

“PROGRAMS FOR EMISSION REDUCTIONS & GREEN INDUSTRY”

PT SEMEN INDONESIA (PERSERO) Tbk.

Thursday, 30th April 2015



SEMENT PADANG



SEMENT GRESIK



SEMENT TONASA



TLCC

Together We Build A Better Future

OUTLINE

1

Company Profile & Environment Policy

2

Emission Reduction Programs

3

Green Industry Programs

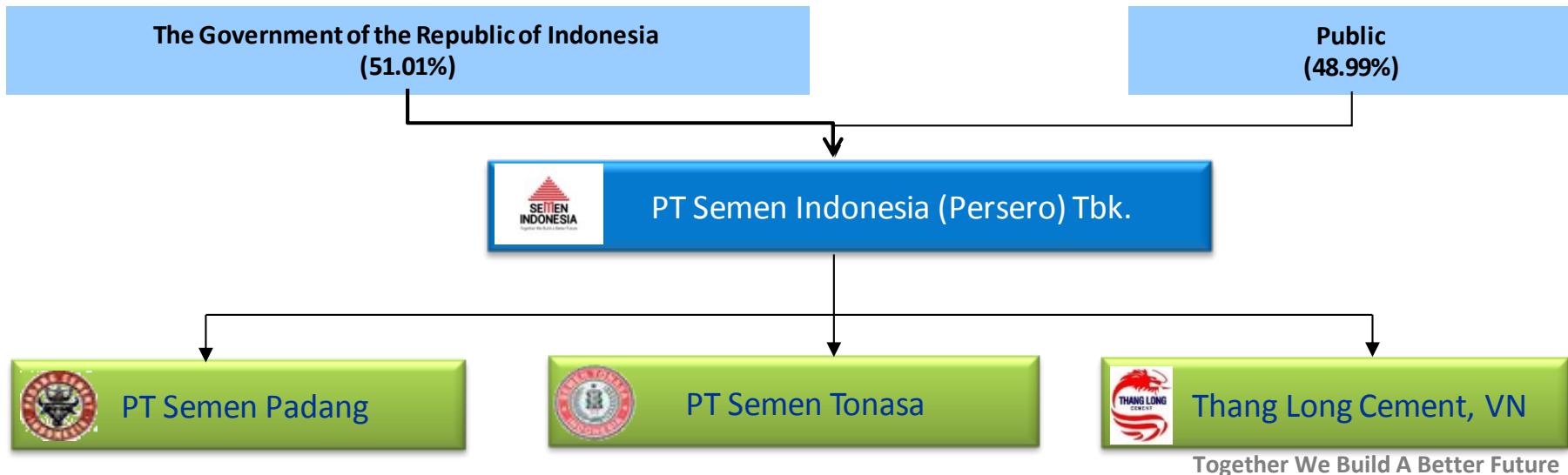
Tiada Henti Membangun Negeri

COMPANY PROFILE

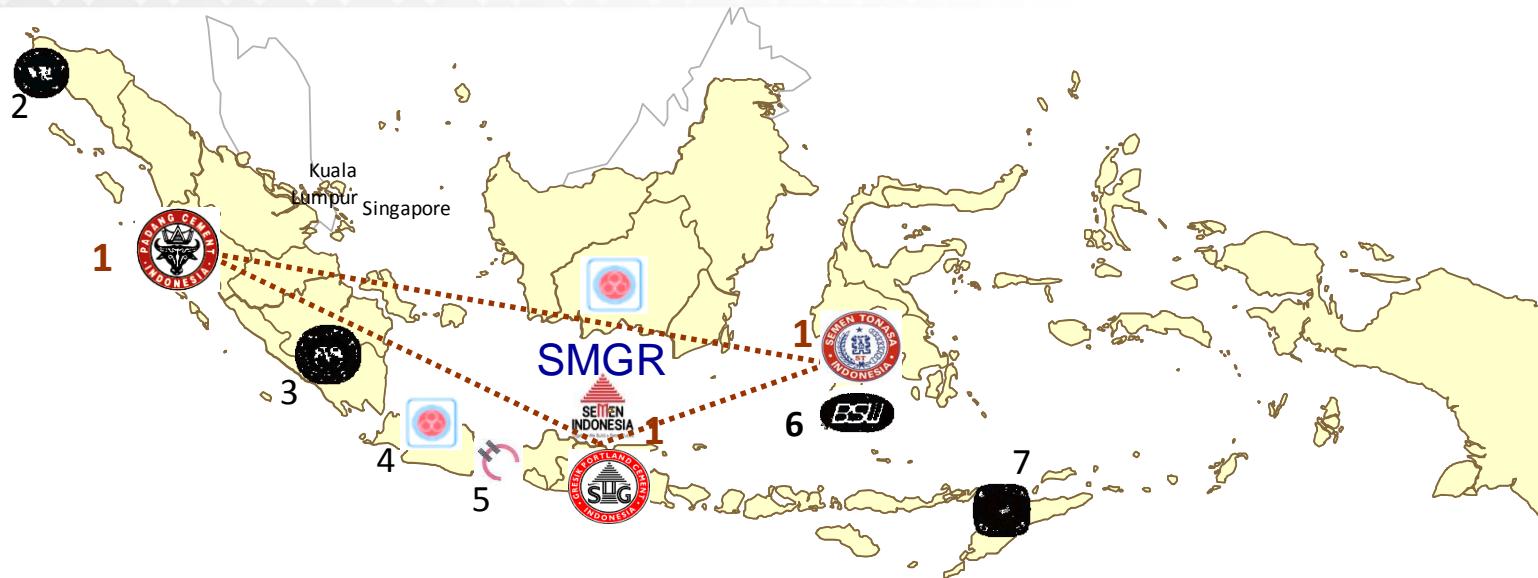
BRIEF HISTORY

- 1957 : Inauguration of Gresik I, installed capacity of 250,000 ton cement per annum
- 1991 : Initial Public Offering, Market Cap.: IDR0.63tn, resulting shareholding structure post IPO:
 - Government of Republic of Indonesia: 73%
 - Public: 27%
- 1995 : Acquisition of PT Semen Padang (Persero) and PT Semen Tonasa (Persero)
- 1998 : Cemex became a strategic partner, Market Cap.: IDR4.9tn
- 2006 : Blue Valley Holdings bought Cemex's 24.9% stake in SMGR, Market Cap.: IDR21.5tn
- 2010 : In March 31, Blue Valley Holdings sold all of its stake ownership in SMGR, Market Cap per April 30, 2010: IDR72.1tn
- 2012 : Acquisition of Thang Long Cement Vietnam, Total installed capacity of 2.3mm tons, Market Cap Dec 19th, 2012: IDR91.9tn
- 2013 : PT Semen Gresik (Persero) Tbk transformed by changing the corporate name to **PT Semen Indonesia (Persero) Tbk.**

OWNERSHIP STRUCTURE



INDONESIA'S CEMENT INDUSTRY



CEMENT INDUSTRY	2013	2014F ¹⁾	2015F ¹⁾	DOMESTIC CAPACITY (2014)
• Design Capacity	: 68.0 mio tons	71.5 mio tons	82.2 mio tons	1. SEMEN INDONESIA 29.5 mn ton
• Production Capacity	: 55.2 mio tons	60.0 mio tons	69.8 mio tons	- Semen Padang : 7.3 mn ton
• Domestic Growth	: 5.5%	6.0%	6.0%	- Semen Gresik : 14.4 mn ton
• Domestic Utilization	: 100%	100%	94%	- Semen Tonasa: 7.8 mn ton
• Supply				2. Semen Andalas ²⁾ 1.6 mn ton
> Domestic	: 58.0 mio tons	61.0 mio tons	65.8 mio tons	3. Semen Baturaja 1.3 mn ton
> Export	: 0.5 mio tons	0.5 mio tons	0.5 mio tons	4. Indo cement TP 20.5 mn ton
> Import	: 3.3 mio tons ²⁾	3.0 mio tons ³⁾	3.0 mio tons ³⁾	5. Holcim Indonesia 12.1 mn ton
				6. Semen Bosowa 6.0 mn ton
				7. Semen Kupang 0.5 mn ton
				TOTAL 71.5 mn ton

1) Based on the Company's forecast

2) Imported cement by PT Semen Andalas (1.0 mio ton) and clinker by Bosawa and Kupang

3) Imported cement & clinker

DOMESTIC MARKET SHARE

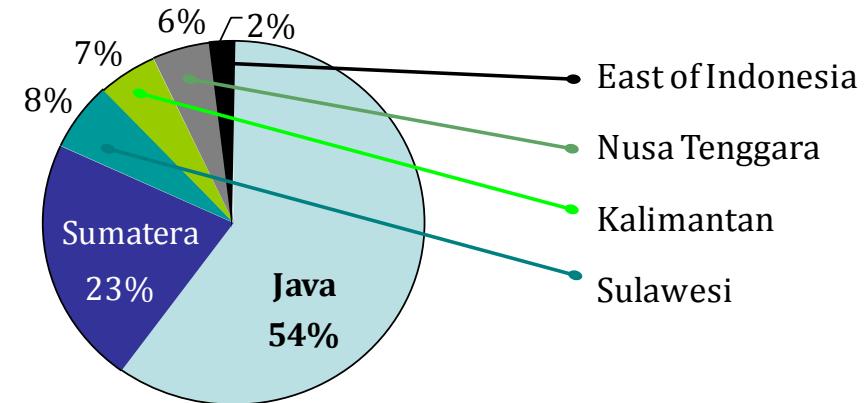
Domestic Consumption – Java remains as the largest market^{*)}



Domestic Market Share^{*)}



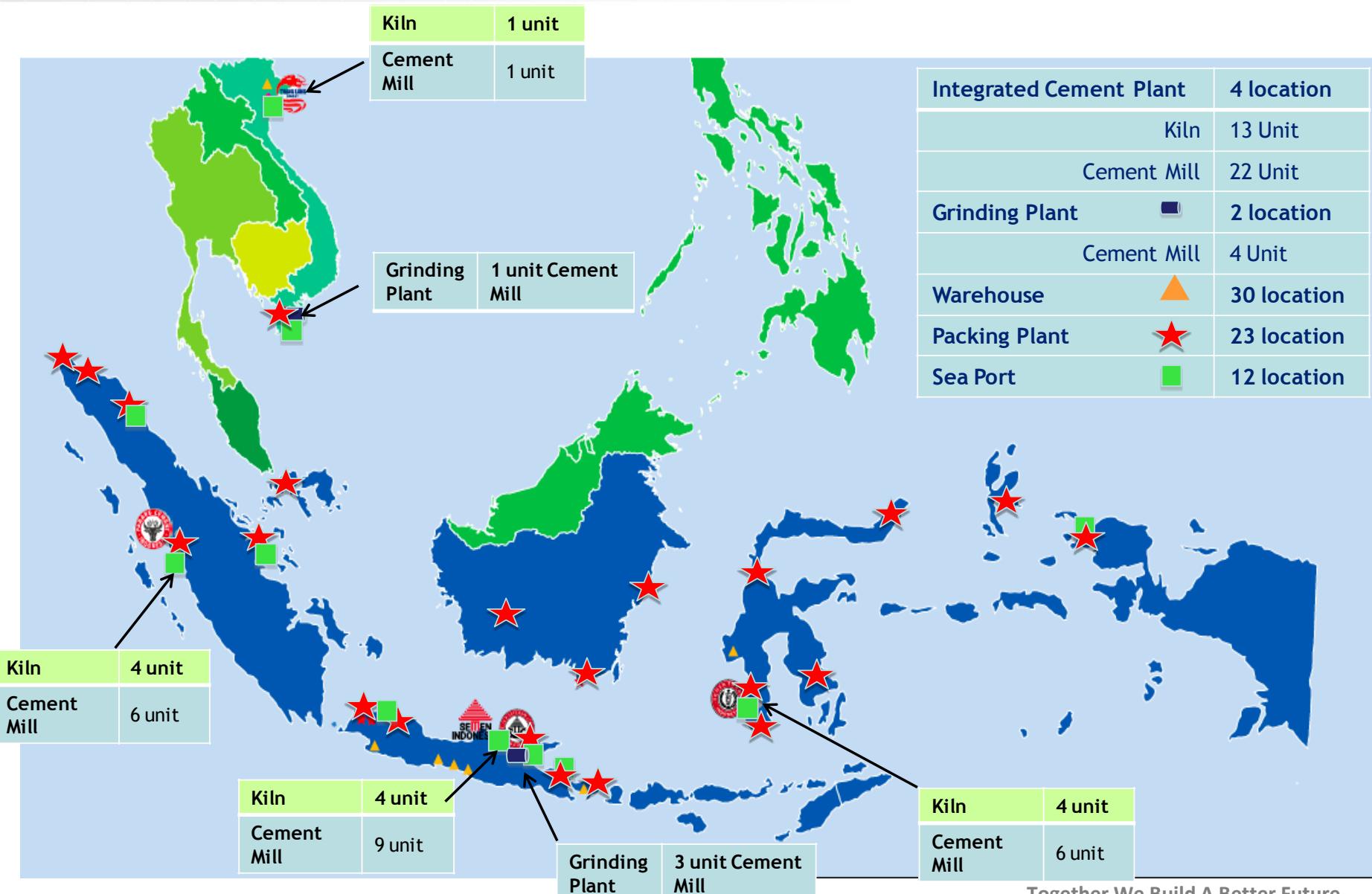
^{*)} Source: ASI (Indonesia Cement Association)



MARKET SHARE (%)

REGION	SMGR	INTP	HOLCIM	OTHER S
1. JAVA	39.5	38.9	19.4	2.2
2. SUMATERA	47.0	14.9	8.0	30.1
3. SULAWESI	65.7	13.2	-	21.1
4. KALIMANTAN	58.9	25.0	6.4	9.7
5. NUSA TENGGARA	41.5	39.0	3.0	16.5
6. EASTERN IND.	78.2	11.9	1.3	8.6
TOTAL INDONESIA	45.6	29.8	13.0	11.6

COMPETITIVENESS OF SEMEN INDONESIA



Together We Build A Better Future

VISION – MISSION & ENVIRONMENT POLICY



VISI

Menjadi Perusahaan Persemenan Terkemuka di Indonesia dan Asia Tenggara

MISI

- 
- 1. Memproduksi, memperdagangkan semen dan produk terkait lainnya yang berorientasikan kepuasan konsumen dengan menggunakan teknologi ramah lingkungan
 - 2. Mewujudkan manajemen berstandar internasional dengan menjunjung tinggi etika bisnis dan semangat kebersamaan dan inovatif
 - 3. Maningkatkan keunggulan bersaing di domestik dan internasional
 - 4. Memberdayakan dan mensinergikan sumber daya yang dimiliki untuk meningkatkan nilai tambah secara berkesinambungan
 - 5. Memberikan kontribusi dalam peningkatan kesejahteraan para pemangku kepentingan (stakeholders)



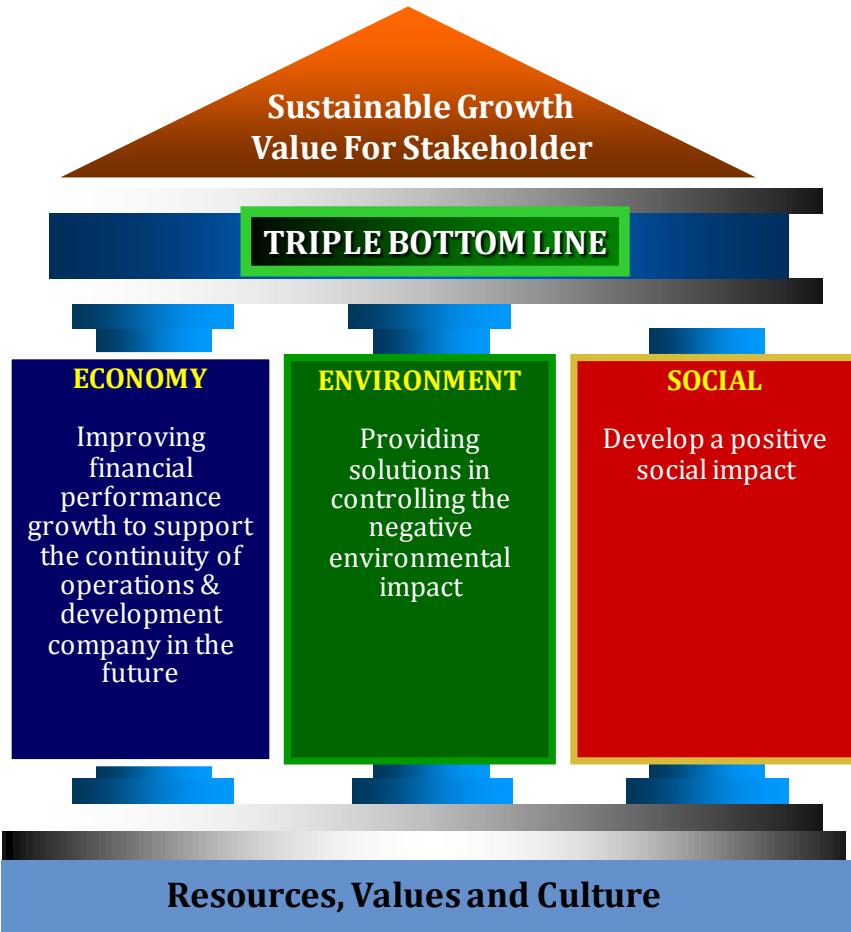
PT Semen Indonesia (Persero) Tbk.

KEBIJAKAN PERUSAHAAN

- 6. Mengelola dan mensinergikan seluruh kegiatan sehingga dapat memberikan nilai tambah bagi para pemangku kepentingan dengan;
 - Selalu menaati peraturan & perundang-undangan yang berlaku
 - melakukan pengelolaan lingkungan yang lebih baik guna mengendalikan dampak lingkungan yang timbul, termasuk upaya penurunan emisi CO₂ dan dampak pemanasan global; pengurangan pencemar udara; pengurangan & pemanfaatan limbah B3; pengurangan & pemanfaatan limbah non B3; konservasi air; perlindungan keanekaragaman hayati; efisiensi energi; upaya pencegahan kecelakaan kerja dan penyakit akibat kerja;
 - melakukan pengujian menggunakan peralatan yang selalu terkalibrasi, metode pengujian yang standard serta didukung sumberdaya manusia yang kompeten dan bebas tekanan;
 - secara proaktif meningkatkan komitmen terhadap masyarakat sekitar.

ENVIRONMENT POLICY

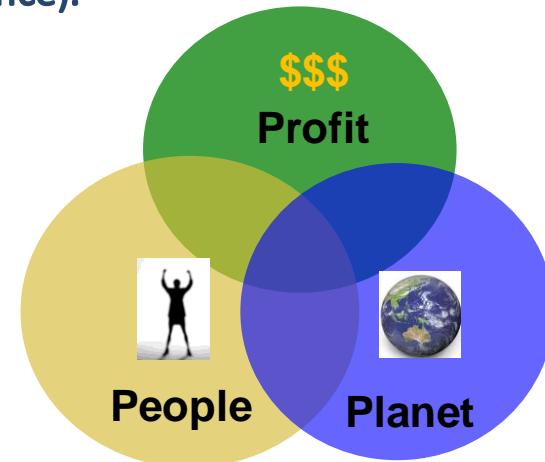
TRIPLE BOTTOM LINE & GCG



- Sustainable business growth,
- Environmental Management and development of surrounding communities,

Addressing social and environmental issues by implementing an environmental management system in a consistent and harmonious relationships with surrounding communities.

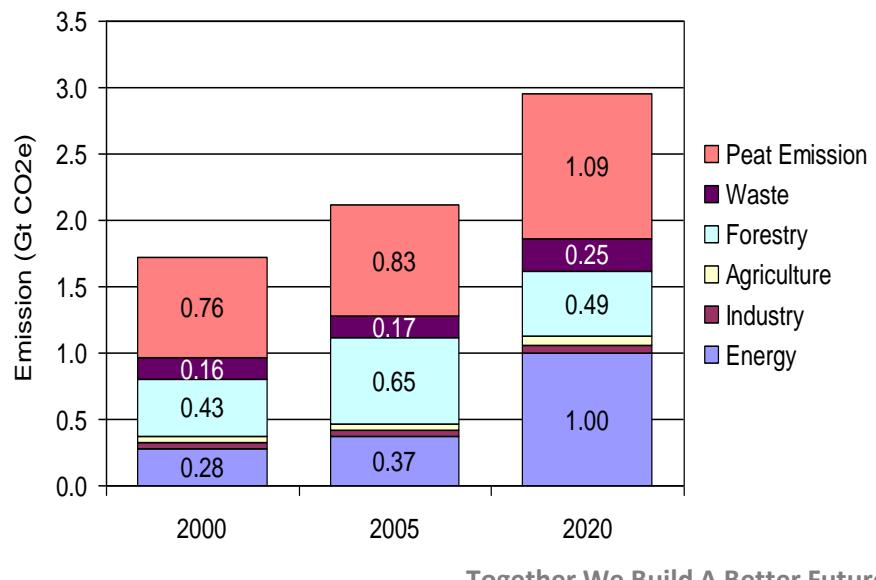
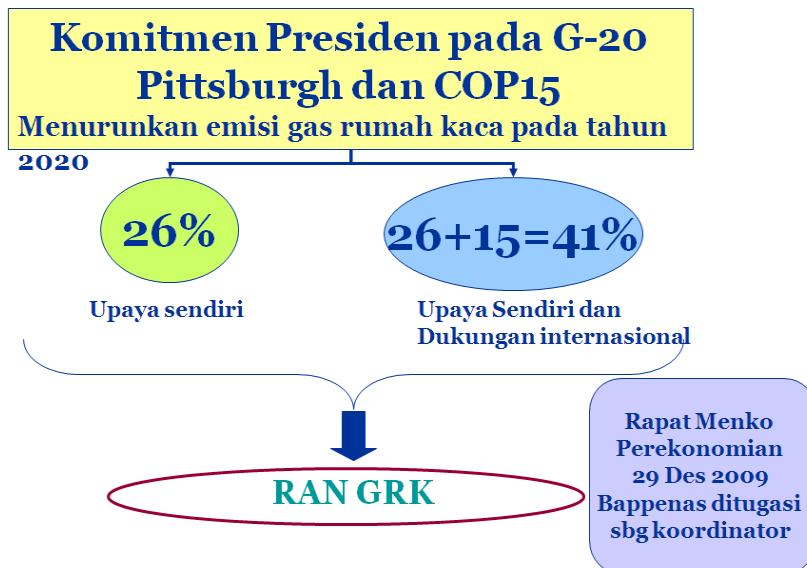
- Commitment to Corporate Management based on the principles of GCG (Good Corporate Governance).



Support and Align with the Government Target



- Commitment of the President of Indonesia in the G-20 Pittsburgh and COP15 to reduce greenhouse gas emissions by **26%**.
- Road Map of Bappenas on CO₂ emissions reduction for the industrial sector.
- Regulation of the Minister of Industry No. 12 / M-IND / PER / 1/2012 of 2012 on Map Guide (Road Map) Reduction of CO₂ Emissions Cement Industry in Indonesia.



Regulation

Regulation of the Minister of Industry No. 12 / M-IND / PER / 1/2012 of 2012 on Map Guide (Road Map) Reduction of CO₂ Emissions Cement Industry in Indonesia.

Article 1 (4):

Specific CO₂ is the calculation of the amount of CO₂ produced per tonne of cement.

Article 4:

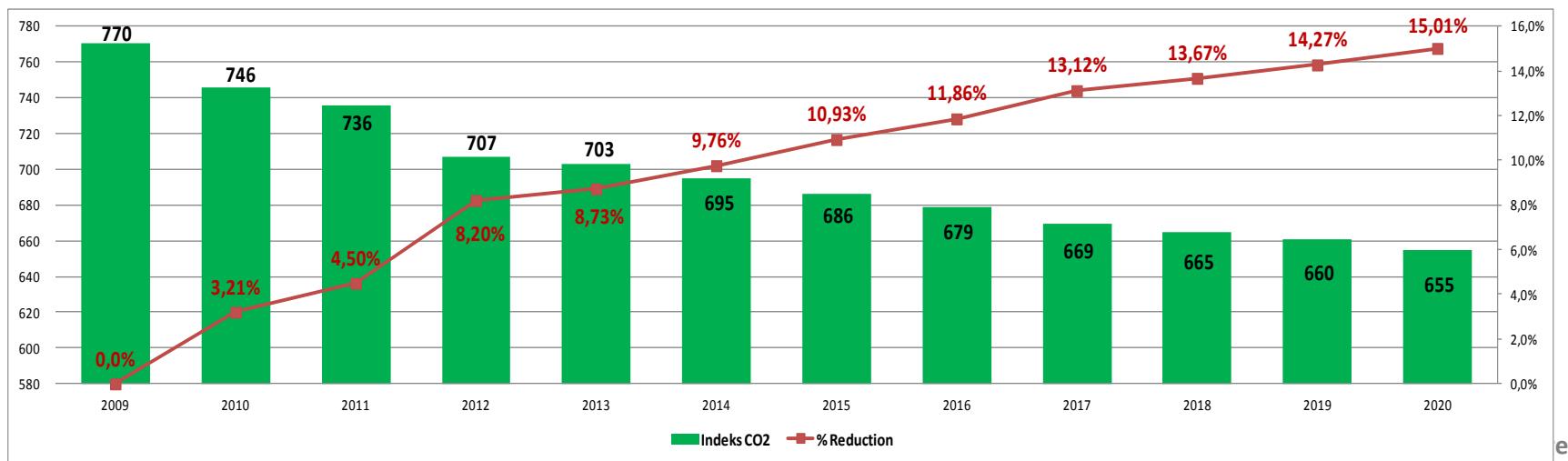
Specific CO₂ Emission Reduction from **baseline in 2009**, are:

- a. Voluntary basis by **2%** for the period **2011-2015**.
- b. Compulsory (are required) by **3%** for the period **2016-2020**.

ROAD MAP OF CO₂ REDUCTION



DESCRIPTION	UNIT	2009	2010	2011	2012	2013	2014	2015F	2016F	2017F	2018F	2019F	2020F	
Clinker Production	(000) ton	15.498	15.047	16.028	18.367	21.256	22.220	23.464	24.093	26.811	30.221	31.186	33.125	
Clinker Faktor	%	85%	84%	81%	81%	81%	80%	80%	79%	78%	78%	77%	76%	
Cement Production	(000) ton	18.152	17.991	19.880	22.711	26.400	27.615	29.310	30.415	34.195	38.839	40.419	43.402	
CO2 absolute (Calcination)	(000) ton	8.313	8.071	8.597	9.852	11.401	11.918	12.585	12.922	14.380	16.209	16.727	17.767	
Coal Consumption	(000) ton	2.538	2.377	2.705	2.846	3.285	3.339	3.449	3.542	3.941	4.442	4.584	4.869	
IDO Consumption	kliter	8.756	19.555	17.194	16.620	16.328	16.328	18.995	19.504	22.287	28.705	38.151	53.861	
Kerosine for Vehicle	kliter	3.165	3.133	3.689	3.981	4.251	4.251	4.251	4.365	4.988	6.424	8.538	12.054	
Biomass Consumption	ton	960	45.905	120.645	115.987	177.392	204.826	229.652	234.245	238.929	243.708	248.582	253.554	
Total CO2 from Fuel	(000) ton	5.671	5.345	6.030	6.244	7.197	7.314	7.561	7.765	8.645	9.759	10.105	10.788	
CO2 Reduction from WHRPG	(000) ton				34	34	34	34	34	138	138	138	138	
Total CO2 emission per years	ribu ton	13.984	13.416	14.626	16.061	18.564	19.197	20.111	20.653	22.887	25.830	26.694	28.417	
Specific emission CO2	kgCO2/ton	770	746	736	707	703	703	695	686	679	669	665	660	655
Percent of CO2 Emission reduction	baseline	3,2%	4,5%	8,2%	8,7%	9,76%	10,93%	11,86%	13,12%	13,67%	14,27%	15,01%		





Major Semen Indonesia Programs

Resources Conservation Programs is a real down to the earth program Semen Indonesia:

Actively implements best practice efforts in accordance with resources sustainability and availability:

- 
- 1. Energy Efficiency and Conservation for GHG Reduction**
 - 2. Air Pollution Reduction Program**
 - 3. Hazardous (B3) Waste Management**
 - 4. Non Hazardous Waste Management (Garbage, Trash, Etc)**
 - 5. Water Efficiency and Conservation**
 - 6. Biodiversity Protection**

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Tiada Henti Membangun Negeri

INITIATIVE STRATEGIES OF GHG REDUCTION



The project consists of three major initiatives :

1. Blended Cement Project

- To reduce CO₂ emissions by reducing the clinker content in the produced cement.
- The total CO₂ emissions will be reduced proportionally with the amount of alternative materials use pozzolana materials.

2. Alternative Fuels Project

- To reduce CO₂ emission by burning “biomass” as alternative fuels in clinkering process.
- Biomass Fuels such as rice husks, corn cobs, wood chips, tobacco waste, etc. generally accepted as CO₂-neutral.
- Implementation of Clean Development Mechanism (CDM) Project.

3. Waste Heat Recovery for Power Generation Project

- Utilize the waste heat gas from cement production process to generate electricity.
- Project status : 8,4 MVA (commercial at Semen Padang) and 28,5 MW (construction at Semen Indonesia – Tuban Plant).
- GHG Scheme : G to G with Nedo, Japan - USD 15 Million (Semen Padang) & JCM - USD 11 Million (Committed – Tuban Plant).

Completed Project

Waste Heat Recovery for Power Generation (WHRPG)



Project	Waste Heat Recovery Power Generation
Location	Indarung Padang, West Sumatra
Capacity	8,5 MW
Investment	USD 26 Million
GHG Scheme	G to G with Nedo, Japan USD 15 Million
Emission Reduction	43,000t-CO2/y
Special Note	Operation 2013



Completed Project

Waste to Zero Project



Project	Waste to Zero
Location	TPA NGIPIK - Gresik, East Java
Capacity	15.000 tpy
Investment	USD 10 Million
Construction Period	6 months
GHG Scheme	Private
Emission Reduction	10,000t-CO2/y
Progress	Construction (Jan 2015)

The program to be implemented is the **management of municipal solid waste into RDF (Refused Derived Fuel) and compost.**

a. Municipal Solid Waste into RDF



b. Composting



Ongoing Project

Construction of WHRPG at Tuban Plant



Project	Waste Heat Recovery Power Generation
Location	Tuban, East Java
Capacity	28,5 MW
Investment	USD 60 Million ~ IDR 638 Billion
GHG Scheme	JCM (Joint Crediting Mechanism) USD 11 Million (Committed)
Emission Reduction	130,000t-CO2/y
Special Note	One of the first JCM project Japan - Indonesia
Progress	Construction (2015 – 2016)



Semen Indonesia Build Power Plant worth IDR 638 Billion (October 22, 2014) by JCM Project Scheme

PT Semen Indonesia Tbk (SMGR) began a construction of the power plant by utilizing the exhaust gas (Waste Heat Recovery Power Generation / WHRPG) Tuban I - IV with a capacity of 30.6 MW. These WHRPG project is a collaboration between Semen Indonesia and JFE Engineering Japan. Projects with an investment of IDR 638 billion is conducted groundbreaking by President Director of Semen Indonesia, Dwi Soetjipto and in Tuban.



Indonesia JCM Secretariat and Related Ministries Visited PT Semen Indonesia

Tuban - On June 25 June 2014, JCM Secretariat, Coordinating Ministry of Economic Affairs, and Ministry of Energy and Mineral Resources visit PT Semen Indonesia, which is located at Tuban, East Java. During the visit, discussion on the last status update of JCM projects in PT Semen Indonesia was conducted.

PT Semen Indonesia together with JFE Engineering, as its Japanese partner, is running a project called "**Power generation by waste heat recovery in cement industry**". It is a 526 billion rupiah project, which utilize waste heat that is produced by the factory's activity to be fed to a boiler and produce steam to generate the power generator.



PT Semen Indonesia is interested in this project because not only it is environmentally friendly and reduces green house gas emission, but also it increases the factory's energy efficiency. With waste heat recovery, PT Semen Indonesia can save up to 85% of its electricity bill. Moreover, each year up to 122,000 ton CO₂ is expected to reduce.

Now, the project is in its design and procurement of main equipment. This project is expected to finish on December 2016 (RKA).

*Discussion between JCM Secretariat,
Coordinating Ministry of Economic Affairs,
Ministry of Energy and PT Semen Indonesia*
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PROGRES RENCANA DAN REALISASI



Objective :

Pembangunan Waste Heat Recovery Power Generation (WHRPG) di Pabrik Tuban meliputi :

- 4 unit PH Boiler & 4 unit AQC Boiler
- 1 unit Condensing Steam Turbine
- 1 unit Generator
- 1 unit Air Cooled Condenser
- 16 unit Pump

Memanfaatkan gas buang dari 4 line pabrik untuk menghasilkan listrik sebesar ±30.6 MW dan mengurangi emisi gas CO₂ sebesar 122,358 ton/tahun.

PROGRES FISIK (G)

<input type="checkbox"/> Project duration	:	26 bulan
<input type="checkbox"/> Schedule in progress	:	05 bulan
<input type="checkbox"/> SPI : 1.074		<input type="checkbox"/> CPI : 1.00

PV	EV	AC
71.0 M	76.3 M	76.3 M

PROGRES BIAYA (G)

<input type="checkbox"/> Total budget *	:	Rp. 526,000,000,000
<input type="checkbox"/> EAC	:	Rp. 525.936.126.000
Commitment	:	Rp. 351.200.465.377
Remn. Order	:	Rp. 293.903.660.623
<input type="checkbox"/> Cash Out	:	Rp. 71.851.803.990

* Tidak termasuk subsidi dari Pemerintah Jepang sebesar JPY 1.061.644.000,- (Rp. 119,375 Miliar, dengan asumsi kurs tukar mata uang 1 JPY = Rp. 112,444-)

Lokasi pondasi T/G House, Air Condenser, SP Boiler & AQC Boiler



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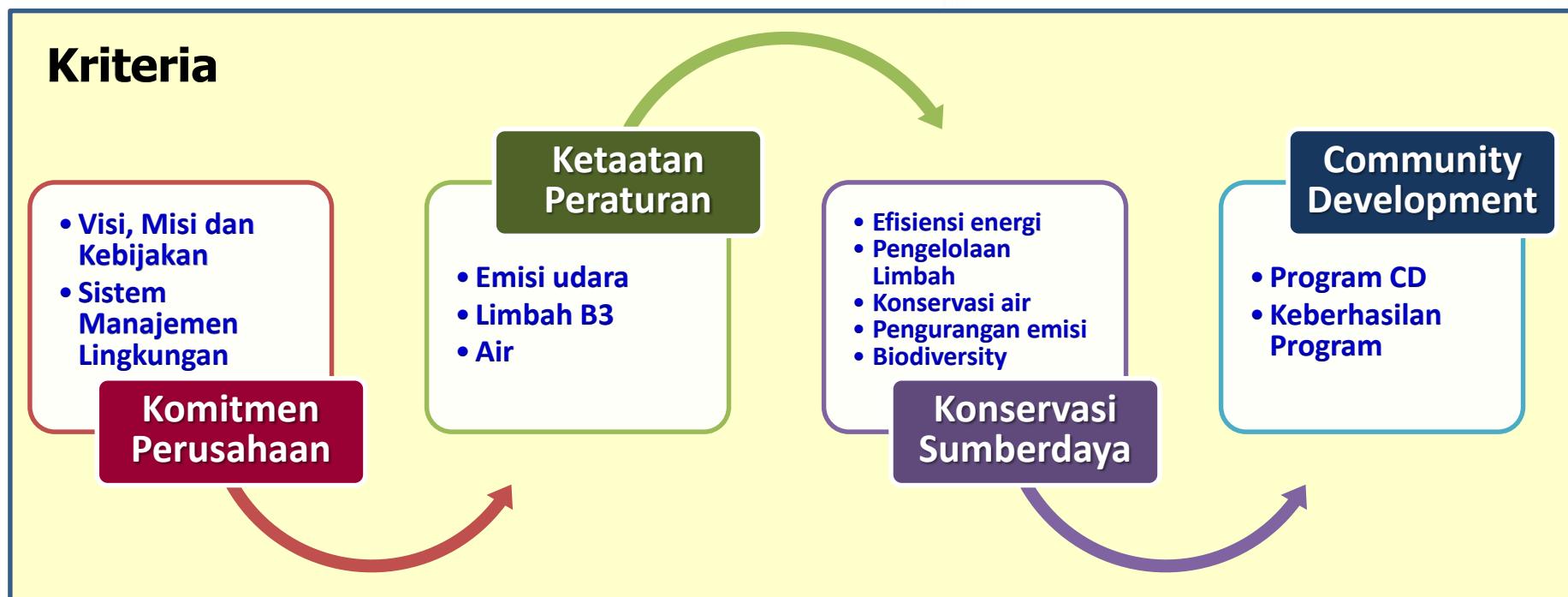
GREEN INDUSTRY

Pengertian Green Industry :

Industri berwawasan lingkungan yang menyelaraskan pertumbuhan perusahaan dengan kelestarian lingkungan hidup, mengutamakan efisiensi dan efektifitas penggunaan sumberdaya alam serta bermanfaat bagi masyarakat.



Kriteria



RUANG LINGKUP “GREEN INDUSTRY”



1. Program Pencegahan Pencemaran

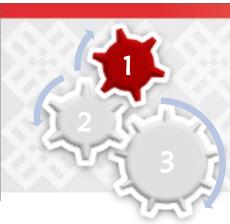
Perseroan sangat peduli terhadap dampak yang ditimbulkan akibat operasional produksi dan ketaatan peraturan perundangan

2. Program konservasi sumberdaya & Penurunan Gas Rumah Kaca

Perseroan memiliki komitmen dalam bidang konservasi sumberdaya dan penurunan dampak pemanasan global.

3. Community Development

Perseroan memiliki komitmen yang tinggi terhadap pemberdayaan masyarakat sekitar.



Program Pencegahan Pencemaran



Merupakan kegiatan yang dilakukan dalam upaya pencegahan pencemaran dan monitoring sesuai peraturan perundungan lingkungan melalui program :

Pemasangan Fasilitas Pencegah Pencemaran



Penanaman Green Belt & Green Barrier



Pengelolaan Limbah Non B3 – 3R



Pengelolaan limbah untuk limbah non B3 dilakukan secara cermat dan hati-hati dengan menerapkan prinsip 3R (Reduce, Reuse & Recycle) serta kepatuhan terhadap peraturan perundungan yang berlaku.

Pemantauan Lingkungan sesuai RKL - RPL



Kegiatan yang dilakukan adalah : pemantauan emisi udara cerobong pabrik /gas buang, pemantauan kualitas udara ambien, pemantauan kebisihan lingkungan, pemantauan iklim kerja, pemantauan kualitas air buangan, air badan air dan air laut, pemantauan keberadaan air tanah

Pengelolaan Limbah B3 - 3R



Pengelolaan limbah untuk limbah berbahaya & beracun (B3) harus dilakukan secara hati-hati dengan menerapkan prinsip 3R (Reduce, Reuse & Recycle) serta kepatuhan terhadap peraturan perundungan yang berlaku.

Post Mining Reclamation





Program Penurunan Gas Rumah Kaca



Perusahaan ikut berpartisipasi aktif dalam upaya penurunan gas rumah kaca (GHG) dalam rangka meminimalkan efek pemanasan global, melalui:

- Melakukan inovasi produk semen ramah lingkungan menggunakan AFR
- Pemanfaatan biomass sebagai bahan bakar alternatif pengganti bahan bakar fosil (batubara).
- Pemanfaatan gas panas buang sebagai pembangkit listrik : Waste Heat Recovery for Power Generator (WHRPG)
- Implementasi Clean Development Mechanism (CDM) Project.



SPECIAL BLENDED SEMEN



SEMEN PPC



LAUNCHING OF BIOMASS
IMPLEMENTATION

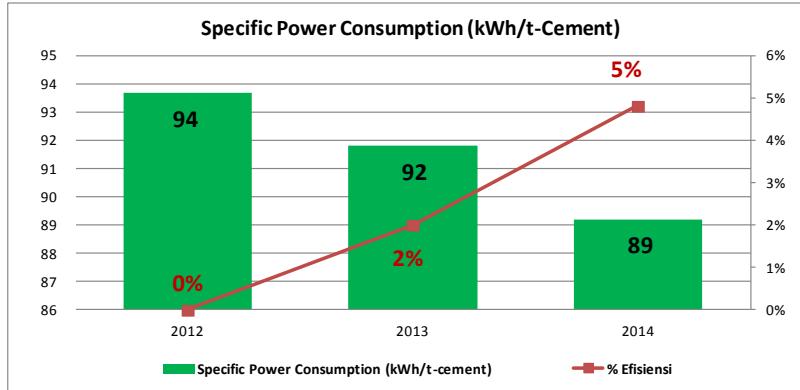


CDM CONTRACT SIGNING

Efisiensi & Konservasi Energi

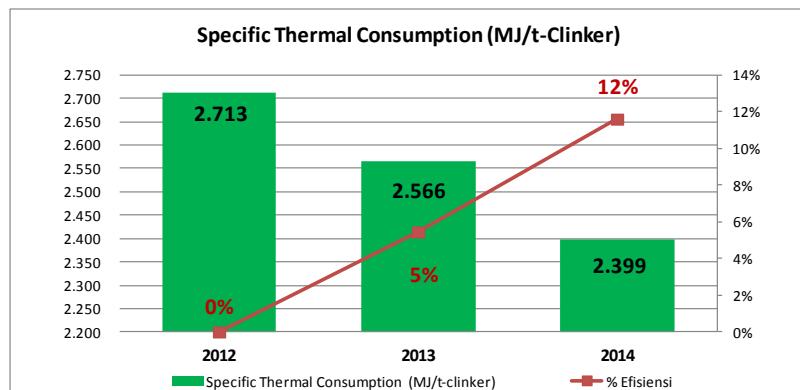
KEUNGGULAN

1. Efisiensi Penggunaan Energi Listrik



Penghematan indeks pemakaian energi listrik → 5%

2. Efisiensi Penggunaan Energi Panas

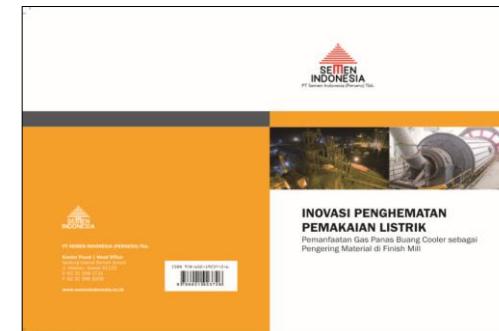


Penghematan indeks pemakaian energi panas → 12%

INOVASI

Inovasi di bidang Efisiensi energi , sbb:

1. Audit Energi secara berkala
2. Pemanfaatan biomass sebagai AFR
3. Pembangunan Vertical Finish Mill yang menurunkan power consump. 10 kWh/ts (*Pertama untuk Pabrik semen di Indonesia*)
4. Maksimalisasi penggunaan substitusi terak
5. Pemanfaatan gas panas buang cooler utk pengeringan material ke-3 di Finish mill.
6. Next Project : pembangunan WHRPG (Waste Heat Recovery for Power Generations) → 28,6 MW.



Pemanfaatan gas panas buang cooler untuk pengering material ke 3 di Ball Mill.

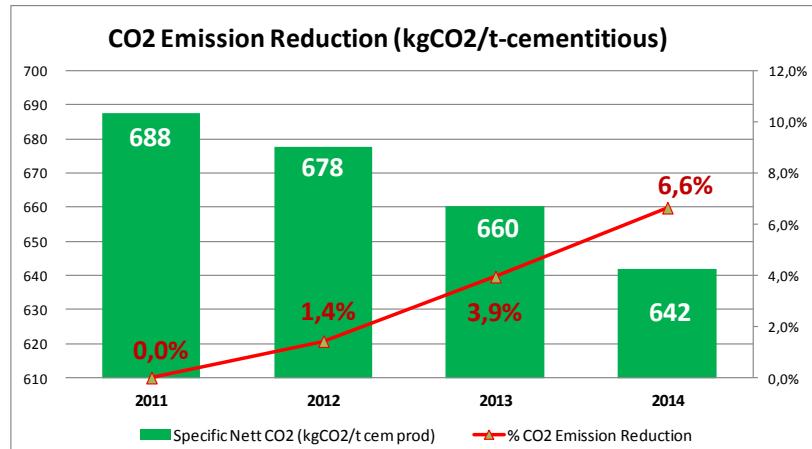


Vertical Finish Mill

Penurunan Emisi Gas CO₂

KEUNGGULAN

Penurunan Emisi Gas CO₂



Penurunan indeks emisi Gas CO₂ → 6,6%

Dampak Positif Pemanfaatan Biomass Sebagai Bahan Bakar Alternatif

Pola pemenuhan suplai biomass dilakukan dengan memberdayakan masyarakat sekitar sebagai vendor pemasok.

Jumlah vendor pemasok sebanyak 11 vendor yang pada umumnya berasal dari Kabupaten Tuban, yaitu :

- 1. CV. Hima Jaya
- 2. CV. Fajar
- 3. CV. Hidayatullah
- 4. CV. Jaya Abadi
- 5. KWSG
- 6. CV. Nusa Karya
- 7. CV. Sumber Makmur
- 8. CV. Sulung Putera
- 9. CV. Sumber Rejeki
- 10. PT. Varia Usaha
- 11. CV. Ande – Ande Lumut



- o Penyerapan tenaga kerja oleh setiap vendor sebanyak 15 – 20 orang.
- o Memberikan tambahan penghasilan bagi petani dan pemilik penggilingan sekam padi, tempat penggerajian kayu , dan lain-lain.
- o Omzet yang diperoleh untuk setiap vendor rata-rata : Rp. 250.000.000,00/ bulan.



INOVASI

Inovasi yang telah diimplementasikan dalam program penurunan emisi gas CO₂ sebagai berikut :

1. Penurunan clinker factor dengan meningkatkan pemakaian material ke 3
2. **Pemakaian biomass sebagai bahan bakar alternatif di Pabrik Tuban 1 & 3.**
3. Optimalisasi peralatan produksi dengan menutup kebocoran pada ducting sehingga proses pembakaran berjalan dengan optimal.



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BIO MASS UNTUK PENGURANGAN EMISI
Upaya Mewujudkan Industri Semen Berkelanjutan



Pengelolaan Limbah B3

KEUNGGULAN

Pemanfaatan limbah B3 secara co-processing

- a. Limbah B3 internal dimanfaatkan sebagai AFR



- b. Pemanfaatan limbah B3 Eksternal sebagai AM



URAIAN	SATUAN	2008	2009	2010	2011	2012	2013
- Cooper Slag	Ton	210.209	197.591	173.656	179.077	170.121	189.443
- Fly Ash	Ton	166.917	193.051	204.777	190.373	143.459	195.652
- Gypsum Sintesis	Ton	349.997	273.493	309.812	367.964	357.670	369.938
- Bottom Ash	Ton					10.560	98.772
- Spent Earth	Ton						22.356
- Filter Aid	Ton						3.780
- Dust EAF	Ton						12.188
- Drilling Cutting							15.169
- Oil Sludge	Ton			462	271		
Total Limbah	Ton	727.123	664.135	688.707	737.685	681.810	907.298
Indeks	Kg/t-cem	81,93	71,82	77,72	77,05	73,47	97,66
% Pemanfaatan	%	8,2%	7,2%	7,8%	7,7%	7,3%	9,8%

PROGRAM STRATEGIS

Dalam upaya membantu mengatasi masalah limbah industri, Perseroan menerapkan **Co-Processing** dengan **memanfaatkan limbah internal dan eksternal (industri lain) sebagai bahan baku dan bahan bakar alternatif.**

Limbah B3 industri lain yang telah digunakan sebagai bahan baku alternatif adalah :

- a. cooper slag,
- b. fly ash,
- c. gypsum sintesis,
- d. papper sludge,
- e. spent earth,
- f. bottom ash,
- g. filter aid,
- h. dust EAF ,
- i. drilling cutting,
- j. Resin
- k. Clay alumina

Tahun 2014 jumlah pemakaian limbah B3 sebagai bahan baku alternatif sebesar 907.298 ton.

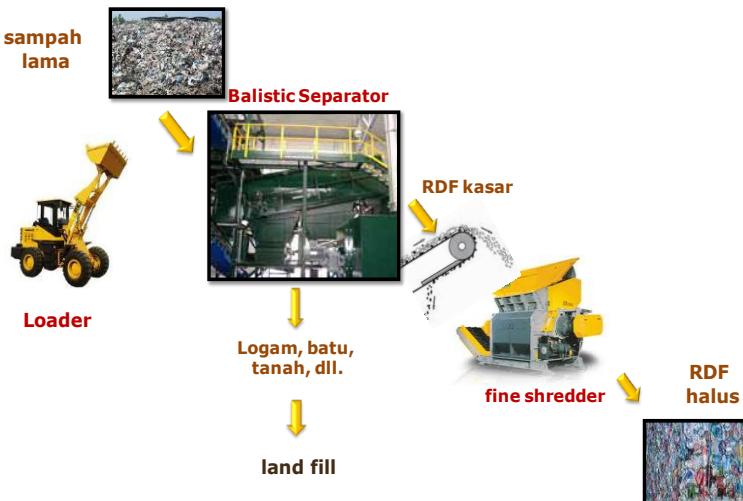
Pengelolaan Limbah Non - B3 / Sampah

KEUNGGULAN

Program Pemanfaatan Sampah : Waste to Zero



Teknologi Pengolahan Sampah Kota :



INOVASI

Inovasi yang telah diimplementasikan adalah **pengelolaan sampah kota di TPA Ngipik – Gresik menjadi RDF (Refused Derived Fuel) dan kompos.**

RDF digunakan sebagai bahan bakar alternatif dengan nilai kalor, yaitu 3.500 – 4.000 kcal/kg.

a. Pengelolaan sampah kota menjadi RDF

Project	Waste to Zero
Location	TPA Ngipik, Gresik
Capacity	250 ton/ hari
Construction Period	12 months
GHG Scheme	Private



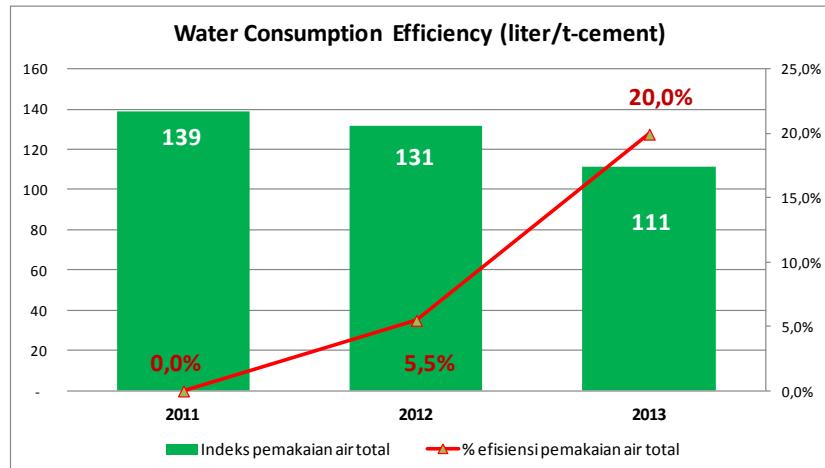
b. Pembuatan pupuk kompos



Efisiensi & Konservasi Air

KEUNGGULAN

1. Efisiensi Pemakaian Air



Penghematan indeks pemakaian air → 20%

2. Peningkatan Pemakaian Air Recycle

Uraian	Satuan	2012	2013	2014
Produksi Semen	ton	9.829.800	9.947.156	12.588.565
Pemakaian Air Total	kliter	1.366.333	1.306.783	1.400.670
- air sumur	kliter	490.000	359.864	350.168
- air recycle	kliter	876.333	946.919	1.050.503
% Pemakaian Air Recycle	%	64,1%	72,5%	75,0%

Pemakaian air recycle tahun 2014 sebesar 75%

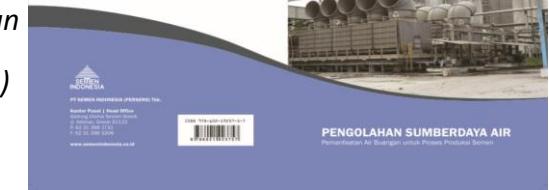
INOVASI

Inovasi yang telah diimplementasikan dalam program konservasi air sebagai berikut :

1. Meningkatkan pemanfaatan air buangan dari proses pendinginan mesin dan sanitasi (recycle)
2. Meningkatkan pemanfaatan air dari bozem tambang tanah liat.
3. Pemanfaatan tampungan air di bozem untuk pengairan sawah milik masyarakat sekitar



pemanfaatan air buangan
dari proses pendinginan
mesin & sanitasi (recycle)
untuk air proses.



Kontribusi konservasi air terhadap masyarakat sekitar adalah sebagai berikut:

- Pemanfaatan air sebagai pengairan sawah & ladang di sekitar area pabrik.
- Bantuan air bersih untuk kebutuhan pokok masyarakat sekitar Pabrik



Perlindungan Keanekaragaman Hayati

KEUNGGULAN

Program Pengelolaan dan Pengembangan Keanekaragaman Hayati dilakukan melalui :

- Pengembangan hutan mangrove (Mangrove Center Tuban)
- Pengembangan kawasan bekas tambang Ngipik
- Green Belt & Green Barrier
- Pemanfaatan bekas galian tanah liat menjadi keramba ikan
- Hutan Kota



Suasana Telaga Ngipik sebagai sarana rekreasi dan olah raga



INOVASI

1. Pengembangan Mangrove Center Tuban

Lokasi keanekaragaman hayati menjadi tempat penelitian, penyebaran informasi dan peningkatan pengetahuan pemangku kepentingan.



Para siswa dan siswi belajar tentang beragam jenis tanaman dan cara-cara pelestariannya di lingkungan di Mangrove Center Tuban. Di lokasi ini setiap pekannya, terdapat sedikitnya 5-7 Lomba pendidikan yang berkunjung dan belajar perlindungan keanekaragaman hayati di kawasan pantai.



2. Pengembangan Kawasan Bekas Tambang Ngipik

Digunakan untuk kebun percobaan & kemitraan dan Laboratorium Hidup Untuk Pembelajaran





Community Development



Pola Pengembangan Masyarakat



Community Development



Community Empowerment



Community Care (Services) and Relation



Sarana & Prasarana Umum



Kesejahteraan Sosial



Pendidikan



Kesehatan



Keagamaan



Bantuan bencana alam



Olah Raga



Kesenian

PROGRAM IMPLEMENTATION

Blended Cement Project



Blended cement which has been produced by the Company is PPC (Pozzoland Portland Cement), SBC (Special Blended Cement) and PCC (Portland Composite Cement).

- In product Blended Cement, Clinker consumption can be reduced by replacing other materials such as: Pozzoland (trass), filler (fly ash, dust return, blast furnace slag), etc.
- With reduced use of clinker it will reduce emissions of CO₂ (carbon dioxide) produced.



PROGRAM IMPLEMENTATION

Alternative Fuels Project



PLANT	BIOMASS
Location	Tuban, East Java Padang, West Sumatera Tonasa, South Sulawesi
Total Capacity	300.000 t/y
Investment	USD 10 Million
GHG Scheme	SG & ST → CDM SP → Private
Emission Reduction	150,000t-CO2/y

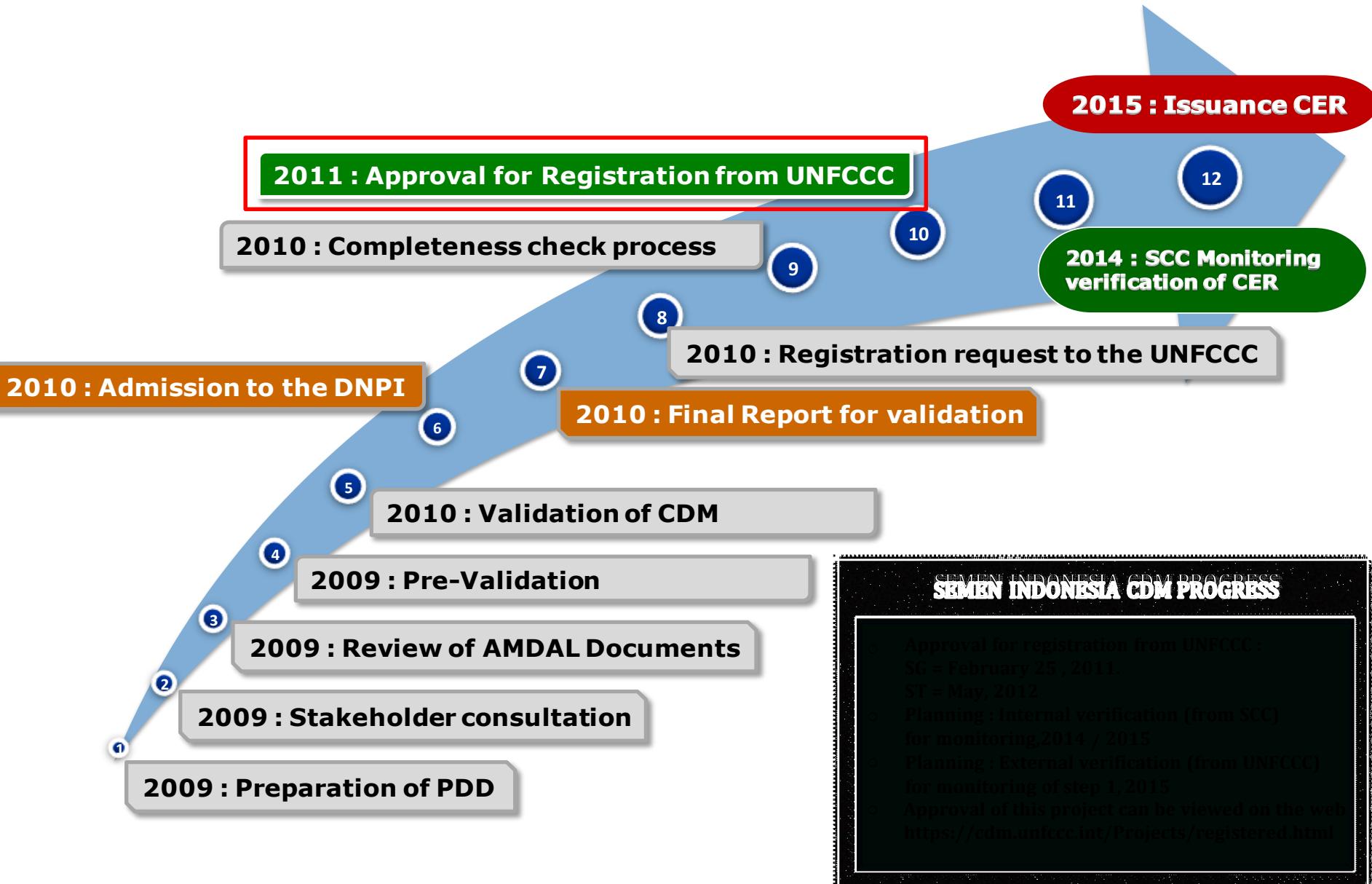


PROGRAM IMPLEMENTATION

Alternative Fuels Project



ROAD MAP OF CDM PROJECT



Remarkable Achievements



THANK YOU

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