Company Climate Action
PT Holcim Indonesia Tbk
Climate Initiative at Holcim Indonesia
LH Group Sustainable Development Strategy

THE 2030 PLAN
BUILDING FOR TOMORROW

We will generate 1/3 of our turnover from solutions with enhanced sustainability performance

Climate

In house
We will reduce net specific CO₂ emissions by 40% per tonne of cement (vs. 1990)

Beyond our fence
We will help our customers avoid 10 million tonnes of CO₂ being released from buildings each year through our innovative solutions

Circular Economy

We will use 80 million tonnes of waste-derived resources per year

We will provide end-of-life solutions for our products and will supply 4 times more recycled aggregates from CDW/RAP

Water & Nature

We will reduce specific freshwater withdrawal in cement operations by 30%
We will implement The WASH Pledge on all sites

We will make a positive impact on water in water-scarce areas
We will show a positive change for biodiversity

People & Communities

We want zero fatalities
We will reduce LTI FR < 0.20
We will reduce TIFR by 50%
We will reduce our disease rate < 0.1
We will have 30% minimum gender diversity at all management levels

We will develop initiatives to benefit 75 million people
We will engage in collective action to combat bribery & corruption in high risk countries

Innovative solutions

Low-carbon cement & concrete
Insulating concrete
Thermal-mass solutions
Recycled aggregates
Urban mining solutions
Waste management services
Rainwater harvesting
Pervious concrete
Stormwater protection
Vertical green solutions
Affordable housing materials and solutions
Affordable sanitation solutions

Note: all targets are for 2030. Baseline year is 2015 unless stated otherwise.
Carbon Emission Reduction at Cement Industry

a. **Alternative fuels** – use of less carbon-intensive fossil fuels and more alternative (fossil) fuels and biomass fuels in the cement production process. Alternative fuels include wastes that may otherwise be burnt in incinerators, landfilled or improperly destroyed.

b. **Thermal and electric efficiency** – deployment of existing state of the art technologies in new cement plants, and retrofit of energy efficiency equipment where economically viable.
Carbon Emission Reduction at Cement Industry

c. **Clinker substitution** – substituting carbon intensive clinker, an intermediate in cement manufacture, with other, lower carbon, materials with cementitious properties e.g.: Fly Ash, Pozzolant, Granulated Slag

![Diagram](image)

Previous

Now
CO2 Emission Reduction (Direct emission) Cement Industry

Option 1 and 2 is the most significant option to reduce CO2 emission. However, company also

1. 5% clinker factor reduction = 6-7% emission reduction

2. 5% Alt Fuel Increase = 1 - 2% emission reduction

3. 100 MJ/t energy efficiency from process modification = 1% emission reduction
Calculation of CO2 Reduction Using WBCSD Standard

- In cement Industry worldwide, CO2 monitoring and accounting protocol use WBCSD Standard which also refer to IPCC.
- Since 2010 to 2017 Holcim Indonesia has reduced 8.8% its specific Net CO2 per ton cementitious product (from 715 to 652 kg CO2 / ton Cementitious product).
- In general using 1 ton of Alternative Fuel will reduce 0.9 – 1 ton of CO2.
Basic CO2 Calculation Protocol at WBCSD Standard

Table 4: Emission sources to be reported within “gross emissions”

<table>
<thead>
<tr>
<th>Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂ from raw materials</td>
</tr>
<tr>
<td>+ CO₂ from conventional fossil kiln fuels</td>
</tr>
<tr>
<td>+ CO₂ from alternative fossil kiln fuels</td>
</tr>
<tr>
<td>(fossil wastes)</td>
</tr>
<tr>
<td>+ CO₂ from fossil carbon of mixed (alternative)</td>
</tr>
<tr>
<td>kiln fuels and non-kiln fuels (excluding on-site power generation)</td>
</tr>
<tr>
<td>+ CO₂ from non-kiln fuels excluding CO₂ from</td>
</tr>
<tr>
<td>on-site power generation</td>
</tr>
</tbody>
</table>

= Gross CO₂ Emissions
= Direct emissions (excluding CO₂ from on-site power generation)

Net emissions are the gross emissions minus the CO₂ emissions from alternative fossil fuels.

\[
Net CO₂ Emissions = Gross CO₂ Emissions - fossil CO₂ emissions from AF
\]

Net emissions as defined here are an indicator for a company’s net carbon footprint. They reflect a company’s direct emissions as well as emission reductions achieved indirectly by preventing the need for incineration or land filling of waste materials. As mentioned in Section 5.1 in this method the discount for CO₂ from fossil alternative fuels is a proxy because real (but unknown) overall balance can result in a higher or lower reduction. See Section 9.2 for the reporting requirements with respect to net emissions.

Memo Items

- CO₂ from biomass fuels
- CO₂ from biogenic carbon of mixed (alternative) fuels
- Indirect CO₂ (bought electricity & clinker)
Built Waste Co-Processing Facility to Convert Industrial Waste to Alternative Fuel

In 2017 company has used 770,000 ton of Alternative Fuel and Alternative Raw Material. Total 8.3 % of Fossil fuel was replaced with Alternative Fuel

Company has reduced 21.5 % net specific CO2 emission per ton product (2017) compare to 1990
Support Government Policy: Set up Ozone Depleting Substances Destruction Facility in Collaboration with MOE Indonesia and MOE Japan

The Only One Ozone Depleting Substances Destruction Facility in South East Asia
Already Destroy 20,173 kg ODS. (Global Warming Potential of ODS around 7000 x CO2)
Promoting Sustainable Construction Through LafargeHolcim Award Competition & “Greening Asia” Book Launching

Tiga Perwakilan Indonesia Sabet Penghargaan LafargeHolcim Asia Pasifik

CO₂ Emissions from Fossil Fuels

Buildings 39%
Industry 29%
Transport 33%
Since 2008 participate in CDM Project and already obtain CER (Certified Emision Reduction) from UNFCCC

<table>
<thead>
<tr>
<th>Project ID: 1598</th>
<th>Emission reductions through partial substitution of fossil fuel with alternative fuels in the 2 cement plants of PT Holcim Indonesia Tbk - Issuance Request</th>
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<tbody>
<tr>
<td>Project</td>
<td>1598: Emission reductions through partial substitution of fossil fuel with alternative fuels in the 2 cement plants of PT Holcim Indonesia Tbk</td>
</tr>
<tr>
<td>ISSUANCE STATUS</td>
<td>Issued (on 03 Feb 11)</td>
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<tr>
<td>Monitoring period</td>
<td>02 Sep 08 - 31 Dec 08</td>
</tr>
<tr>
<td>Monitoring report</td>
<td>[Monitoring report (195 KB)]</td>
</tr>
<tr>
<td>Request for issuance</td>
<td>[Signed form (308 KB)]</td>
</tr>
<tr>
<td>Amount of CERs</td>
<td>12,335</td>
</tr>
<tr>
<td>Serial Range</td>
<td>[Block start: ID-5-1209152-1-1-6-1598 Block end: ID-5-122486-1-1-0-1598]</td>
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<tr>
<td>Verification and certification reports</td>
<td>[Certification report (365 KB)]</td>
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<tr>
<td>Additional documents</td>
<td>[HIL_PDD_calculation_V05_monitoring period 2008_24062010 (422 KB)]</td>
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<td></td>
<td>[calibration frequency from 2011 (33 KB)]</td>
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<tr>
<td></td>
<td>[Monitoring report 2008_V6_CDM HIL 28102010 (488 KB)]</td>
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</tbody>
</table>

This activity also involve local community and local transporter in supplying more than 90,000 ton of biomass waste to the plant and already obtain more than 136,283 CER
Together with Ministry of Industry, Ministry of Environment and Cement Industry Association to set up climate related policy in cement sector

No.155, 2012 KEMENTERIAN PERINDUSTRIAN. Peta Panduan. Pengurangan. Emisi CO₂

PERATURAN MENTERI PERINDUSTRIAN REPUBLIK INDONESIA
NOMOR 12/M-IND/PER/1/2012
TENTANG
PETA PANDUAN (ROAD MAP ) PENGURANGAN EMISI CO₂
INDUSTRI SEMEN DI INDONESIA
DENGAN RAHMAT TUHAN YANG MAHA ESA
MENTERI PERINDUSTRIAN REPUBLIK INDONESIA,

Pasal 4
Penurunan Emisi CO₂ spesifik dari baseline 2009, adalah:
(a) Secara sukarela sebesar 2 % untuk kurun waktu 2011-2015.
(b) Secara wajib sebesar 3 % untuk kurun waktu 2016-2020.
Ground breaking RDF Facility by Vice Governor of Central Java, witnessed by Director General of Control and Pollution of Environment Ministry of Environment and Forestry / KLHK, Directorate of Cipta Karya of the Ministry of PUPR, Cilacap Regent, Danish Government Representative and PT. Holcim Tbk and other invites.

This RDF facility is able to process 120 tons of waste per day and will produce 40 ton alternative fuel. The facility will be in operation in the end of 2018.
Expected Result – Cilacap RDF Project

Overview

Cilacap Situation

- Incoming fresh waste of 120 tons per day in Jeruk Legi Landfill
- CO2 emission from methane gas of waste pile
- Waste Management Solution is limited by Landfill lifetime which requires periodical investment for new Landfills
- Land Scarcity issue with increasing price of land which only possible to have the new landfills far away from the city and will impact on logistics cost
- Potential of Community rejection at the new landfill
- Waste Pickers activity at the landfill

Innovative Solution

- Reduce 80% of incoming waste in Jeruk Legi Landfill
- Reduce CO2 emission
- Current Landfill Lifetime Extension
- Provide better Environment for Waste Pickers
- Increase the Waste Management Solution Quality in Cilacap
- Can be extended for future expansion
Bio Drying Membrane at Cilacap Project
Drying Process Principle

Example of bio-drying equipment setup

[Diagram of bio-drying equipment setup]

- CO₂
- Weather resistance
- Moisture
- Oxygen/temperature measuring head
- Temperature measuring head
- Membrane cover
- Air channels
- Unwinding device
- Blower unit

[Image of bio-drying setup with covers and food items]

FUEL VALUE
FRESH
4 MJ/kg

FUEL VALUE
DRIED
12 MJ/kg

WASTE TO PRODUCT!
The Potential Cooperation Model
Clear role and responsibilities for all stakeholders

**Waste Collection**
- Government

**Waste Processing**
- MSW to RDF Facility

**Waste Utilization**
- Holcim Indonesia

**Operation**
- Rental
- Fuel
- Labor
- Electricity

**INVESTMENT**
- Land
- Building
- Equipment
- Laboratory
- Health and Safety

**RISK MANAGEMENT**
- Operation
- Product Quality
- etc

**INVESTMENT**
- Land
- Storage
- Equipment
- Kiln Modification
- Laboratory
- Health and Safety

**OPERATION**
- Rental
- Fuel
- Labor
- Electricity

**RISK MANAGEMENT**
- Emission
- Production

Sending the waste to RDF Plant
Taking the Residue and Leachate
Transportation to Cement Plant
MEMPERKENALKAN
Semen Holcim dengan Micro Filler Particle

Yang PASTI Aja!
Dengan mineral mikro yang halus, mampu mengisi rongga dengan sempurna dan memberikan kekuatan dari dalam, sehingga hasil bangunan kuat dan permukaan halus.

LEBIH LANJUT

Holcim – Membangun Bersama