceedance of the average electricity costs (with depreciation and cost of capital) deducting received investment support over market price (EUR/MWh <sub>el</sub> ) [28-1]		243	129	76

We can conclude that the additional investment aid led to the

## **Annex V**

overcompensation risk for supported biomass cogeneration plants with installed capacity more than 1 MW.