

Sustainability Performance Data

Environmental Performance	Unit	2015	2016	2017	2018	2019	GRI Standard	DJSI
Production and Raw Materials								
Production	Tons	40,770,000	39,506,000	42,048,000	43,224,000	43,136,000		0.1
Raw Materials	Tons	49,432,000	49,684,000	48,787,000	50,981,000	51,394,000	GRI 301-1	
Recycle Materials	Tons	3,253,000	3,438,000	3,877,000	3,733,000	4,251,000	GRI 301-2	
Greenhouse Gas Emissions								
GHGs Scope 1 and 2	Tons CO ₂	24,982,000	23,845,000	23,604,000	24,542,000	23,989,643		
GHG Scope 1*	Tons CO ₂	22,515,000	21,505,000	21,151,000	22,098,000	21,584,780	GRI 305-1	2.3.1
GHG Scope 2*	Tons CO ₂	2,467,000	2,340,000	2,453,000	2,444,000	2,404,863	GRI 305-2	2.3.2
GHG Emission Reduction compare with business as usual (BAU) at base year of 2007	Tons CO ₂	1,458,000	1,806,000	1,907,000	1,959,000	2,431,805		
	%	5.5	7.0	7.5	7.4	9.2		
Energy Consumption								
Total Energy Consumption*	Petajoules	186.48	180.90	183.49	189.36	188.83	GRI 302-1	2.3.3
Heating and Steam Consumption	Petajoules	171.07	166.30	169.14	175.00	174.60	GRI 302-1	
Alternative Energy								
- Renewable: Biomass	Petajoules	6.65	5.50	5.10	5.66	8.88	GRI 302-1	
- Renewable: Industrial Waste	Petajoules	11.99	12.37	12.64	9.80	9.81	GRI 302-1	
- Non-Renewable: Industrial Waste	Petajoules				4.42	5.08	GRI 302-1	
Portion of Alternative Energy	%	10.9	10.7	10.5	11.4	13.6	GRI 302-1	
Electrical Consumption	Gigawatt-Hours	4,281	4,057	3,985	3,988	3,953	GRI 302-1	
Energy Consumption Reduction compare with business as usual (BAU) at base year of 2007	Petajoules	11.53	13.18	16.90	16.08	15.31	GRI 302-4	
	%	5.8	6.8	8.4	7.8	7.5		
Energy Consumption - by Category								
a) Non-renewable fuels (coal, oil, natural gas, etc.) purchased and consumed*	Megawatt-Hours	40,775,626	39,783,469	40,460,824	42,863,956	42,038,353	GRI 302-1	2.3.3
b) Non-renewable electricity purchased*	Megawatt-Hours	3,903,813	3,632,773	3,496,405	3,398,368	3,371,388	GRI 302-1	2.3.3
c) Steam / heating / cooling and other energy (non-renewable) purchased*	Megawatt-Hours	1,568,228	1,445,991	1,595,372	1,484,067	1,314,380	GRI 302-1	2.3.3
d) Total renewable energy (wind, solar, biomass, hydroelectric, geothermal, etc.) purchased or generated.*	Megawatt-Hours	5,176,775	4,964,128	5,416,967	4,883,520	5,772,189	GRI 302-1	2.3.3

Sustainability Performance Data

Environmental Performance	Unit	2015	2016	2017	2018	2019	GRI Standard	DJSI
e) Total non-renewable energy (electricity and heating & cooling) sold*	Megawatt-Hours	3,466	31,570	30,901	29,816	42,563	GRI 302-1	2.3.3
Total Non-Renewable Energy Consumption (a+b+c-e)	Megawatt-Hours	46,244,201	44,830,663	45,521,700	47,716,575	46,681,558	GRI 302-1	2.3.3
Water Withdrawal								
Water Withdrawal*	Million cubic meters	117.70	114.43	117.60	110.18	103.43	GRI 303-1	2.3.4
Water Withdrawal Reduction compare with business as usual (BAU) at base year of 2014	Million cubic meters	-2.19	2.66	3.92	10.03	12.17		
	%	-1.90	2.3	3.2	8.3	10.5		
Recycle Water*	Million cubic meters	12.65	9.04	10.19	11.24	12.30	GRI 303-3	
Portion of Recycle Water	%	9.7	7.3	8.0	9.3	10.6		
Water Consumption/Withdrawal - by Source								
a) Water Withdrawal: Municipal Water*	Million cubic meters	2.35	2.36	1.72	6.96	7.13	GRI 303-1	2.3.4
b) Water Withdrawal: Surface Water*	Million cubic meters	71.80	68.23	70.80	58.96	54.51	GRI 303-1	2.3.4
c) Water Withdrawal: Underground Water*	Million cubic meters	43.55	43.84	45.08	44.26	41.79	GRI 303-1	2.3.4
d) Discharge: Water returned to the source of extraction at similar or higher quality as raw water extracted	Million cubic meters	0	0	0	0	0	GRI 303-1	2.3.4
e) Total net fresh water consumption (a+b+c-d)	Million cubic meters	117.70	114.43	117.60	110.18	103.43	GRI 303-1	2.3.4
Effluent Quality								
BOD	Tons	415	457	387	240	165	GRI 306-1	
COD	Tons	6,533	6,753	6,322	5,390	4,422	GRI 306-1	
TSS	Tons	897	922	965	793	588	GRI 306-1	
Waste Management								
Hazardous Waste Generation*	Tons	15,659	21,603	12,082	13,943	11,704		2.3.5
Hazardous Waste Management*	Tons	15,305	20,781	12,195	13,617	11,381	GRI 306-2	2.3.5
- Reuse/Recycled	Tons	10,912	17,236	9,946	12,307	10,997		
- Incinerated without energy recovery	Tons	4,393	3,546	2,222	1,310	384		
- Landfilled	Tons	0	0	27	0	0		
Hazardous waste in the storage at the end of the year	Tons	NA	NA	NA	NA	1,159	GRI 306-2	

Sustainability Performance Data

Environmental Performance	Unit	2015	2016	2017	2018	2019	GRI Standard	DJSI
Non-Hazardous Waste Generation*	Tons	1,373,363	1,347,852	1,394,451	1,414,237	1,527,055		2.3.5
Non-Hazardous Waste Management*	Tons	1,317,866	1,488,481	1,376,281	1,354,884	1,542,302	GRI 306-2	2.3.5
- Reused/Recycled	Tons	1,284,289	1,475,393	1,372,585	1,172,792	1,318,964		
- Incinerated without energy recovery	Tons	30,692	13,078	3,696	2,113	1,364		
- Landfilled	Tons	2,886	10	0	179,979	221,975		
Non-Hazardous waste in the storage at the end of the year	Tons	NA	NA	NA	NA	191,840	GRI 306-2	
Total waste generated in term of DJSI (means waste management)*	Tons	1,333,170	1,509,263	1,388,477	1,368,501	1,553,685	GRI 306-2	2.3.5
Total Waste reuse/recycle*	Tons	1,295,200	1,492,629	1,382,531	1,185,099	1,329,960	GRI 306-2	2.3.5
Total waste disposed (included incinerated and landfilled) *	Tons	37,970	16,634	5,946	183,402	223,725	GRI 306-2	2.3.5
Air Emissions								
Oxides of Nitrogen*	Tons	25,448	22,160	25,481	27,229	25,716	GRI 305-7	2.3.6
Oxides of Sulfur*	Tons	3338	2841	3496	2881	2746	GRI 305-7	2.3.7
Particulate Matter*	Tons	1,913	1,374	1,087	1,246	1,357	GRI 305-7	2.3.9
Mercury*	Tons	0.01651	0.01495	0.01453	0.11228	0.08421		2.3.8
Biodiversity								
Quarries with Biodiversity Management Plan in place	Number of sites	4	4	4	4	4		2.4.2
	%	100	100	100	100	100		
Environmental Expenditures and Benefits								
Environmental - Operating Expenses	Million Baht	939	1,124	1,462	2,190	2,192		2.2.3
Environmental - Capital Investments	Million Baht	2,077	1,562	692	1,275	2,593		2.2.3
Total Expense (Capital Investment + Operating Expenses)	Million Baht	3,016	2,686	2,154	3,465	4,785		
Savings, cost avoidance and tax incentives linked to environment investment	Million Baht	800	450	210	278	546		2.2.3
Violations of Legal Obligations and Regulations								
Number of violations of legal obligations/regulations	Number of cases	0	0	0	0	0	GRI 307-1	2.2.4

Sustainability Performance Data

Environmental Performance	Unit	2015	2016	2017	2018	2019	GRI Standard	DJSI
Co-processing Performance for Cement-Building Materials Business								
% Alternative fuel used to replace the fossil fuel (as % of total heat consumption)	%	13.3	11.9	11.1	11.9	17.5		2.5.1
- % Alternative fossil fuel	%	5.0	5.0	5.0	4.9	6.2		
- % Biomass	%	8.3	6.9	6.1	7.0	11.3		
% Alternative raw materials contained in cement	%	9.6	13.5	13.4	13.8	9.6		2.5.1
% Alternative raw materials contained in concrete	%	NA	1.9	2.0	2.0	1.2		2.5.1
Clinker-to-Cement ratio	%	76.7	76.0	75.6	74.8	74.4		2.5.1
% Alternative raw materials contained in other building materials	%	NA	16.0	19.2	14.1	14.7		2.5.1

NA = Not Available

* Within KPMG's limited assurance scope