

Energy consumption and carbon dioxide emissions of the construction of six urban models

ANNEX II. TABLES

1 Total energy consumption and CO₂ emissions of the public infrastructure

1.1 A1 Manhattan

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Road	76,971,815.02	12,572,195.66	89,544,010.68
Sidewalk	16,276,800.84	5,437,817.75	21,714,618.59
Public lighting	6,287,955.93	479,997.84	6,767,953.77
Drinkable water	5,603,509.80	506,951.34	6,110,461.14
Rain water	23,990,631.62	5,753,623.06	29,744,254.68
Sewage water	5,272,970.11	2,297,219.88	7,570,189.99
Gardening	211,543.17	173,106.73	384,649.90
Total (MJ)	134,615,226.49	27,220,912.26	161,836,138.75

Energy consumption (MJ/Ha)			
	Material manufacturing stage (MJ/Ha)	Construction stage(MJ/Ha)	Total (MJ/Ha)
Road	2,620.58	428.03	3,048.62
Sidewalk	554.16	185.14	739.30
Public lighting	214.08	16.34	230.42
Drinkable water	190.78	17.26	208.04
Rain water	816.79	195.89	1,012.67
Sewage water	179.52	78.21	257.73
Gardening	7.20	5.89	13.10
Total (MJ)	4,583.11	926.76	5,509.88

Energy consumption (MJ/pop)			
	Material manufacturing stage (MJ/pop)	Construction stage(MJ/pop)	Total (MJ/pop)
Road	2,474.66	404.20	2,878.86
Sidewalk	523.30	174.83	698.13
Public lighting	202.16	15.43	217.59
Drinkable water	180.15	16.30	196.45
Rain water	771.30	184.98	956.28
Sewage water	169.53	73.86	243.38
Gardening	6.80	5.57	12.37
Total (MJ)	4,327.91	875.16	5,203.07

CO ₂ Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Road	10,215,270.52	3,283,857.51	13,499,128.03

Sidewalk	2,691,107.77	1,402,656.99	4,093,764.76
Public lighting	688,603.79	125,373.77	813,977.56
Drinkable water	729,109.98	132,415.69	861,525.67
Rain water	2,230,765.90	1,502,734.99	3,733,500.89
Sewage water	590,899.62	599,945.52	1,190,845.14
Gardening	22,669.98	45,214.30	67,884.28
Total (MJ)	17,168,427.56	7,092,198.77	24,260,626.33

CO2 Emissions (Kg/Ha)			
	Material manufacturing stage (Kg/Ha)	Construction stage (Kg/Ha)	Total (Kg/Ha)
Road	347.79	111.80	459.59
Sidewalk	91.62	47.75	139.38
Public lighting	23.44	4.27	27.71
Drinkable water	24.82	4.51	29.33
Rain water	75.95	51.16	127.11
Sewage water	20.12	20.43	40.54
Gardening	0.77	1.54	2.31
Total (MJ)	584.52	241.46	825.98

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage (Kg/pop)	Total (Kg/pop)
Road	328.42	105.58	434.00
Sidewalk	86.52	45.10	131.62
Public lighting	22.14	4.03	26.17
Drinkable water	23.44	4.26	27.70
Rain water	71.72	48.31	120.03
Sewage water	19.00	19.29	38.29
Gardening	0.73	1.45	2.18
Total (MJ)	551.97	228.02	779.98

1.2 A2 Barcelona

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Road	65,437,515.35	10,459,079.14	75,896,594.49
Sidewalk	19,341,037.78	3,669,371.86	23,010,409.64
Public lighting	3,776,408.96	461,246.98	4,237,655.94
Drinkable water	5,576,138.78	596,677.24	6,172,816.02
Rain water	19,898,777.06	4,449,128.54	24,347,905.60
Sewage water	4,314,286.49	1,465,579.65	5,779,866.14
Gardening	235,047.97	192,340.81	427,388.78

Total (MJ)	118,579,212.39	21,293,424.22	139,872,636.61
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Energy consumption (MJ/Ha)			
	Material manufacturing stage (MJ/Ha)	Construction stage(MJ/Ha)	Total (MJ/Ha)
Road	2,312.12	369.55	2,681.67
Sidewalk	683.38	129.65	813.03
Public lighting	133.43	16.30	149.73
Drinkable water	197.02	21.08	218.11
Rain water	703.09	157.20	860.29
Sewage water	152.44	51.78	204.22
Gardening	8.30	6.80	15.10
Total (MJ)	4,189.78	752.36	4,942.15

Energy consumption (MJ/pop)			
	Material manufacturing stage (MJ/pop)	Construction stage(MJ/pop)	Total (MJ/pop)
Road	2,840.17	453.95	3,294.12
Sidewalk	839.45	159.26	998.72
Public lighting	163.91	20.02	183.93
Drinkable water	242.02	25.90	267.92
Rain water	863.66	193.10	1,056.77
Sewage water	187.25	63.61	250.86
Gardening	10.20	8.35	18.55
Total (MJ)	5,146.67	924.19	6,070.86

CO2 Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Road	8,777,911.95	2,731,183.92	11,509,095.87
Sidewalk	2,667,938.04	946,833.24	3,614,771.28
Public lighting	480,615.42	120,476.46	601,091.88
Drinkable water	753,637.67	155,852.10	909,489.77
Rain water	1,855,574.19	1,162,035.22	3,017,609.41
Sewage water	479,717.96	382,740.02	862,457.98
Gardening	25,188.86	50,238.11	75,426.97
Total (MJ)	15,040,584.09	5,549,359.07	20,589,943.16

CO2 Emissions (Kg/Ha)	
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	Material manufacturing stage (Kg/Ha)	Construction stage(Kg/Ha)	Total (Kg/Ha)
Road	310.15	96.50	406.65
Sidewalk	94.27	33.45	127.72
Public lighting	16.98	4.26	21.24
Drinkable water	26.63	5.51	32.14
Rain water	65.56	41.06	106.62
Sewage water	16.95	13.52	30.47
Gardening	0.89	1.78	2.67
Total (MJ)	531.43	196.08	727.51

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage(Kg/pop)	Total (Kg/pop)
Road	380.99	118.54	499.53
Sidewalk	115.80	41.10	156.89
Public lighting	20.86	5.23	26.09
Drinkable water	32.71	6.76	39.47
Rain water	80.54	50.44	130.97
Sewage water	20.82	16.61	37.43
Gardening	1.09	2.18	3.27
Total (MJ)	652.80	240.86	893.66

1.3 B1 Hong Kong

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Road	30,840,629.17	4,343,369.22	35,183,998.39
Sidewalk	4,627,977.68	1,451,798.54	6,079,776.22
Equipment	9,932,365.05	4,494,404.95	14,426,770.00
Public lighting	3,875,792.21	413,237.07	4,289,029.28
Drinkable water	2,368,112.77	209,034.86	2,577,147.63
Rain water	20,750,050.60	4,813,727.59	25,563,778.19
Sewage water	3,080,744.54	1,269,493.06	4,350,237.60
Gardening	100,444.80	63,048.63	163,493.43
Total (MJ)	75,576,116.82	17,058,113.92	92,634,230.74

Energy consumption (MJ/Ha)			
	Material manufacturing stage (MJ/Ha)	Construction stage(MJ/Ha)	Total (MJ/Ha)

Road	1,223.74	172.34	1,396.08
Sidewalk	183.64	57.61	241.24
Equipment	394.11	178.34	572.45
Public lighting	153.79	16.40	170.19
Drinkable water	93.97	8.29	102.26
Rain water	823.35	191.01	1,014.36
Sewage water	122.24	50.37	172.61
Gardening	3.99	2.50	6.49
Total (MJ)	2,998.81	676.86	3,675.67

Energy consumption (MJ/pop)			
	Material manufacturing stage (MJ/pop)	Construction stage(MJ/pop)	Total (MJ/pop)
Road	1,007.07	141.83	1,148.90
Sidewalk	151.12	47.41	198.53
Equipment	324.33	146.76	471.09
Public lighting	126.56	13.49	140.05
Drinkable water	77.33	6.83	84.15
Rain water	677.57	157.19	834.76
Sewage water	100.60	41.45	142.05
Gardening	3.28	2.06	5.34
Total (MJ)	2,467.87	557.02	3,024.89

CO2 Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Road	4,157,593.14	1,134,488.04	5,292,081.18
Sidewalk	751,335.41	374,483.93	1,125,819.34
Equipment	1,715,428.99	1,172,559.69	2,887,988.68
Public lighting	424,800.73	107,936.28	532,737.01
Drinkable water	316,415.54	54,599.91	371,015.45
Rain water	1,939,479.96	1,257,235.01	3,196,714.97
Sewage water	331,436.03	331,547.92	662,983.95
Gardening	5,356.19	16,468.30	21,824.49
Total (MJ)	9,641,845.99	4,449,319.08	14,091,165.07

CO2 Emissions (Kg/Ha)			
	Material manufacturing stage (Kg/Ha)	Construction stage(Kg/Ha)	Total (Kg/Ha)
Road	164.97	45.02	209.99
Sidewalk	29.81	14.86	44.67
Equipment	68.07	46.53	114.59
Public lighting	16.86	4.28	21.14
Drinkable water	12.56	2.17	14.72
Rain water	76.96	49.89	126.84

Sewage water	13.15	13.16	26.31
Gardening	0.21	0.65	0.87
Total (MJ)	382.58	176.55	559.13

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage(Kg/pop)	Total (Kg/pop)
Road	135.76	37.05	172.81
Sidewalk	24.53	12.23	36.76
Equipment	56.02	38.29	94.30
Public lighting	13.87	3.52	17.40
Drinkable water	10.33	1.78	12.12
Rain water	63.33	41.05	104.39
Sewage water	10.82	10.83	21.65
Gardening	0.17	0.54	0.71
Total (MJ)	314.85	145.29	460.13

1.4 B2 Moscow

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Road	65,504,694.24	7,916,326.35	73,421,020.59
Sidewalk	3,777,560.75	620,719.58	4,398,280.33
Path	1,341,803.94	527,393.14	
Public lighting	7,618,366.38	796,907.96	8,415,274.34
Drinkable water	3,139,629.28	235,309.42	3,374,938.70
Rain water	18,519,561.34	4,141,896.27	22,661,457.61
Sewage water	3,275,399.72	1,418,168.74	4,693,568.46
Gardening	624,090.24	341,779.32	965,869.56
Total (MJ)	103,801,105.89	15,998,500.78	117,930,409.59

Energy consumption (MJ/Ha)			
	Material manufacturing stage (MJ/Ha)	Construction stage(MJ/Ha)	Total (MJ/Ha)
Road	2,336.45	282.36	2,618.81
Sidewalk	134.74	22.14	156.88
Path	47.86	18.81	66.67
Public lighting	271.74	28.42	300.16
Drinkable water	111.99	8.39	120.38

Rain water	660.56	147.73	808.30
Sewage water	116.83	50.58	167.41
Gardening	22.26		22.26
Total (MJ)	3,702.42	558.45	4,260.87

Energy consumption (MJ/pop)			
	Material manufacturing stage (MJ/pop)	Construction stage(MJ/pop)	Total (MJ/pop)
Road	9,530.73	1,151.80	10,682.53
Sidewalk	549.62	90.31	639.94
Path	195.23	76.73	271.96
Public lighting	1,108.45	115.95	1,224.40
Drinkable water	456.81	34.24	491.04
Rain water	2,694.54	602.63	3,297.17
Sewage water	476.56	206.34	682.90
Gardening	90.80	49.73	140.53
Total (MJ)	15,102.74	2,327.73	17,430.47

CO2 Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Road	8,994,672.28	2,067,744.44	11,062,416.72
Sidewalk	495,717.81	162,131.95	657,849.76
Path	191,063.78	137,755.09	328,818.87
Public lighting	866,146.14	208,083.95	1,074,230.09
Drinkable water	430,262.18	61,462.82	491,725.00
Rain water	1,729,293.13	1,081,786.15	2,811,079.28
Sewage water	367,549.03	370,370.36	737,919.39
Gardening	33,280.61	89,272.76	122,553.37
Total (MJ)	13,107,984.96	4,178,607.52	17,286,592.48

CO2 Emissions (Kg/Ha)			
	Material manufacturing stage (Kg/Ha)	Construction stage(Kg/Ha)	Total (Kg/Ha)
Road	320.83	73.75	394.58
Sidewalk	17.68	5.78	23.46
Path	6.81	4.91	11.73
Public lighting	30.89	7.42	38.32
Drinkable water	15.35	2.19	17.54
Rain water	61.68	38.59	100.27
Sewage water	13.11	13.21	26.32
Gardening	1.19	3.18	4.37
Total (MJ)	467.54	149.04	616.59

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage(Kg/pop)	Total (Kg/pop)
Road	1,308.70	300.85	1,609.55
Sidewalk	72.13	23.59	95.72
Path	27.80	20.04	47.84
Public lighting	126.02	30.28	156.30
Drinkable water	62.60	8.94	71.54
Rain water	251.61	157.40	409.00
Sewage water	53.48	53.89	107.36
Gardening	4.84	12.99	17.83
Total (MJ)	1,907.17	607.97	2,515.15

1.5 C1 Chicago

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Road	60,025,579.63	8,241,753.44	68,267,333.07
Sidewalk	8,022,396.71	1,846,414.22	9,868,810.93
Public lighting	8,007,388.09	744,846.19	8,752,234.28
Drinkable water	2,770,492.02	398,937.78	3,169,429.80
Rain water	18,750,736.89	3,798,829.88	22,549,566.77
Sewage water	3,498,921.93	1,477,629.83	4,976,551.76
Gardening	462,336.38	558,594.38	1,020,930.76
Total (MJ)	101,537,851.65	17,067,005.72	118,604,857.37

Energy consumption (MJ/Ha)			
	Material manufacturing stage (MJ/Ha)	Construction stage(MJ/Ha)	Total (MJ/Ha)
Road	2,202.05	302.35	2,504.40
Sidewalk	294.30	67.74	362.04
Public lighting	293.75	27.32	321.08
Drinkable water	101.64	14.64	116.27
Rain water	687.87	139.36	827.23
Sewage water	128.36	54.21	182.57
Gardening	16.96	20.49	37.45
Total (MJ)	3,724.93	626.11	4,351.03

Energy consumption (MJ/pop)			

	Material manufacturing stage (MJ/pop)	Construction stage(MJ/pop)	Total (MJ/pop)
Road	46,316.03	6,359.38	52,675.41
Sidewalk	6,190.12	1,424.70	7,614.82
Public lighting	6,178.54	574.73	6,753.27
Drinkable water	2,137.73	307.82	2,445.55
Rain water	14,468.16	2,931.20	17,399.36
Sewage water	2,699.79	1,140.15	3,839.93
Gardening	356.74	431.01	787.76
Total (MJ)	78,347.11	13,168.99	91,516.09

CO2 Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Road	8,356,187.94	2,152,746.00	10,508,933.94
Sidewalk	1,204,174.93	476,273.01	1,680,447.94
Public lighting	872,192.86	194,550.92	1,066,743.78
Drinkable water	351,996.71	104,202.55	456,199.26
Rain water	1,749,315.18	992,187.40	2,741,502.58
Sewage water	392,775.90	385,896.26	778,672.16
Gardening	24,653.29	145,904.85	170,558.14
Total (MJ)	12,951,296.81	4,451,760.99	17,403,057.80

CO2 Emissions (Kg/Ha)			
	Material manufacturing stage (Kg/Ha)	Construction stage(Kg/Ha)	Total (Kg/Ha)
Road	306.55	78.97	385.52
Sidewalk	44.18	17.47	61.65
Public lighting	32.00	7.14	39.13
Drinkable water	12.91	3.82	16.74
Rain water	64.17	36.40	100.57
Sewage water	14.41	14.16	28.57
Gardening	0.90	5.35	6.26
Total (MJ)	475.12	163.31	638.43

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage(Kg/pop)	Total (Kg/pop)
Road	6,447.68	1,661.07	8,108.75
Sidewalk	929.15	367.49	1,296.64
Public lighting	672.99	150.12	823.10
Drinkable water	271.60	80.40	352.01
Rain water	1,349.78	765.58	2,115.36
Sewage water	303.07	297.76	600.83
Gardening	19.02	112.58	131.60

Total (MJ)	9,993.28	3,435.00	13,428.29
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1.6 C2 Los Angeles

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Road	18,916,973.96	5,103,095.17	24,020,069.13
Sidewalk	3,101,984.94	802,686.20	3,904,671.14
Public lighting	1,407,343.12	170,368.31	1,577,711.43
Drinkable water	817,173.58	144,468.48	961,642.06
Rain water	12,462,172.00	2,594,391.72	15,056,563.72
Sewage water	2,686,204.49	876,580.65	3,562,785.14
Gardening	79,916.31	65,395.87	145,312.18
Total (MJ)	39,471,768.40	9,756,986.40	49,228,754.80

Energy consumption (MJ/Ha)			
	Material manufacturing stage (MJ/Ha)	Construction stage (MJ/Ha)	Total (MJ/Ha)
Road	694.66	187.39	882.05
Sidewalk	113.91	29.48	143.39
Public lighting	51.68	6.26	57.94
Drinkable water	30.01	5.31	35.31
Rain water	457.63	95.27	552.90
Sewage water	98.64	32.19	130.83
Gardening	2.93	2.40	5.34
Total (MJ)	1,449.46	358.29	1,807.75

Energy consumption (MJ/pop)			
	Material manufacturing stage (MJ/pop)	Construction stage (MJ/pop)	Total (MJ/pop)
Road	29,192.86	7,875.15	37,068.01
Sidewalk	4,787.01	1,238.71	6,025.73
Public lighting	2,171.83	262.91	2,434.74
Drinkable water	1,261.07	222.95	1,484.02
Rain water	19,231.75	4,003.69	23,235.44
Sewage water	4,145.38	1,352.75	5,498.13
Gardening	123.33	100.92	224.25
Total (MJ)	60,913.22	15,057.08	75,970.30

CO2 Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)

Road	2,586,105.93	1,332,928.46	3,919,034.39
Sidewalk	478,619.47	207,048.76	685,668.23
Public lighting	177,316.63	44,499.37	221,816.00
Drinkable water	113,373.46	37,735.17	151,108.63
Rain water	1,156,870.05	677,615.81	1,834,485.86
Sewage water	308,693.73	228,911.92	537,605.65
Gardening	8,564.21	17,080.96	25,645.17
Total (MJ)	4,829,543.48	2,545,820.45	7,375,363.93

CO2 Emissions (Kg/Ha)			
	Material manufacturing stage (Kg/Ha)	Construction stage(Kg/Ha)	Total (Kg/Ha)
Road	94.97	48.95	143.91
Sidewalk	17.58	7.60	25.18
Public lighting	6.51	1.63	8.15
Drinkable water	4.16	1.39	5.55
Rain water	42.48	24.88	67.37
Sewage water	11.34	8.41	19.74
Gardening	0.31	0.63	0.94
Total (MJ)	177.35	93.49	270.83

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage(Kg/pop)	Total (Kg/pop)
Road	3,990.90	2,056.99	6,047.89
Sidewalk	738.61	319.52	1,058.13
Public lighting	273.64	68.67	342.31
Drinkable water	174.96	58.23	233.19
Rain water	1,785.29	1,045.70	2,831.00
Sewage water	476.38	353.26	829.64
Gardening	13.22	26.36	39.58
Total (MJ)	7,453.00	3,928.74	11,381.73

2 Total energy consumption and CO₂ emissions of buildings

2.1 A1 Manhattan

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks			
Cleaning and clearing of vegetation with mechanical means		3,889,882.19	3,889,882.19
Soil excavation with mechanical means		42,010,880.79	42,010,880.79
Excavation of trenches and wells with mechanical means		5,004,430.33	5,004,430.33
Ground transport and legal disposal of the wastes		149,144,936.56	149,144,936.56
Subtotal		200,050,129.87	200,050,129.87
Foundations			
Cleaning and ground leveling layer, 10cm thick	11,183,923.18		11,183,923.18
Trench foundations of HA-25/F/20/IIa	256,616,607.04	9,293,942.04	265,910,549.08
Reinforced concrete wall HA-25/B/10/I	752,259,233.78	13,314,617.88	765,573,851.66
HA-30/P/10/IIa+F concrete pavement	57,392,423.90	3,960,139.92	61,352,563.82
Electrically welded mesh of corrugated steel bars	41,128,178.22		41,128,178.22
Subtotal	1,118,580,366.12	26,568,699.84	1,145,149,065.96
Frame structure			
Reinforced concrete pile with concrete HA-25/B/10/I,	248,572,889.88		248,572,889.88
Reticular ribbed framework of 35+5 cm	412,950,664.92		412,950,664.92
Reticular ribbed framework of 25+5 cm	1,480,872,224.23		1,480,872,224.23
Inclinor reinforced concrete slab 15 cm thick	51,095,688.88	927,514.44	52,023,203.32
Subtotal	2,193,491,467.91	927,514.44	2,194,418,982.35
TOTAL	3,312,071,834.03	227,546,344.15	3,539,618,178.18

CO ₂ emissions (Kg)			
	Material manufacturing stage (Kg)	Construction stage (Kg)	Total (Kg)
Earthworks			

Cleaning and clearing of vegetation with mechanical means		1,016,037.23	1,016,037.23
Soil excavation with mechanical means		10,973,242.06	10,973,242.06
Excavation of trenches and wells with mechanical means		1,307,157.20	1,307,157.20
Ground transport and legal disposal of the wastes		38,956,657.43	38,956,657.43
Subtotal		52,253,093.92	52,253,093.92
Foundations			
Cleaning and ground leveling layer, 10cm thick	1,908,526.36		1,908,526.36
Trench foundations of HA-25/F/20/IIa	35,383,046.60	2,427,577.66	37,810,624.26
Reinforced concrete wall HA-25/B/10/I	75,930,879.69	3,477,778.19	79,408,657.88
HA-30/P/10/IIa+F concrete pavement	10,065,287.40	1,003,589.54	11,068,876.94
Electrically welded mesh of corrugated steel bars	3,313,616.95		3,313,616.95
Subtotal	126,601,357.00	6,908,945.39	133,510,302.39
Frame structure			
Reinforced concrete pile with concrete HA-25/B/10/I,	24,781,431.38		24,781,431.38
Reticular ribbed framework of 35+5 cm	41,274,863.25		41,274,863.25
Reticular ribbed framework of 25+5 cm	143,911,591.55		143,911,591.55
Inclinator reinforced concrete slab 15 cm thick	5,322,323.29	242,266.77	5,564,590.06
Subtotal	215,290,209.47	242,266.77	215,532,476.24

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks	0.00	200,050,129.87	200,050,129.87
Foundations	1,118,580,366.13	26,568,699.85	1,145,149,065.98
Frame structure	2,193,491,467.92	927,514.44	2,194,418,982.36
Total (MJ)	3,312,071,834.05	227,546,344.16	3,539,618,178.21

Energy consumption (MJ/Ha)			
	Material manufacturing stage (MJ/Ha)	Construction stage (MJ/Ha)	Total (MJ/Ha)

Earthworks	0.00	6,810.91	6,810.91
Foundations	38,083.22	904.56	38,987.78
Frame structure	74,679.68	31.58	74,711.26
Total (MJ)	112,762.90	7,747.05	120,509.95

Energy consumption (MJ/pop)			
	Material manufacturing stage (MJ/pop)	Construction stage (MJ/pop)	Total (MJ/pop)
Earthworks	0.00	6,431.65	6,431.65
Foundations	35,962.59	854.19	36,816.78
Frame structure	70,521.20	29.82	70,551.02
Total (MJ)	106,483.79	7,315.66	113,799.45

CO2 Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks	0.00	52,253,093.92	52,253,093.92
Foundations	126,601,357.00	6,908,945.39	133,510,302.39
Frame structure	215,290,209.48	242,266.77	215,532,476.25
Total (MJ)	341,891,566.48	59,404,306.08	401,295,872.56

CO2 Emissions (Kg/Ha)			
	Material manufacturing stage (Kg/Ha)	Construction stage (Kg/Ha)	Total (Kg/Ha)
Earthworks	0.00	1,779.01	1,779.01
Foundations	4,310.27	235.22	4,545.50
Frame structure	7,329.78	8.25	7,338.03
Total (MJ)	11,640.05	2,022.48	13,662.53

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage (Kg/pop)	Total (Kg/pop)
Earthworks	0.00	1,679.95	1,679.95
Foundations	4,070.26	222.12	4,292.38
Frame structure	6,921.62	7.79	6,929.41
Total (MJ)	10,991.88	1,909.86	12,901.74

2.2 A2 Barcelona

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks			
Cleaning and clearing of vegetation with mechanical means		3,788,307.69	3788307.69
Soil excavation with mechanical means		45,459,692.31	45459692.31
Excavation of trenches and wells with mechanical means		4,591,465.73	4591465.73
Ground transport and legal disposal of the wastes		158,612,282.54	158612282.5
Subtotal		212,451,748.27	212451748.3
Foundations			
Cleaning and ground leveling layer, 10cm thick	10,756,227.62		10,756,227.62
Trench foundations of HA-25/F/20/IIa	235,440,655.57	8,527,007.79	243,967,663.36
Reinforced concrete wall HA-25/B/10/I	601,356,873.61	10,643,720.44	612,000,594.05
HA-30/P/10/IIa+F concrete pavement	55,893,764.98	3,856,730.82	59,750,495.80
Electrically welded mesh of corrugated steel bars	40,054,219.20		40,054,219.20
Subtotal	943,501,740.98	23027459.05	966,529,200.03
Frame structure			
Reinforced concrete pile with concrete HA-25/B/10/I,	178,048,636.16		178,048,636.16
Reticular ribbed framework of 35+5 cm	443,366,543.18		443,366,543.18
Reticular ribbed framework of 25+5 cm	1,236,174,469.91		1,236,174,469.91
Inclinators reinforced concrete slab 15 cm thick	23,137,670.44	420,006.54	23,557,676.98
Subtotal	1,880,727,319.69	420,006.54	1,881,147,326.23
TOTAL	2,824,229,060.67	235,899,213.86	3,060,128,274.53

CO2 emissions (Kg)			
	Material manufacturing stage (Kg)	Construction stage (Kg)	Total (Kg)
Earthworks			
Cleaning and clearing of vegetation with mechanical means		989,505.97	989,505.97
Soil excavation with mechanical means		11,874,071.63	11,874,071.63
Excavation of trenches and wells with mechanical means		1,199,290.85	1,199,290.85
Ground transport and legal disposal of the wastes		41,429,528.20	41,429,528.20

Subtotal		55,492,396.65	55,492,396.65
Foundations			
Cleaning and ground leveling layer, 10cm thick	1,835,540.50		1,835,540.50
Trench foundations of HA-25/F/20/IIa	32,463,244.62	2,227,254.43	34,690,499.05
Reinforced concrete wall HA-25/B/10/I	60,699,230.23	2,780,139.78	63,479,370.01
HA-30/P/10/IIa+F concrete pavement	9,802,457.71	977,383.32	10,779,841.03
Electrically welded mesh of corrugated steel bars	3,227,090.17		3,227,090.17
Subtotal	108,027,563.23	5,984,777.53	114,012,340.76
Frame structure			
Reinforced concrete pile with concrete HA-25/B/10/I,	17,750,528.07		17,750,528.07
Reticular ribbed framework of 35+5 cm	44,314,963.00		44,314,963.00
Reticular ribbed framework of 25+5 cm	120,131,792.93		120,131,792.93
Inclinor reinforced concrete slab 15 cm thick	2,410,108.66	109,705.71	2,519,814.37
Subtotal	184,607,392.66	109,705.71	184,717,098.37
TOTAL	292,634,955.89	61,586,879.89	354,221,835.78

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks	0.00	212,451,748.27	212,451,748.27
Foundations	943,501,740.98	23,027,459.05	966,529,200.03
Frame structure	1,880,727,319.70	420,006.54	1,881,147,326.24
Total (MJ)	2,824,229,060.68	235,899,213.86	3,060,128,274.54

Energy consumption (MJ/Ha)			
	Material manufacturing stage (MJ/Ha)	Construction stage (MJ/Ha)	Total (MJ/Ha)
Earthworks	0.00	7,506.60	7,506.60
Foundations	33,336.93	813.63	34,150.56
Frame structure	66,452.10	14.84	66,466.94
Total (MJ)	99,789.03	8,335.07	108,124.10

Energy consumption (MJ/pop)			
	Material manufacturing stage (MJ/pop)	Construction stage (MJ/pop)	Total (MJ/pop)
Earthworks	0.00	9,221.00	9,221.00
Foundations	40,950.60	999.46	41,950.05

Frame structure	81,628.79	18.23	81,647.02
Total (MJ)	122,579.39	10,238.68	132,818.07

CO2 Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks	0.00	55,492,396.65	55,492,396.65
Foundations	108,027,563.23	5,984,777.54	114,012,340.77
Frame structure	184,607,392.67	109,705.71	184,717,098.38
Total (MJ)	292,634,955.90	61,586,879.90	354,221,835.80

CO2 Emissions (Kg/Ha)			
	Material manufacturing stage (Kg/Ha)	Construction stage (Kg/Ha)	Total (Kg/Ha)
Earthworks	0.00	1,960.72	1,960.72
Foundations	3,816.96	211.46	4,028.42
Frame structure	6,522.77	3.88	6,526.64
Total (MJ)	10,339.73	2,176.06	12,515.79

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage (Kg/pop)	Total (Kg/pop)
Earthworks	0.00	2,408.52	2,408.52
Foundations	4,688.70	259.76	4,948.45
Frame structure	8,012.47	4.76	8,017.24
Total (MJ)	12,701.17	2,673.04	15,374.21

2.3 B1 Hong Kong

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks			
Cleaning and clearing of vegetation with mechanical means		1,975,203.69	1,975,203.69
Soil excavation with mechanical means		55,472,688.00	55,472,688.00
Ground transport and legal disposal of the wastes		172,050,632.46	172,050,632.46
Subtotal		229,498,524.15	229,498,524.15
Foundations			

Cleaning and ground leveling layer, 10cm thick	8,958,323.24		8,958,323.24
Trench foundations of HA-25/F/20/IIa	209,550,372.68	3,708,938.37	213,259,311.05
HA-30/P/10/IIa+F concrete pavement	14,570,989.72	1,005,414.20	15,576,403.92
Electrically welded mesh of corrugated steel bars	10,441,766.03		10,441,766.03
Concrete for raft foundations HA-30/B/20/Ibis	167,811,413.32	8,501,911.91	176,313,325.23
Steel in corrugated bars B 500 SD	125,588,543.49		125,588,543.49
Timber plank form used for raft foundations	2,582,718.34		2,582,718.34
Subtotal	539,504,126.82	13,216,264.48	552,720,391.30
Frame structure			
Reinforced concrete pile with concrete HA-25/B/10/I,	407,113,274.04		407,113,274.04
Reticular ribbed framework of 35+5 cm	487,977,384.71		487,977,384.71
Reticular ribbed framework of 25+5 cm	1,352,770,662.79		1,352,770,662.79
Inclinators reinforced concrete slab 15 cm thick	27,988,145.62	508,054.79	28,496,200.41
Subtotal	2,275,849,467.16	508,054.79	2,276,357,521.95
TOTAL	2,815,353,593.98	243,222,843.42	3,058,576,437.40

CO2 emissions (Kg)			
	Material manufacturing stage (Kg)	Construction stage(Kg)	Total (Kg)
Earthworks			
Cleaning and clearing of vegetation with mechanical means		515,923.20	515,923.20
Soil excavation with mechanical means		14,489,466.11	14,489,466.11
Ground transport and legal disposal of the wastes		44,939,625.20	44,939,625.20
Subtotal		59,945,014.51	59,945,014.51
Foundations			
Cleaning and ground leveling layer, 10cm thick	1,528,729.75		1,528,729.75
Trench foundations of HA-25/F/20/IIa	21,151,410.87	968,774.70	22,120,185.57
HA-30/P/10/IIa+F concrete pavement	2,555,410.44	254,794.83	2,810,205.27
Electrically welded mesh of corrugated steel bars	841,272.68		841,272.68
Concrete for raft foundations HA-30/B/20/Ibis	31,215,388.47	2,220,699.39	33,436,087.86
Steel in corrugated bars B 500 SD	10,117,600.82		10,117,600.82
Timber plank form used for raft foundations	138,392.52		138,392.52
Subtotal	67,548,205.55	3,444,268.92	70,992,474.47

Frame structure			
Reinforced concrete pile with concrete HA-25/B/10/I,	40,587,087.64		40,587,087.64
Reticular ribbed framework of 35+5 cm	48,773,864.61		48,773,864.61
Reticular ribbed framework of 25+5 cm	131,462,644.72		131,462,644.72
Inclinators reinforced concrete slab 15 cm thick	2,915,352.79	132,703.91	3,048,056.70
Subtotal	223,738,949.76	132,703.91	223,871,653.67
TOTAL	291,287,155.31	63,521,987.34	354,809,142.65

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks	0.00	229,498,524.15	229,498,524.15
Foundations	539,504,126.82	13,216,264.48	552,720,391.30
Frame structure	2,275,849,467.16	508,054.79	2,276,357,521.95
Total (MJ)	2,815,353,593.98	243,222,843.42	3,058,576,437.40

Energy consumption (MJ/Ha)			
	Material manufacturing stage (MJ/Ha)	Construction stage (MJ/Ha)	Total (MJ/Ha)
Earthworks	0.00	9,106.36	9,106.36
Foundations	21,407.19	524.41	21,931.61
Frame structure	90,304.32	20.16	90,324.48
Total (MJ)	111,711.51	9,650.93	121,362.45

Energy consumption (MJ/pop)			
	Material manufacturing stage (MJ/pop)	Construction stage (MJ/pop)	Total (MJ/pop)
Earthworks	0.00	7,494.07	7,494.07
Foundations	17,617.04	431.57	18,048.60
Frame structure	74,315.88	16.59	74,332.47
Total (MJ)	91,932.92	7,942.23	99,875.14

CO2 Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks		59,945,014.51	59,945,014.51
Foundations	67,548,205.55	3,444,268.92	70,992,474.47
Frame structure	223,738,949.76	132,703.91	223,871,653.67

Total (MJ)	291,287,155.31	63,521,987.34	354,809,142.65
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CO2 Emissions (Kg/Ha)			
	Material manufacturing stage (Kg/Ha)	Construction stage(Kg/Ha)	Total (Kg/Ha)
Earthworks	0.00	2,378.58	2,378.58
Foundations	2,680.27	136.67	2,816.94
Frame structure	8,877.83	5.27	8,883.09
Total (MJ)	11,558.10	2,520.51	14,078.61

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage(Kg/pop)	Total (Kg/pop)
Earthworks	0.00	1,957.45	1,957.45
Foundations	2,205.73	112.47	2,318.20
Frame structure	7,306.00	4.33	7,310.33
Total (MJ)	9,511.73	2,074.26	11,585.98

2.4 B2 Moscow

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks			
Cleaning and clearing of vegetation with mechanical means		1,656,088.62	1,656,088.62
Soil excavation with mechanical means		1,844,232.92	1,844,232.92
Ground transport and legal disposal of the wastes		4,616,211.83	4,616,211.83
Subtotal		8,116,533.37	8,116,533.37
Foundations			
Cleaning and ground leveling layer, 10cm thick	1,471,877.94		1,471,877.94
HA-30/P/10/IIa+F concrete pavement	5,377,568.55	371,058.10	5,748,626.65
Electrically welded mesh of corrugated steel bars	3,853,637.51		3,853,637.51
Concrete for raft foundations HA-30/B/20/Ibis	55,469,129.26	2,810,259.69	58,279,388.95
Steel in corrugated bars B 500 SD	41,512,594.49		41,512,594.49
Timber plank form used for raft foundations	853,703.18		853,703.18
Subtotal	108,538,510.93	3,181,317.79	111,719,828.72
Frame structure			
Reinforced concrete pile with concrete HA-25/B/10/I,	39,130,387.97		39,130,387.97

Reticular ribbed framework of 25+5 cm	357,208,336.35		357,208,336.35
Inclinor reinforced concrete slab 15 cm thick	12,969,748.86	235,433.35	13,205,182.21
Subtotal	409,308,473.18	235,433.35	409,543,906.53
TOTAL	517,846,984.11	11,533,284.51	529,380,268.62

CO2 emissions (Kg)			
	Material manufacturing stage (Kg)	Construction stage(Kg)	Total (Kg)
Earthworks			
Cleaning and clearing of vegetation with mechanical means		432,570.35	432,570.35
Soil excavation with mechanical means		481,713.64	481,713.64
Ground transport and legal disposal of the wastes		1,205,754.53	1,205,754.53
Subtotal		2,120,038.52	2,120,038.52
Foundations			
Cleaning and ground leveling layer, 10cm thick	251,174.64		251,174.64
HA-30/P/10/IIa+F concrete pavement	943,099.62	94,034.56	1,037,134.18
Electrically welded mesh of corrugated steel bars	310,480.04		310,480.04
Concrete for raft foundations HA-30/B/20/Ibis	10,318,073.03	734,039.83	11,052,112.86
Steel in corrugated bars B 500 SD	3,344,316.67		3,344,316.67
Timber plank form used for raft foundations	45,744.88		45,744.88
Subtotal	15,212,888.88	828,074.39	16,040,963.27
Frame structure			
Reinforced concrete pile with concrete HA-25/B/10/I,	3,901,097.28		3,901,097.28
Reticular ribbed framework of 25+5 cm	34,713,609.56		34,713,609.56
Inclinor reinforced concrete slab 15 cm thick	1,350,978.88	61,495.19	1,412,474.07
Subtotal	39,965,685.72	61,495.19	40,027,180.91
TOTAL	55,178,574.60	3,009,608.10	58,188,182.70

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks	0.00	8,116,533.37	8,116,533.37
Foundations	108,768,386.51	3,181,317.79	111,949,704.30
Frame structure	409,308,473.18	235,433.35	409,543,906.53
Total (MJ)	518,076,859.69	11,533,284.51	529,610,144.20

Energy consumption (MJ/Ha)			
	Material manufacturing stage (MJ/Ha)	Construction stage(MJ/Ha)	Total (MJ/Ha)
Earthworks	0.00	289.50	289.50
Foundations	3,879.60	113.47	3,993.07
Frame structure	14,599.39	8.40	14,607.79
Total (MJ)	18,478.99	411.37	18,890.36

Energy consumption (MJ/pop)			
	Material manufacturing stage (MJ/pop)	Construction stage(MJ/pop)	Total (MJ/pop)
Earthworks	0.00	1,180.93	1,180.93
Foundations	15,825.46	462.87	16,288.33
Frame structure	59,553.10	34.25	59,587.36
Total (MJ)	75,378.56	1,678.06	77,056.62

CO2 Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks	0.00	2,120,038.52	2,120,038.52
Foundations	15,227,707.28	828,074.40	16,055,781.68
Frame structure	39,965,685.72	61,495.19	40,027,180.91
Total (MJ)	55,193,393.00	3,009,608.11	58,203,001.11

CO2 Emissions (Kg/Ha)			
	Material manufacturing stage (Kg/Ha)	Construction stage(Kg/Ha)	Total (Kg/Ha)
Earthworks	0.00	75.62	75.62
Foundations	543.15	29.54	572.68
Frame structure	1,425.51	2.19	1,427.71
Total (MJ)	1,968.66	107.35	2,076.01

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage(Kg/pop)	Total (Kg/pop)
Earthworks	0.00	308.46	308.46
Foundations	2,215.58	120.48	2,336.07
Frame structure	5,814.88	8.95	5,823.83
Total (MJ)	8,030.47	437.89	8,468.35

2.5 C1 Chicago

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks			
Cleaning and clearing of vegetation with mechanical means		2,898,952.62	2898952.62
Excavation for cutting of the compact soil with mechanical means and mechanical load over truck		861,403.06	861403.06
Excavation of trenches and wells with mechanical means		164,317.46	164317.46
Revision and compaction of the pavement box		226,535.98	
Ground transport and legal disposal of the wastes		4,129,381.37	4129381.37
Subtotal		8,054,054.51	8054054.51
Foundations			
Cleaning and ground leveling layer, 10cm thick	48,051.43		48,051.43
Trench foundations of HA-25/F/20/IIa	8,425,852.09	305,161.00	8,731,013.09
HA-30/P/10/IIa+F concrete pavement of plastic	25,466,596.67	1,757,222.98	27,223,819.65
Electrically welded mesh of corrugated steel bars	12,166,469.08		12,166,469.08
Subtotal	46,106,969.27	2062383.98	48,169,353.25
Frame structure			
Fir C24 timber pile planed, section from 14x14 to 20x20cm and 4m length	1,763,596.80		1,763,596.80
Fir C24 timber pile planed, section from 10x20 to 14x24cm and 5m length	1,216,228.86		1,216,228.86
Form for fir timber purling C24 plane finished, section from 9x18 cm and 5m length	81,067,644.07		81,067,644.07
Fir C24 timber truss planed finishing	427,019.04	1,728,290.08	2,155,309.12
Sheathed with timber boards with panel sandwich isolation of timber and scrim polystyrene	67,101,072.30		67,101,072.30
Subtotal	151,575,561.07	1,728,290.08	153,303,851.15
TOTAL	197,682,530.34	11,844,728.57	209,527,258.91

CO2 emissions (Kg)			
	Material manufacturing stage (Kg)	Construction stage(Kg)	Total (Kg)
Earthworks			

Cleaning and clearing of vegetation with mechanical means		757,206.42	757206.42
Excavation for cutting of the compact soil with mechanical means and mechanical load over truck		224,998.48	224998.48
Excavation of trenches and wells with mechanical means		42,919.72	42919.72
Revision and compactation of the pavement box		59,171.20	59171.2
Ground transport and legal disposal of the wastes		1,078,594.41	1078594.41
Subtotal		2,162,890.23	2162890.23
Foundations			
Cleaning and ground leveling layer, 10cm thick	8,199.93		8,199.93
Trench foundations of HA-25/F/20/IIa	1,161,781.07	79,708.05	1,241,489.12
HA-30/P/10/IIa+F concrete pavement of plastic	4,466,244.79	445,320.28	4,911,565.07
Electrically welded mesh of corrugated steel bars	980,228.64		980,228.64
Subtotal	6,616,454.43	525028.33	7,141,482.76
Frame structure			
Fir C24 timber pile planed, section from 14x14 to 20x20cm and 4m length	50,438.87		50,438.87
Fir C24 timber pile planed, section from 10x20 to 14x24cm and 5m length	34,784.15		34,784.15
Form for fir timber purling C24 plane finished, section from 9x18 cm and 5m length	6,946,776.00		6,946,776.00
Fir C24 timber truss planed finishing	12,212.74	451,429.37	463,642.11
Sheathed with timber boards with panel sandwich isolation of timber and scrim polystyrene	5,730,122.95		5,730,122.95
Subtotal	12,774,334.71	451,429.37	13,225,764.08
TOTAL	19,390,789.14	3,139,347.93	22,530,137.07

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks	0.00	8,280,590.49	8,280,590.49
Foundations	46,106,969.27	2,062,383.98	48,169,353.25
Frame structure	151,575,561.07	1,728,290.08	153,303,851.15
Total (MJ)	197,682,530.34	12,071,264.55	209,753,794.89

Energy consumption (MJ/Ha)

	Material manufacturing stage (MJ/Ha)	Construction stage(MJ/Ha)	Total (MJ/Ha)
Earthworks	0.00	303.77	303.77
Foundations	1,691.44	75.66	1,767.10
Frame structure	5,560.57	63.40	5,623.97
Total (MJ)	7,252.01	442.84	7,694.85

Energy consumption (MJ/pop)			
	Material manufacturing stage (MJ/pop)	Construction stage(MJ/pop)	Total (MJ/pop)
Earthworks	0.00	6,389.34	6,389.34
Foundations	35,576.37	1,591.35	37,167.71
Frame structure	116,956.45	1,333.56	118,290.01
Total (MJ)	152,532.82	9,314.25	161,847.06

CO2 Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks	0.00	2,162,890.24	2,162,890.24
Foundations	6,616,454.44	525,028.33	7,141,482.77
Frame structure	12,774,334.71	451,429.37	13,225,764.08
Total (MJ)	19,390,789.15	3,139,347.94	22,530,137.09

CO2 Emissions (Kg/Ha)			
	Material manufacturing stage (Kg/Ha)	Construction stage(Kg/Ha)	Total (Kg/Ha)
Earthworks	0.00	79.35	79.35
Foundations	242.73	19.26	261.99
Frame structure	468.63	16.56	485.19
Total (MJ)	711.35	115.17	826.52

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage(Kg/pop)	Total (Kg/pop)
Earthworks	0.00	1,668.90	1,668.90
Foundations	5,105.29	405.11	5,510.40
Frame structure	9,856.74	348.33	10,205.06
Total (MJ)	14,962.03	2,422.34	17,384.37

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Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks			
Cleaning and clearing of vegetation with mechanical means		3,558,417.23	3,558,417.23
Excavation of trenches and wells with mechanical means		748,086.17	748,086.17
Ground transport and legal disposal of the wastes		4,508,834.39	4,508,834.39
Subtotal		8,815,337.79	8,815,337.79
Foundations			
Cleaning and ground leveling layer, 10cm thick	1,145,616.37		1,145,616.37
Trench foundations of HA-25/F/20/IIa	38,360,277.16	1,389,302.89	39,749,580.05
HA-30/P/10/IIa+F concrete pavement	28,014,249.18	1,933,013.79	29,947,262.97
Electrically welded mesh of corrugated steel bars	20,075,385.47		20,075,385.47
Subtotal	87,595,528.18	3,322,316.68	90,917,844.86
Frame structure			
Reinforced concrete pile with concrete HA-25/B/10/I,	7,821,008.42		7,821,008.42
Reticular ribbed framework of 25+5 cm	161,426,168.46		161,426,168.46
Inclinor reinforced concrete slab 15 cm thick	1,355,722.88	24,609.76	1,380,332.64
Subtotal	170,602,899.76	24,609.76	170,627,509.52
TOTAL	258,198,427.94	12,162,264.23	270,360,692.17

CO2 emissions (Kg)			
	Material manufacturing stage (Kg)	Construction stage (Kg)	Total (Kg)
Earthworks			
Cleaning and clearing of vegetation with mechanical means		929,458.58	929,458.58
Excavation of trenches and wells with mechanical means		195,400.11	195,400.11
Ground transport and legal disposal of the wastes		1,177,707.54	1,177,707.54
Subtotal		2,302,566.23	2,302,566.23
Foundations			
Cleaning and ground leveling layer, 10cm thick	195,498.40		195,498.40

Trench foundations of HA-25/F/20/IIa	5,289,226.95	362,885.91	5,652,112.86
HA-30/P/10/IIa+F concrete pavement	4,913,043.40	489,869.67	5,402,913.07
Electrically welded mesh of corrugated steel bars	1,617,434.58		1,617,434.58
Subtotal	12,015,203.33	852,755.58	12,867,958.91
Frame structure			
Reinforced concrete pile with concrete HA-25/B/10/I,	779,714.09		779,714.09
Reticular ribbed framework of 25+5 cm	15,687,441.79		15,687,441.79
Inclinor reinforced concrete slab 15 cm thick	141,217.30	6,428.07	147,645.37
Subtotal	16,608,373.18	6,428.07	16,614,801.25
TOTAL	28,623,576.51	3,161,749.88	31,785,326.39

Energy consumption (MJ)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)
Earthworks	0.00	8,815,337.79	8,815,337.79
Foundations	87,595,528.19	3,322,316.67	90,917,844.86
Frame structure	170,602,899.76	24,609.76	170,627,509.52
Total (MJ)	258,198,427.95	12,162,264.22	270,360,692.17

Energy consumption (MJ/Ha)			
	Material manufacturing stage (MJ/Ha)	Construction stage (MJ/Ha)	Total (MJ/Ha)
Earthworks	0.00	323.71	323.71
Foundations	3,216.64	122.00	3,338.64
Frame structure	6,264.80	0.90	6,265.70
Total (MJ)	9,481.43	446.62	9,928.05

Energy consumption (MJ/pop)			
	Material manufacturing stage (MJ/pop)	Construction stage (MJ/pop)	Total (MJ/pop)
Earthworks	0.00	13,603.92	13,603.92
Foundations	135,178.28	5,127.03	140,305.32
Frame structure	263,276.08	37.98	263,314.06
Total (MJ)	398,454.36	18,768.93	417,223.29

CO2 Emissions (Kg)			
	Material manufacturing stage (MJ)	Construction stage (MJ)	Total (MJ)

Earthworks	0.00	2,302,566.23	2,302,566.23
Foundations	12,015,203.32	852,755.58	12,867,958.90
Frame structure	16,608,373.18	6,428.07	16,614,801.25
Total (MJ)	28,623,576.50	3,161,749.88	31,785,326.38

CO2 Emissions (Kg/Ha)			
	Material manufacturing stage (Kg/Ha)	Construction stage(Kg/Ha)	Total (Kg/Ha)
Earthworks	0.00	84.55	84.55
Foundations	441.22	31.31	472.53
Frame structure	609.88	0.24	610.12
Total (MJ)	1,051.10	116.10	1,167.20

CO2 Emissions (Kg/pop)			
	Material manufacturing stage (Kg/pop)	Construction stage(Kg/pop)	Total (Kg/pop)
Earthworks	0.00	3,553.34	3,553.34
Foundations	18,541.98	1,315.98	19,857.96
Frame structure	25,630.21	9.92	25,640.13
Total (MJ)	44,172.19	4,879.24	49,051.43