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**A detailed map of GHG related
activity data in Poland, ready
for use in Work Package 1.
Deliverable 3.1**

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GESAPU

Geoinformation technologies, spatio-temporal approaches, and full carbon account for improving accuracy of GHG inventories

Deliverable 3.1. A detailed map of GHG related activity data in Poland, ready for use in Work Package 1

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Work package 3. Improving accuracy of inventories by means of spatio-temporal statistical methods

Deliverable 3.1. A detailed map of GHG related activity data in Poland, ready for use in Work Package 1

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Industry

The activity data required for GHG inventory in Industry is available on the web site of the Polish Cement Association¹. Tables 1–12 present main indicators of Polish cement industry for each month of year 2010, and involve information about cement production by plant types, clinker production; import, export, and sale of these mineral products.

The data on the capacities of cement factories are available on the official web sites of the factories². Figure 1 reflects capacities of 13 cement plants and their territorial distribution by voivodeships.

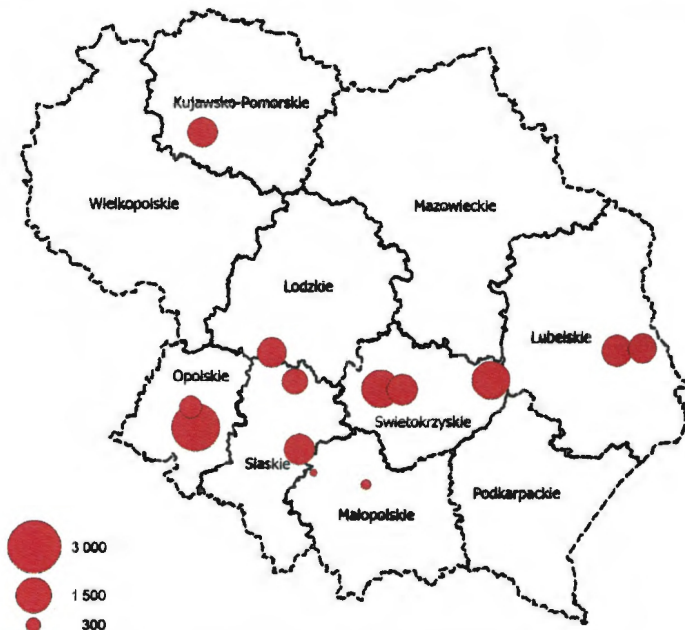


Figure 4.1. Cement plants' capacities in 2010 (Gg)

¹ Polish Cement Association : <http://www.polskicement.com.pl/index.php?s=1/3/4/10/0>

² Gorazdze Cement S.A. www.gorazdze.pl

Lafarge Cement S.A. <http://www.lafarge.pl/>

Grupa Ozarow S.A. www.ozarow.com.pl

Dyckerhoff Polska Sp. z o.o. www.dyckerhoff.pl

Cementownia Warta S.A. www.wartasa.com.pl

Cementownia Odra S.A. www.odrasa.com.pl

Górka Cement Sp. z o.o. www.gorka.com.pl

Cemex Polska Sp. z o.o. www.cemex.pl

Table 4.1. Statistical data on Cement Industry in January, 2010

Activity	January	January	I 2010 /	I-I	I-I	I 2010 /
	2010	2009	I 2009	2010	2009	I 2009
	(Gg)	(Gg)	(%)	(Gg)	(Gg)	(%)
Clinker production – total:	699.5	688.9	101.6	699.5	688.9	101.6
Cement production – total:	247.8	500.4	49.5	247.8	500.4	49.5
CEM I 32.5:	25.9	34.3	75.5	25.9	34.3	75.5
CEM I 42.5:	77	121.6	63.3	77	121.6	63.3
CEM I 52.5:	19.2	18.7	102.7	19.2	18.7	102.7
CEM II 32.5:	67.7	232	29.2	67.7	232	29.2
CEM II 42.5:	33.7	63.6	52.9	33.7	63.6	52.9
CEM II 52.5:	4.6	1.5	303.3	4.6	1.5	303.3
CEM III 32.5:	14.5	20.9	69.2	14.5	20.9	69.2
CEM III 42.5:	5.4	7.8	68.8	5.4	7.8	68.8
Import of clinker:	0	0	-	0	0	-
Sale of clinker:	2.1	42.4	5	2.1	42.4	5
Export of clinker – total:	0.4	0.1	455.6	0.4	0.1	455.6
Czech Republic:	0.4	0.1	455.6	0.4	0.1	455.6
Import of cement - total:	3.1	11.6	26.3	3.1	11.6	26.3
Czech Republic:	0.1	1.4	9.3	0.1	1.4	9.3
German:	2.9	10.2	28.7	2.9	10.2	28.7
Sale of cement – total:	229.7	541.2	42.4	229.7	541.2	42.4
Sale of cement – in Poland:	223.2	535.8	41.7	223.2	535.8	41.7
Sale of cement – in Poland – bags:	32.1	167.1	19.2	32.1	167.1	19.2
Export of cement – total:	6.5	5.4	121.4	6.5	5.4	121.4
Czech Republic:	0.7	2.8	26.4	0.7	2.8	26.4
Finland:	3.7	0	-	3.7	0	-
German:	0.2	0.1	320	0.2	0.1	320
German/Austria:	0.3	0.4	75	0.3	0.4	75
Russia:	0.6	1.1	53.2	0.6	1.1	53.2
Slovakia:	1.1	0.1	2200	1.1	0.1	2200

Table 4.2. Statistical data on Cement Industry in February, 2010

Activity	February	February	II 2010	I-II	I-II	II 2010
	2010	2009	/	2010	2009	/
	(Gg)	(Gg)	(%)	(Gg)	(Gg)	(%)
Clinker production – total:	369.6	492.1	75.1	1069.2	1180.9	90.5
Cement production – total:	451.1	637.9	70.7	698.9	1138.4	61.4
CEM I 32.5:	18.5	47.7	38.8	44.4	82	54.1
CEM I 42.5:	108.9	163.4	66.7	185.9	285.1	65.2
CEM I 52.5:	15	19.3	77.8	34.2	38	90
CEM II 32.5:	181.1	255	71	248.8	487	51.1
CEM II 42.5:	76.6	92	83.3	110.3	155.5	70.9
CEM II 52.5:	6	3.7	162.2	10.6	5.2	202.9
CEM III 32.5:	30.6	38.9	78.6	45	59.8	75.3
CEM III 42.5:	14.5	17.6	82.1	19.8	25.4	78
Import of clinker:	0	0	-	0	0	-
Sale of clinker:	5.3	39.6	13.4	7.4	82	9
Export of clinker – total:	2.7	5.3	51.4	3.1	5.4	58.1
Czech Republic:	2.7	5.3	51.4	3.1	5.4	58.1
Import of cement - total:	5.4	7.1	74.9	8.4	18.7	44.8
Czech Republic:	0.1	1.5	9.2	0.3	2.9	9.2
German:	5.2	5.6	92.9	8.1	15.8	51.5
Sale of cement – total:	427.1	601.3	71	656.8	1142.4	57.5
Sale of cement – in Poland:	423.3	590.4	71.7	646.4	1126.2	57.4
Sale of cement – in Poland – bags:	97	128	75.7	129.1	295.1	43.7
Export of cement – total:	3.9	10.9	35.3	10.4	16.3	63.7
Austria:	0	0	-	0	0	-
Czech Republic:	1.3	4.7	26.8	2	7.5	26.6
Finland:	0	0	-	3.7	0	-
German:	0.2	0.1	180	0.3	0.2	226.7
German/Austria:	1	1.3	76.9	1.3	1.7	76.5
Russia:	0	0.6	0	0.6	1.7	34.9
Slovakia:	1.4	1.5	89.6	2.5	1.6	156

Table 4.3. Statistical data on Cement Industry in March, 2010

Activity	March	March	III 2010 /	I-III	I-III	III 2010 /
	2010	2009	III 2009	2010	2009	III 2009
	(Gg)	(Gg)	(%)	(Gg)	(Gg)	(%)
Clinker production – total:	769.4	627	122.7	1838.6	1807.9	101.7
Cement production – total:	1095.3	972.9	112.6	1794.2	2111.3	85
CEM I 32.5:	87	48.5	179.4	131.3	130.4	100.7
CEM I 42.5:	294.5	262.8	112.1	480.4	547.8	87.7
CEM I 52.5:	20.4	20.3	100.2	54.6	58.3	93.6
CEM II 32.5:	449	452.8	99.2	697.8	939.8	74.3
CEM II 42.5:	156.9	127.7	122.9	267.2	283.2	94.3
CEM II 52.5:	30.9	3	1030	41.5	8.2	505.5
CEM III 32.5:	26.4	38.8	68.1	71.5	98.6	72.5
CEM III 42.5:	28.9	15.9	181.9	48.7	41.3	118
CEM V 32.5:	0	1.7	0	0	1.7	0
other	1.3	1.5	86.7	1.3	2.1	61.9
Import of clinker:	14.7	0	-	14.7	0	-
Sale of clinker:	17.6	56.6	31.1	25.1	138.7	18.1
Export of clinker – total:	8.6	6.4	135.3	11.8	11.8	99.9
Czech Republic:	8.6	6.4	135.3	11.8	11.8	99.9
Import of cement – total:	15.1	19.6	76.8	23.5	38.3	61.2
Czech Republic:	0.4	1.6	21.3	0.6	4.6	13.6
German:	14.7	18	81.8	22.8	33.8	67.6
Sale of cement – total:	1179.7	1070	110.3	1836.6	2212.4	83
Sale of cement – in Poland:	1158.2	1042.3	111.1	1804.7	2168.4	83.2
Sale of cement – in Poland – bags:	363.2	257.3	141.1	495.6	552.4	89.7
Export of cement – total:	21.5	27.7	77.7	31.9	44	72.5
Austria:	0.2	0	-	0.2	0	-
Bulgaria:	0.1	0	-	0.1	0	-
Czech Republic:	6.2	9.5	65.6	8.2	17	48.4
Indirect export:	0	1.7	0	0	2.7	0
Finland:	0	0	-	3.7	0	-
Lithuania/Hungary	0	2.5	0	0	5.2	0
German:	1.8	1.1	167	2.1	1.2	174.4
German/Austria:	3.9	5.8	67.2	5.2	7.5	69.3
Russia:	1.9	1.1	175.5	2.5	2.8	89.1
Slovakia:	7.5	6.1	122.4	10	7.7	129.4

Table 4.4. Statistical data on Cement Industry in April, 2010

Activity	April	April	IV 2010 /	I-IV	I-IV	IV 2010
	2010	2009	IV 2009	2010	2009	IV 2009
	(Gg)	(Gg)	(%)	(Gg)	(Gg)	(%)
Clinker production – total:	1107.1	703.6	157.3	2945.7	2511.5	117.3
Cement production – total:	1440.4	1393.3	103.4	3234.5	3504.6	92.3
CEM I 32.5:	84.9	108.2	78.4	216.2	238.7	90.6
CEM I 42.5:	395.3	357.1	110.7	875.7	904.9	96.8
CEM I 52.5:	27.7	25.1	110.5	82.3	83.4	98.7
CEM II 32.5:	581	611.1	95.1	1278.8	1550.9	82.5
CEM II 42.5:	207.3	177.6	116.7	474.5	460.8	103
CEM II 52.5:	35.8	14.4	248.6	77.3	22.6	341.8
CEM III 32.5:	48.6	57.7	84.3	120.1	156.3	76.8
CEM III 42.5:	50.4	39.7	127.1	99.2	81	122.4
CEM V 32.5:	8.5	0.5	1700	8.5	2.2	386.4
other:	0.8	2	40	2.1	4.1	51.2
Import of clinker:	19.7	0	-	34.4	0	-
Sale of clinker:	31.7	82.7	38.4	56.8	221.4	25.6
Export of clinker – total:	10.1	6.8	148.4	21.8	18.5	117.6
Czech Republic:	10.1	6.8	148.4	21.8	18.5	117.6
Import of cement - total:	2.7	26.6	10.3	26.2	64.9	40.3
Czech Republic:	0.4	1.7	22.3	1	6.2	15.9
German	2.4	25	9.5	25.2	58.7	42.9
Sale of cement – total:	1460.6	1554.6	94	3297.2	3767	87.5
Sale of cement – in Poland:	1428	1514.3	94.3	3232.6	3682.7	87.8
Sale of cement – in Poland – bags:	323.8	461.9	70.1	819.4	1014.3	80.8
Export of cement – total:	32.6	40.3	80.9	64.5	84.3	76.5
Austria:	0.5	0.1	1060	0.8	0.1	1500
Bulgaria:	0.8	0	-	0.9	0	-
Czech Republic:	10.9	18.1	60.2	19.1	35.1	54.5
Indirect export:	0	3	0	0	5.7	0
Finland:	0	0	-	3.7	0	-
Lithuania /Hungary	0	1.9	0	0	7.1	0
German:	1.8	1.3	137.6	3.9	2.5	155.1
German/Austria:	6.5	5.2	125	11.7	12.7	92.1
Russia:	3.1	5.7	55.6	5.6	8.4	66.5
Slovakia:	8.9	5.1	175.7	18.9	12.8	147.8

Table 4.5. Statistical data on Cement Industry in May, 2010

Activity	May	May	V 2010 /	I-V	I-V	V 2010 /
	2010	2009	V 2009	2010	2009	V 2009
	(Gg)	(Gg)	(%)	(Gg)	(Gg)	(%)
Clinker production – total:	1173.3	915.2	128.2	4119	3426.7	120.2
Cement production – total:	1569.3	1799.7	87.2	4803.9	5304.3	90.6
CEM I 32.5:	103.6	133.2	77.8	319.8	371.8	86
CEM I 42.5:	429.1	424.9	101	1304.8	1329.8	98.1
CEM I 52.5:	31.3	28.5	109.6	113.6	111.9	101.5
CEM II 32.5:	593.2	822.1	72.2	1872	2373	78.9
CEM II 42.5:	215.7	231.5	93.2	690.2	692.4	99.7
CEM II 52.5:	41	7.2	568.8	118.2	29.8	396.6
CEM III 32.5:	62.7	86	72.9	182.8	242.3	75.4
CEM III 42.5:	51.4	66.4	77.3	150.5	147.4	102.1
CEM V 32.5:	40.6	0	-	49.1	2.2	2230.5
other	1	0	-	3.1	4.1	74.4
Import of clinker:	24.6	0	-	59.1	0	-
Sale of clinker:	43.7	28.5	153.3	100.5	249.9	40.2
Export of clinker – total:	12.3	8.9	138.1	34.1	27.5	124.3
Czech Republic:	12.3	8.9	138.1	34.1	27.5	124.3
Import of cement – total:	36.5	16.5	221.1	62.7	81.4	76.9
Czech Republic:	0.4	2	19.8	1.4	8.3	16.8
German:	36.1	14.5	249.2	61.3	73.2	83.7
Sale of cement – total:	1531.7	1678.9	91.2	4828.8	5446	88.7
Sale of cement – in Poland:	1496.2	1638.5	91.3	4728.8	5321.3	88.9
Sale of cement – in Poland – bags:	364.5	509.4	71.6	1183.9	1523.7	77.7
Export of cement – total:	35.5	40.5	87.6	100	124.8	80.1
Austria:	0.4	0.3	120	1.1	0.4	317.1
Bulgaria:	1	0	-	1.9	0	-
Czech Republic:	11.8	16.5	71.6	30.9	51.6	60
Indirect export:	0	4.1	0	0	9.8	0
Finland:	0	0	-	3.7	0	-
Lithuania /Hungary	0	2.3	0	0	9.4	0
German:	1.9	1.8	108	5.8	4.3	135.9
German/Austria:	5.2	5.2	100	16.9	17.9	94.4
Russia:	3.8	3.5	110.7	9.4	11.9	79.4
Slovakia:	11.4	6.8	167.2	30.2	19.6	154.5
Hungary:	0	0.1	0	0	0.1	0

Table 4.6. Statistical data on Cement Industry in June, 2010

Activity	June	June	VI 2010 /	I-VI	I-VI	VI 2010 /
	2010	2009	VI 2009	2010	2009	VI 2009
	(Gg)	(Gg)	(%)	(Gg)	(Gg)	(%)
Clinker production – total:	1167.4	1190.2	98.1	5286.4	4616.9	114.5
Cement production – total:	1619.8	1520.7	106.5	6423.6	6824.9	94.1
CEM I 32.5:	95.5	92.7	103	415.3	464.6	89.4
CEM I 42.5:	409	371.9	110	1713.8	1701.7	100.7
CEM I 52.5:	20.2	24.2	83.3	133.7	136.1	98.2
CEM II 32.5:	648.3	681	95.2	2520.3	3054	82.5
CEM II 42.5:	224.1	190.2	117.8	914.2	882.6	103.6
CEM II 52.5:	37.7	10.3	365.5	155.9	40.1	388.7
CEM III 32.5:	79.1	86	92	261.9	328.3	79.8
CEM III 42.5:	48.2	62.4	77.2	198.7	209.8	94.7
CEM V 32.5:	56.4	0	-	105.5	2.2	4793.2
other	1.4	2.1	64.3	4.4	6.2	71
Import of clinker:	22	26.6	82.9	81.1	26.6	305.2
Sale of clinker:	32.9	25.7	128.2	133.4	275.6	48.4
Export of clinker – total:	11.3	10.2	111.2	45.4	37.6	120.8
Czech Republic:	11.3	10.2	111.2	45.4	37.6	120.8
Import of cement - total:	20.9	20	104.3	83.5	101.4	82.3
Czech Republic:	0.4	1.6	25.8	1.8	9.9	18.3
German:	20.4	18.4	111.2	81.7	91.6	89.2
Sale of cement – total:	1713	1546.8	110.7	6541.8	6992.8	93.6
Sale of cement – in Poland:	1671.7	1511	110.6	6400.5	6832.2	93.7
Sale of cement – in Poland – bags:	423	431.7	98	1606.9	1955.4	82.2
Export of cement – total:	41.3	35.9	115	141.3	160.8	87.9
Austria:	0.6	0.3	183.3	1.7	0.7	255.4
Bulgaria:	0.8	0	-	2.7	0	-
Czech Republic:	15.6	14.6	107.2	46.6	66.2	70.4
Indirect export:	0	0.3	0	0	10.1	0
Finland:	0	0	-	3.7	0	-
Lithuania /Hungary	0	2.6	0	0	12	0
German:	8	2.4	330.3	13.8	6.7	205.8
German/Austria:	0	4.8	0	16.9	22.7	74.4
Russia:	3.7	4.1	88.9	13.1	16	81.9
Slovakia:	12.7	6.8	186.7	42.9	26.4	162.8
Hungary:	0	0	-	0	0.1	0

Table 4.7. Statistical data on Cement Industry in July, 2010

Activity	July	July	VII 2010 /	I-VII	I-VII	VII 2010 /
	2010	2009	VII 2009	2010	2009	VII 2009
	(Gg)	(Gg)	(%)	(Gg)	(Gg)	(%)
Clinker production – total:	1194	1111.7	107.4	6480.4	5728.5	113.1
Cement production – total:	1872.9	1659.4	112.9	8296.5	8484.3	97.8
CEM I 32.5:	133.1	117.5	113.3	548.4	582.1	94.2
CEM I 42.5:	442.2	362.3	122.1	2156	2064	104.5
CEM I 52.5:	30.2	30.4	99.5	163.9	166.5	98.5
CEM II 32.5:	700.8	751.9	93.2	3221.1	3805.8	84.6
CEM II 42.5:	279.6	219.4	127.4	1193.8	1102	108.3
CEM II 52.5:	48.4	18	268.9	204.3	58.1	351.5
CEM III 32.5:	104.9	94.2	111.3	366.7	422.5	86.8
CEM III 42.5:	47.6	65.9	72.2	246.3	275.7	89.3
CEM V 32.5:	84.7	0	-	190.1	2.2	8642.7
other	1.5	0	-	5.9	6.2	94.4
Import of clinker:	1.2	0	-	82.3	26.6	309.8
Sale of clinker:	34.9	23.3	150	168.3	298.8	56.3
Export of clinker – total:	15.7	9.5	165	61.1	47.1	129.7
Czech Republic:	12.4	9.5	130.2	57.8	47.1	122.7
Slovakia:	3.3	0	-	3.3	0	-
Import of cement - total:	25.8	21	123.2	109.3	122.4	89.3
Czech Republic:	5.4	0.2	2857.9	7.2	10.1	71.9
German:	20.4	20.8	98.2	102.1	112.3	90.9
Sale of cement – total:	1875.2	1763.9	106.3	8417	8756.7	96.1
Sale of cement – in Poland:	1838.1	1726	106.5	8238.6	8558.2	96.3
Sale of cement – in Poland – bags:	485.8	513.6	94.6	2092.7	2469	84.8
Export of cement – total:	37.1	38	97.7	178.4	198.7	89.8
Austria:	1	0.3	396	2.7	0.9	294.4
Bulgaria:	0.5	0	-	3.2	0	-
Czech Republic:	14.1	15.8	88.9	60.6	82	74
Indirect export:	0	1.2	0	0	11.3	0
Finland:	0	0	-	3.7	0	-
Lithuania:	0.1	0	-	0.1	0	-
Lithuania /Hungary	0	2.1	0	0	14.1	0
German:	6.4	2.2	291.3	20.1	8.9	226.8
German/Austria:	0	5.2	0	16.9	27.9	60.6
Russia:	4.2	5.5	75.2	17.2	21.5	80.1
Slovakia:	11	5.7	191.8	53.9	32.1	168
Hungary:	0	0	-	0	0.1	0

Table 4.8. Statistical data on Cement Industry in August, 2010

Activity	August	August	VIII 2010 /	I-VIII	I-VIII	I-VIII 2010 /
	2010	2009	VIII 2009	2010	2009	I-VIII 2009
	(Gg)	(Gg)	(%)	(Gg)	(Gg)	(%)
Clinker production – total:	1174.5	1175	100	7654.9	6903.5	110.9
Cement production – total:	1752.3	1638.3	107	10048.8	10122.6	99.3
CEM I 32.5:	93.5	114.1	81.9	641.9	696.1	92.2
CEM I 42.5:	448	364.4	122.9	2603.9	2428.4	107.2
CEM I 52.5:	36.5	34.3	106.2	200.4	200.8	99.8
CEM II 32.5:	631.2	710.2	88.9	3852.3	4516	85.3
CEM II 42.5:	284.1	216.8	131.1	1478	1318.8	112.1
CEM II 52.5:	41.7	25.7	162.1	245.9	83.8	293.4
CEM III 32.5:	90	105.7	85.1	456.7	528.2	86.5
CEM III 42.5:	62.5	65.7	95.1	308.8	341.4	90.4
CEM V 32.5:	63.9	0	-	254.1	2.2	11548.2
other	1.1	1.5	73.3	7	7.7	90.3
Import of clinker:	0	0	-	82.3	26.6	309.8
Sale of clinker:	65.3	43.5	150.2	233.6	342.3	68.2
Export of clinker – total:	24.8	28.8	86.2	85.9	75.9	113.2
Czech Republic:	16.3	12.7	128.8	74.1	59.8	124
Lithuania:	7	0	-	7	0	-
Slovakia:	1.5	0	-	4.8	0	-
Ukraine:	0	16.1	0	0	16.1	0
Import of cement – total:	32.3	21	153.4	141.6	143.4	98.7
Czech Republic:	8.6	0.3	2675	15.8	10.4	152.1
German:	23.7	20.7	114.5	125.8	133	94.6
Sale of cement – total:	1794.6	1602.8	112	10211.6	10359.5	98.6
Sale of cement – in Poland:	1749.1	1553.2	112.6	9987.7	10111.4	98.8
Sale of cement – in Poland – bags:	380.3	434.7	87.5	2473	2903.7	85.2
Export of cement – total:	45.5	49.6	91.8	223.9	248.3	90.2
Austria:	1.5	0.2	870.6	4.1	1.1	386
Bulgaria:	0.7	0	-	3.9	0	-
Czech Republic:	16.5	16.5	99.6	77.1	98.5	78.3
Indirect export:	0	2.8	0	0	14.1	0
Finland:	0	8.3	0	3.7	8.3	44.2
Lithuania:	0	0	-	0.1	0	-
Lithuania /Hungary	0	1.9	0	0	16	0
German:	5.3	1.6	325.8	25.5	10.5	242.2
German/Austria:	0	5.1	0	16.9	33	51.2
Russia:	7.7	4.7	164.3	24.9	26.2	95.2
Slovakia:	13.7	8.5	162.1	67.6	40.6	166.8
Hungary:	0	0	-	0	0.1	0
Latvia	0.1	0	-	0.1	0	-

Table 4.9. Statistical data on Cement Industry in September, 2010

Activity	September	September	IX	I-IX	I-IX	I-IX
	2010	2009	IX	2010	2009	I-IX
	(Gg)	(Gg)	2010 / 2009	(Gg)	(Gg)	2010 / 2009
			(%)			(%)
Clinker production – total:	1110.6	1089.1	102	8765.6	7992.6	109.7
Cement production – total:	1677.2	1647.2	101.8	11725.9	11769.8	99.6
CEM I 32.5:	86.1	98.6	87.4	728	794.7	91.6
CEM I 42.5:	437.9	369.7	118.4	3041.8	2798.1	108.7
CEM I 52.5:	38	31.6	120.3	238.4	232.4	102.6
CEM II 32.5:	608.8	718.1	84.8	4461.1	5234.1	85.2
CEM II 42.5:	251.2	232	108.3	1729.1	1550.8	111.5
CEM II 52.5:	42.9	25.7	166.7	288.8	109.5	263.7
CEM III 32.5:	84	92.3	91	540.7	620.5	87.1
CEM III 42.5:	62.3	78.5	79.4	371.1	419.9	88.4
CEM V 32.5:	65.4	0	-	319.4	2.2	14520
other	0.7	1.1	63.6	7.7	8.8	86.9
Import of clinker:	0	0	-	82.3	26.6	309.8
Sale of clinker:	38.1	38.1	100	268.4	380.4	70.6
Export of clinker – total:	15.7	22.5	69.9	101.6	98.4	103.3
Czech Republic:	12.4	13.5	92.1	86.5	73.3	118.1
Lithuania:	3.3	0	-	10.3	0	-
German:	0	1	0	0	1	0
Slovakia:	0	4.9	0	4.8	4.9	98.4
Ukraine:	0	3.2	0	0	19.3	0
Import of cement – total:	32.5	22.4	145.3	174.1	165.8	105
Czech Republic:	9.4	0.2	4715	25.2	10.6	238.2
German:	23.1	22.2	104.1	148.9	155.2	95.9
Sale of cement – total:	1781.1	1734.8	102.7	11992.7	12094.3	99.2
Sale of cement – in Poland:	1737.1	1678.5	103.5	11724.8	11790	99.4
Sale of cement – in Poland – bags:	356.1	447.4	79.6	2829.1	3351.1	84.4
Export of cement – total:	44	56.2	78.3	267.9	304.5	88
Austria:	1.8	0.1	2200	5.9	1.2	512.2
Bielorussia:	0.6	0	-	0.6	0	-
Bulgaria:	0.3	0	-	4.2	0	-
Czech Republic:	13.2	19.1	69.1	90.3	117.6	76.8
Indirect export:	0	1.2	0	0	15.3	0
Finland:	0	11.9	0	3.7	20.2	18.1
Lithuania:	0	0	-	0.1	0	-
Lithuania /Hungary:	0	1.5	0	0	17.5	0
German:	4.3	2.1	205.2	29.8	12.6	236
German/Austria:	0	5.5	0	16.9	38.5	43.9
Russia:	8	6.2	128.9	33	32.4	101.7
Slovakia:	15.8	8.6	184.4	83.4	49.1	169.8
Hungary:	0	0	-	0	0.1	0
Latvia	0	0	-	0.1	0	-

Table 4.10. Statistical data on Cement Industry in October, 2010

Activity	October	October	X 2011 /	I-X	I-X	I-X 2011 /
	2011	2010	X 2010	2011	2010	I-X 2010
	(Gg)	(Gg)	(%)	(Gg)	(Gg)	(%)
Clinker production – total:	1367.6	1176.9	116.2	11243.4	9942.4	113.1
Cement production – total:	1899	1861.2	102	15899.1	13587.1	117
CEM I 32.5:	67	102.8	65.2	680.2	830.8	81.9
CEM I 42.5:	579.3	481.6	120.3	4651.5	3523.4	132
CEM I 52.5:	53.2	47.7	111.6	428.1	286	149.7
CEM II 32.5:	657.7	692.6	95	5566.7	5153.7	108
CEM II 42.5:	298.8	287.4	104	2302.5	2016.5	114.2
CEM II 52.5:	45.6	45.6	99.9	422.7	334.4	126.4
CEM III 32.5:	45.6	72	63.3	457.9	612.7	74.7
CEM III 42.5:	81.6	63.1	129.3	630.9	434.1	145.3
CEM IV 32.5:	3.9	1.2	325	36.7	1.2	3061.7
CEM V 32.5:	65.6	66.6	98.6	713.2	386	184.7
other	0.6	0.7	90.8	8.7	8.3	104.7
Sale of clinker:	29.8	51.4	58.1	366.8	319.8	114.7
Import of clinker – total:	1.5	0	-	1.5	82.3	1.8
Czech Republic:	0	0	-	0	82.3	0
Export of clinker – total:	0	12.9	0	42.7	114.5	37.3
Czech Republic:	0	12.9	0	42.7	99.5	42.9
Lithuania:	0	0	-	0	10.3	0
Slovakia:	0	0	-	0	4.8	0
Import of cement – total:	48.3	27	178.9	330.9	201.1	164.6
Czech Republic:	22.3	3.9	571	125	29.1	429.1
German:	26	23.1	112.6	205.9	172	119.8
Sale of cement – total:	1886.6	1795	105.2	16336.1	13786.2	118.5
Sale of cement – in Poland:	1860.1	1754.3	106.1	16050.9	13477.6	119.1
Sale of cement – in Poland – bags:	286.5	312.2	91.8	3192.7	3141.2	101.6
Export of cement – total:	26.5	40.7	65.2	285.2	308.6	92.4
Austria:	0.3	0.5	71.7	6.1	6.4	96.1
Bialorussia:	0	0.3	0	0	0.9	0
Bulgaria:	0	0.1	0	0	4.3	0
Czech Republic:	11.4	13.4	85.1	99.4	103.7	95.9
Indirect export:	0.3	0	-	2.6	0	-
Finland:	0	0	-	0	3.7	0
Lithuania:	0	0	-	0	0.1	0
German:	3	4.5	67.9	40.6	34.3	118.4
German/Austria:	0	0	-	0	16.9	0
Russia:	4.5	6.5	69	73.6	39.4	186.8
Slovakia:	7	15.5	44.9	62.8	99	63.5
Latvia	0.1	0	-	0.1	0.1	45.5

Table 4.11. Statistical data on Cement Industry in November, 2010

Activity	Nov	Nov	XI 2010 /	I-XI	I-XI	I-XI 2010 /
	2010 (Gg)	2009 (Gg)	XI 2009 (%)	2010 (Gg)	2009 (Gg)	I-XI 2009 (%)
Clinker production – total:	942.8	837.1	112.6	10969.1	10041.8	109.2
Cement production – total:	1299.1	1166.9	111.3	15092.3	14409.7	104.7
CEM I 32.5:	46.1	52.2	88.3	876.9	930.8	94.2
CEM I 42.5:	380.1	309.6	122.8	3903.5	3483.1	112.1
CEM I 52.5:	35.4	38.4	92.1	321.4	320.4	100.3
CEM II 32.5:	491.5	458.5	107.2	5840.6	6249.7	93.5
CEM II 42.5:	194.8	185.6	104.9	2221.4	1958.1	113.4
CEM II 52.5:	41	29.8	137.7	375.4	174.7	214.9
CEM III 32.5:	32.8	50.8	64.6	646	743.5	86.9
CEM III 42.5:	42.2	42.2	99.9	476.3	538.5	88.4
CEM IV 32.5:	0	0	-	1.2	0	-
CEM V 32.5:	34.3	0	-	420.3	2.2	19105.9
other	0.9	0	-	9.2	10.2	90.2
Import of clinker:	0	0	-	82.3	26.6	309.8
Sale of clinker:	43.2	18.7	230.7	363	430.7	84.3
Export of clinker – total:	12	18.7	64	126.5	141.6	89.3
Austria:	0	1.4	0	0	1.4	0
Czech Republic:	12	13.2	90.9	111.4	102.5	108.8
Lithuania:	0	0	-	10.3	0	-
German:	0	4.2	0	0	9.3	0
Slovakia:	0	0	-	4.8	9.2	52
Ukraine:	0	0	-	0	19.3	0
Import of cement – total:	16.4	18.1	90.4	217.5	205	106.1
Czech Republic:	2.9	0.2	1611.1	32	11	292.5
German:	13.5	17.9	75.2	185.4	194	95.6
Sale of cement – total:	1354.6	1231.4	110	15340	14801.4	103.6
Sale of cement – in Poland:	1324.3	1186.9	111.6	15001	14400.4	104.2
Sale of cement – in Poland – bags:	197.4	221.1	89.3	3438.9	3879.4	88.6
Export of cement – total:	30.3	44.4	68.3	338.9	401.2	84.5
Austria:	0.6	1.3	45	6.9	2.7	261.9
Bialorussia:	0	0	-	0.9	0	-
Bulgaria:	0	0	-	4.3	0	-
Czech Republic:	10.3	9.7	105.6	114	140.8	81
Indirect export:	0	0.4	0	0	16.2	0
Finland:	0	15.4	0	3.7	54.8	6.7
Lithuania:	0	0	-	0.1	0	-
Lithuania /Hungary:	0	0	-	0	18	0
German:	2.7	1.5	177.9	36.9	16.1	228.8
German/Austria:	0	4.7	0	16.9	48.4	34.9
Russia:	4.4	4	110.5	43.8	38.7	113.2
Slovakia:	12.4	7.4	167.9	111.3	65.4	170.1
Hungary:	0	0	-	0	0.1	0
Latvia	0	0	-	0.1	0	-

Table 4.12. Statistical data on Cement Industry in December, 2010

Activity	Dec 2010	Dec 2009	XII 2010 / XII 2009	I-XII 2010	I-XII 2009	XII 2010 / XII 2009
	(Gg)	(Gg)	(%)	(Gg)	(Gg)	(%)
Clinker production – total:	734.1	609.4	120.5	11703.2	10651.3	109.9
Cement production – total:	429.1	814.7	52.7	15521.4	15224.1	102.0
CEM I 32.5	31.0	54.2	57.2	907.9	985.0	92.2
CEM I 42.5	131.7	234.9	56.1	4035.2	3717.8	108.5
CEM I 52.5	20.0	31.0	64.5	341.4	351.2	97.2
CEM II 32.5	117.6	280.9	41.9	5958.2	6530.4	91.2
CEM II 42.5	74.9	132.1	56.7	2296.4	2090.2	109.9
CEM II 52.5	15.4	19.9	77.6	390.8	194.2	201.2
CEM III 32.5	15.9	35.9	44.3	661.8	779.0	85.0
CEM III 42.5	14.9	24.7	60.4	491.3	563.0	87.3
CEM IV 32.5	0.0	0.0	0.0	1.2	0.0	0.0
CEM V 32.5	7.8	0.0	0.0	428.1	2.2	19459.1
other	0.0	1.1	0.0	9.2	11.2	82.1
Import of clinker:	0.0	0.0	0.0	82.3	26.6	309.4
Sale of clinker:	11.7	42.5	27.6	374.7	914.1	41.0
Export of clinker – total:	7.8	6.5	120.0	134.3	143.9	93.3
Austria:	0.0	0.0	0.0	0.0	1.4	0.0
Czech Republic:	7.8	6.5	120.0	119.2	108.9	109.5
Lithuania:	0.0	0.0	0.0	10.3	0.0	0.0
German:	0.0	0.0	0.0	0.0	5.1	0.0
Slovakia:	0.0	0.0	0.0	4.8	9.2	52.2
Ukraine:	0.0	0.0	0.0	0.0	19.3	0.0
Import of cement- total:	14.6	6.9	211.6	232.1	211.8	109.6
Czech Republic:	2.5	0.1	2500.0	34.5	11.1	310.8
German:	12.2	6.8	179.4	197.6	200.7	98.5
Sale of cement – total:	402.3	717.0	56.1	15742.3	15518.2	101.4
Sale of cement – in Poland:	397.2	694.2	57.2	15398.3	15093.9	102.0
Sale of cement – in Poland – bags:	33.2	107.1	31.0	3472.2	3986.4	87.1
Export of cement – total:	5.1	22.8	22.4	344.1	424.3	81.1
Austria:	0.1	0.0	0.0	7.1	0.0	0.0
Bialorussia:	0.0	0.0	0.0	0.9	0.0	0.0
Bulgaria:	0.0	0.0	0.0	4.3	0.0	0.0
Czech Republic:	1.5	3.3	45.5	115.4	144.1	80.1
Indirect export:	0.0	0.4	0.0	0.0	16.7	0.0
Finland:	0.0	11.4	0.0	3.7	66.2	5.6
Lithuania:	0.0	0.0	0.0	0.1	0.0	0.0
Lithuania /Hungary:	0.0	0.0	0.0	0.0	18.1	0.0
German:	0.4	0.0	0.0	37.3	0.0	0.0
German/Austria:	0.0	2.8	0.0	16.9	70.3	24.0
Russia:	0.2	1.3	15.4	44.0	40.0	110.0
Slovakia:	3.1	3.5	88.6	114.4	68.9	166.0
Hungary:	0.0	0.0	0.0	0.0	0.0	0.0
Latvia	0.0	0.0	0.0	0.1	0.0	0.0

The data on the main glass manufacturers is available on the web site of the Polish Glass Manufacturers Federation³. Polish Glass Industry counts about 100 glass plants which produce all the main types of glass: container glass, flat glass, fiber glass, special glass, and domestic glass. Owens-Illinois Polska S.A., Saint-Gobain Glass Polska Sp. z o.o., Pilkington Polska Sp. z o.o., Guardian Industries Poland Sp. z o.o., and Euroglas Polska Sp. z o.o are the biggest manufacturers with capacities of more than 250 Gg per year.

The Central Statistical Office of Poland⁴ provides the statistical data on production of the main industrial products in 2010, particularly various glass products.

Figure 2. presents total production of glass by the glass plant with capacity of more than 20 Mg per day.

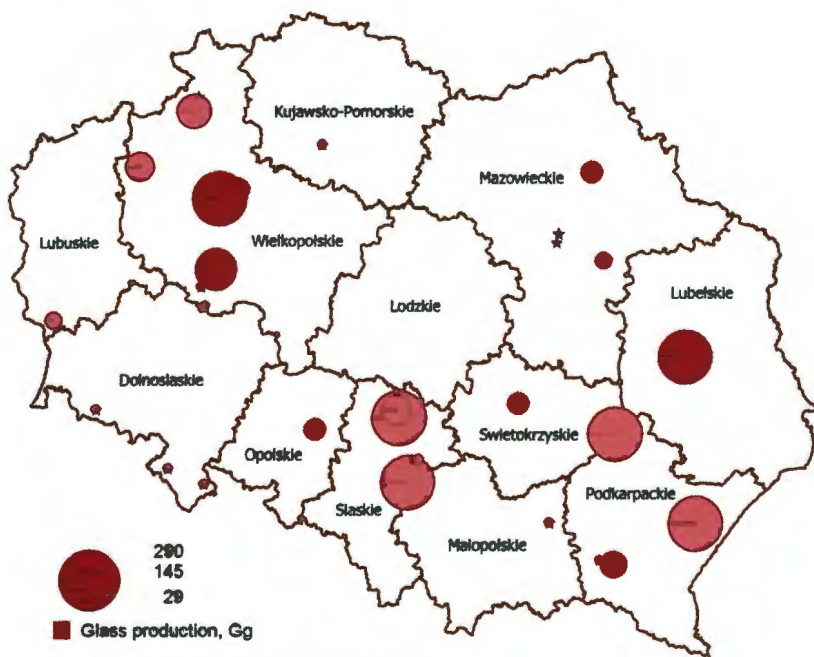


Figure 4.2. Glass plants' capacities in 2010 (Gg)

³ Polish Glass Manufacturers Federation: <http://www.polish-glass.pl>

⁴ GUS. http://www.stat.gov.pl/gus/5840_792_PLK_HTML.htm

Agriculture

The sector of Agriculture, according to the internationally approved methodologies of inventory, has the following sources: domestic livestock (enteric fermentation and manure management), rice cultivation (flooded rice fields), savanna burning, field burning of agricultural residues, and agricultural soil management (IPCC,2006).

In the "Livestock" subsector, the assessment of emissions is conducted for such three categories: 1) enteric fermentation of dairy and non-dairy cattle, sheep, goats, horses, and swine (CH₄ emissions, accounting for approximately 2.4% of total Polish greenhouse gas emissions); 2) the manure of dairy and non-dairy cattle, sheep, goats, horses, swine, and poultry (CH₄ emissions, 0.8%); 3) collecting, storage and use of livestock residues (N₂O emissions, 1.3%).

The input data for modeling emissions from enteric fermentation and manure management includes livestock population (*Table 4.13, Figures 4.3.-4.10*) and appropriate greenhouse gas emission factors considered through the prism of the smallest administrative units, as well as agricultural enterprises (GUS, 2010; GUS, 2012).

Table 4.13. Livestock population of Polish voivodeships, 2010

Voivodeship	In individual households, heads						
	Dairy cattle	Non-dairy cattle	Sheep	Swine	Horses	Goats	Poultry
DOLNOŚLĄSKIE	26256	43924	6776	237764	12616	7658	4670408
KUJAWSKO-POMORSKIE	160737	261588	12138	1678295	7413	2122	6764183
ŁÓDZKIE	223420	259305	14452	1244850	19800	7200	11609149
LUBELSKIE	163355	175232	12067	953650	39000	8500	5877203
LUBUSKIE	12911	32315	4003	146786	6250	2850	4879601
MAŁOPOLSKIE	108962	72351	53981	310724	28500	14800	5480710
MAZOWIECKIE	516240	477542	5704	1327954	44500	6700	18575066
OPOLSKIE	34980	52422	2342	608742	2580	1661	3905821
PODKARPACKIE	70681	31795	14512	213577	18200	13700	4159783
PODLASKIE	464203	452840	17029	552737	23780	5950	4546826
POMORSKIE	55666	106717	10002	638356	14000	4100	5168453
ŚLĄSKIE	45996	68457	11463	268222	9350	19100	7395209
ŚWIĘTOKRZYSKIE	80760	83819	3161	375803	14850	6124	5700474
WARMIŃSKO-MAZURSKIE	181009	212829	6046	596838	16546	5191	5494441
WIELKOPOLSKIE	250336	470650	16589	3370824	20530	12000	25543776
ZACHODNIOPOMORSKIE	21917	46821	3869	188180	5934	2314	5079697

Gmina	Wojewodztwo	Powiat	M_taryf	Cattle_indiv_2010	Noncattle_indiv_2010	Sheep_indiv_2010	Pigs_indiv_2010	Horses_indiv_2010	Goats_indiv_2010	Poultry_indiv_2010
Bolno_wielce	Dolno_l_skle	bolno_powiat	0201011	0	10	5	55	8	9	319
Bolno_wielce	Dolno_l_skle	bolno_powiat	0201028	223	585	21	1 540	81	72	105 686
Gniewosz	Dolno_l_skle	bolno_powiat	0201032	75	202	16	2 259	39	26	26 711
Nowogrodzka	Dolno_l_skle	bolno_powiat	0201043	258	785	9	2 229	53	110	21 106
Osiecznica	Dolno_l_skle	bolno_powiat	0201082	24	57	45	234	24	19	10 430
Warta Bolna_wielce	Dolno_l_skle	bolno_powiat	0201082	169	297	10	1 118	14	34	25 933
Stawna	Dolno_l_skle	elblag_powiat	0202011	63	126	0	63	21	12	464
Dzier_zni_w	Dolno_l_skle	elblag_powiat	0202021	18	36	16	287	7	21	6 366
Plaszowice	Dolno_l_skle	elblag_powiat	0202031	61	189	62	590	64	45	1 032
Plawa_O_rna	Dolno_l_skle	elblag_powiat	0202041	90	151	3	145	10	10	1 043
Dzier_zni_w	Dolno_l_skle	elblag_powiat	0202052	313	819	81	1 980	66	79	50 436
_ngiewski	Dolno_l_skle	elblag_powiat	0202082	242	613	20	1 863	14	30	4 941
Nieruch	Dolno_l_skle	elblag_powiat	0202073	54	132	0	331	32	62	1 463
G_cz_w	Dolno_l_skle	gogowicki	0203011	12	36	0	363	15	5	218
G_cz_w	Dolno_l_skle	gogowicki	0203022	98	273	6	1 635	52	34	5 502
Jezewnowa	Dolno_l_skle	gogowicki	0203032	43	109	5	829	18	6	11 699
Kolka	Dolno_l_skle	gogowicki	0203042	40	129	0	2 470	88	27	2 527
P_czur	Dolno_l_skle	gogowicki	0203082	60	166	5	1 103	10	14	684
_ukowice	Dolno_l_skle	gogowicki	0203082	34	107	0	2 672	36	22	4 342
G_ra	Dolno_l_skle	g_rzewicki	0204013	442	1 146	24	7 100	64	137	5 295
Jamulno	Dolno_l_skle	g_rzewicki	0204022	166	421	2	3 215	83	32	3 277
Niechl_w	Dolno_l_skle	g_rzewicki	0204032	255	661	0	2 468	27	22	4 577
W_cz	Dolno_l_skle	g_rzewicki	0204043	585	1 578	5	4 908	91	80	134 711
Jawor	Dolno_l_skle	jaworski	0205011	6	17	0	115	0	0	171
Bol_k_w	Dolno_l_skle	jaworski	0205023	350	984	764	667	150	92	6 377
M_czka	Dolno_l_skle	jaworski	0205032	186	443	196	1 982	42	63	5 385
M_czka_w	Dolno_l_skle	jaworski	0205042	106	307	4	1 336	26	22	2 985
Paszewice	Dolno_l_skle	jaworski	0205052	153	399	29	1 082	54	37	1 818
W_dra_e_Wielka	Dolno_l_skle	jaworski	0205062	176	464	0	1 781	7	19	2 474
Karnucz	Dolno_l_skle	jalenski	0206011	0	10	3	29	6	7	31
Kowary	Dolno_l_skle	jalenski	0206021	22	66	5	6	36	0	6 570
Pielonowice	Dolno_l_skle	jalenski	0206031	22	67	0	20	42	23	190
Sadowna_Por_ba	Dolno_l_skle	jalenski	0206041	3	13	0	29	28	24	141
Jamulno_Wielka	Dolno_l_skle	jalenski	0206052	84	226	14	208	95	19	705
J_e_w_Sudach	Dolno_l_skle	jalenski	0206062	218	616	36	500	109	47	2 073
Mys_owice	Dolno_l_skle	jalenski	0206072	231	579	23	114	104	21	1 360
Pedzi_czyn	Dolno_l_skle	jalenski	0206082	164	421	358	61	167	36	3 161
Stara_Kamienica	Dolno_l_skle	jalenski	0206082	148	372	171	171	97	62	3 219
Kamienica_G_ra	Dolno_l_skle	kamienicki	0207011	17	37	14	16	11	5	270
Kamienica_G_ra	Dolno_l_skle	kamienicki	0207022	528	1 249	72	635	254	64	2 680
Lubowka	Dolno_l_skle	kamienicki	0207033	338	895	158	398	198	77	1 648
Marsz_w	Dolno_l_skle	kamienicki	0207042	259	603	144	94	132	60	1 413

Figure 4.3. Fragment of geodatabase with data on population of livestock owned by individual farms in Poland (2010)

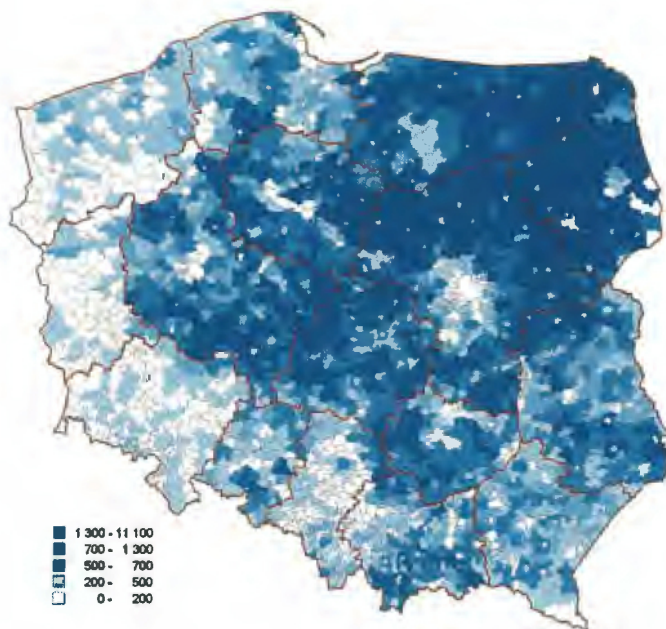


Figure 4.4. Population of cattle (dairy) owned by individual farms in Poland (2010)

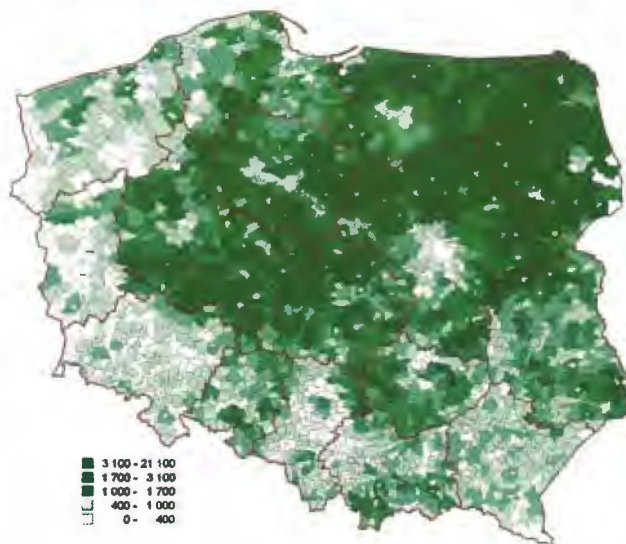


Figure 4.5. Population of cattle (non-dairy) owned by individual farms of Poland (2010)

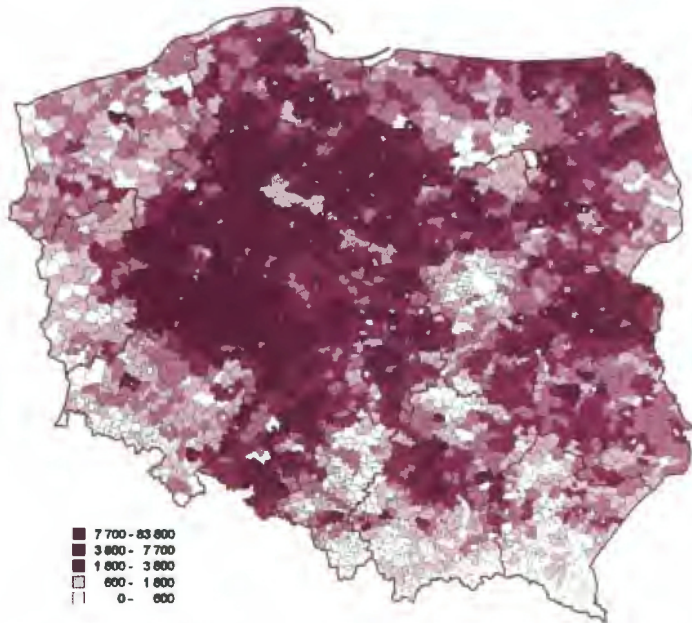


Figure 4.6. Population of swine owned by individual farms of Poland (2010)

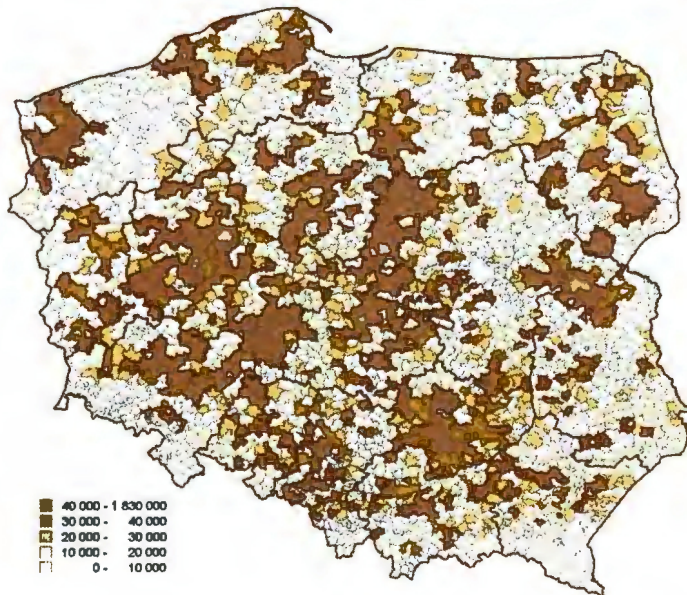


Figure 4.7. Population of poultry owned by individual farms in Poland (2010)

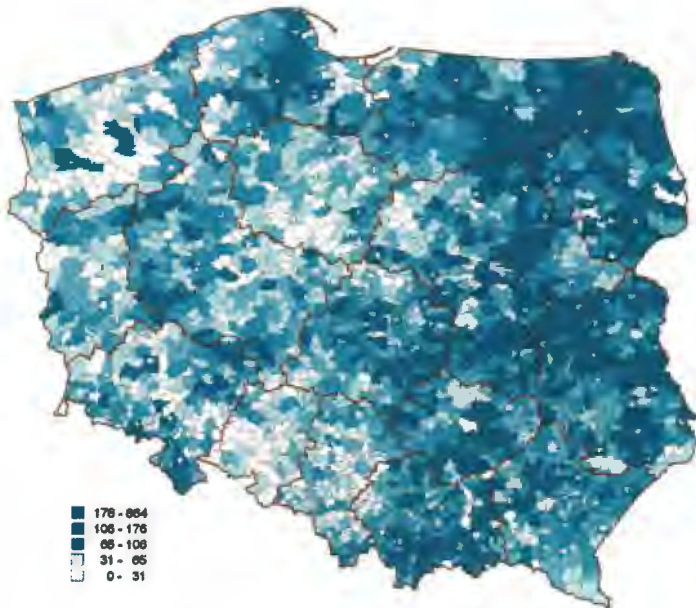


Figure 4.8. Population of horses owned by individual farms in Poland (2010)



Figure 4.9. Population of sheep owned by individual farms in Poland (2010)

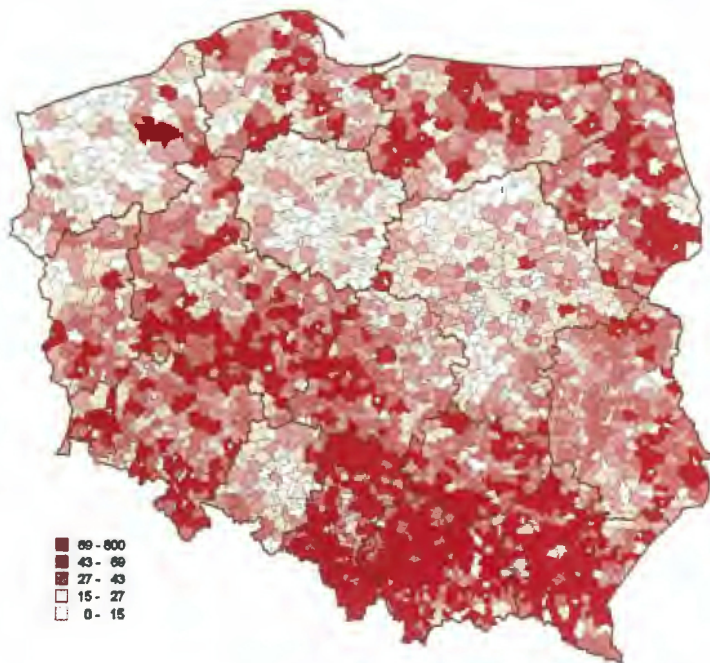


Figure 4.10. Population of goats owned by individual farms in Poland (2010)



Figure 4.11. Evergreen coniferous forest of Poland (CLC 2006, 2011)



Figure 4.12. Broadleaf forest of Poland (CLC 2006, 2011)



Figure 4.13. Mixed forest of Poland (CLC 2006, 2011)

References

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