



# Powering Cement Decarbonization through People, Partnerships and Innovation



# Indian cement industry is on a high growth trajectory and needs to balance growth with sustainability and reducing emissions

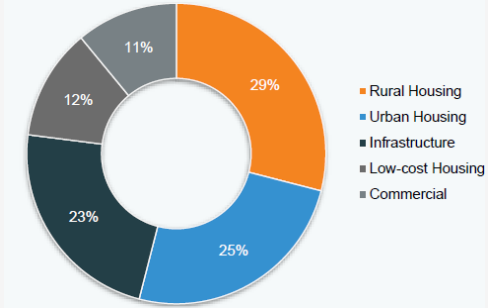


India is the 2<sup>nd</sup> biggest producer of cement. Plan to almost to double production by 2030.



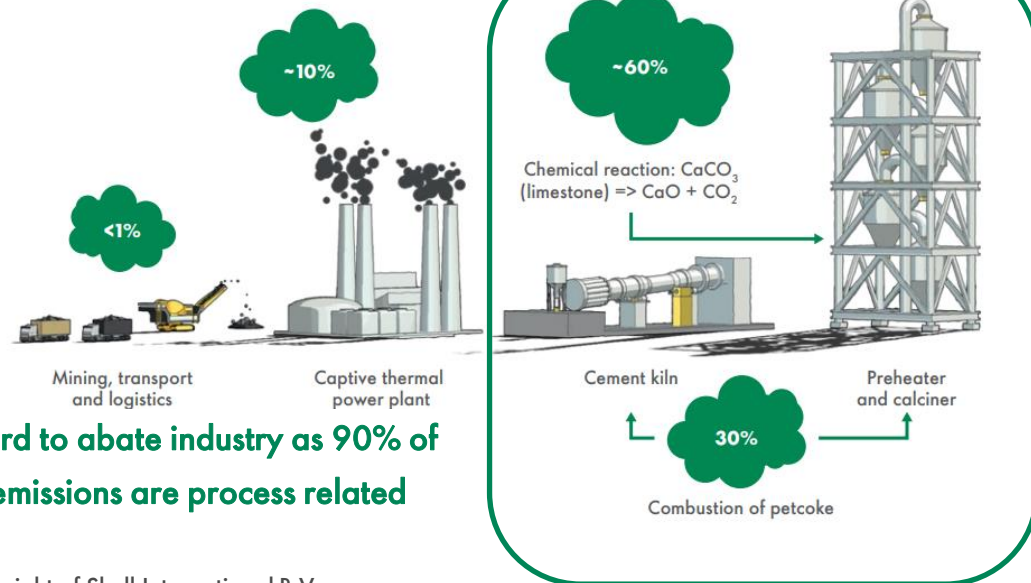
## Cement demand to triple by 2040

Rapid urbanization & total residential floor space increase  
Huge push on infrastructure investment

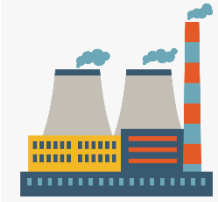


66% demand is from residential housing  
23% from infrastructure

As India grows, the cement industry and production will also grow at a fast pace, and so will the CO<sub>2</sub> emissions.



Indian cement industry the most efficient globally regarding energy efficiency and CO<sub>2</sub> emission intensity. And yet contributes 6% of national emissions. (2016)



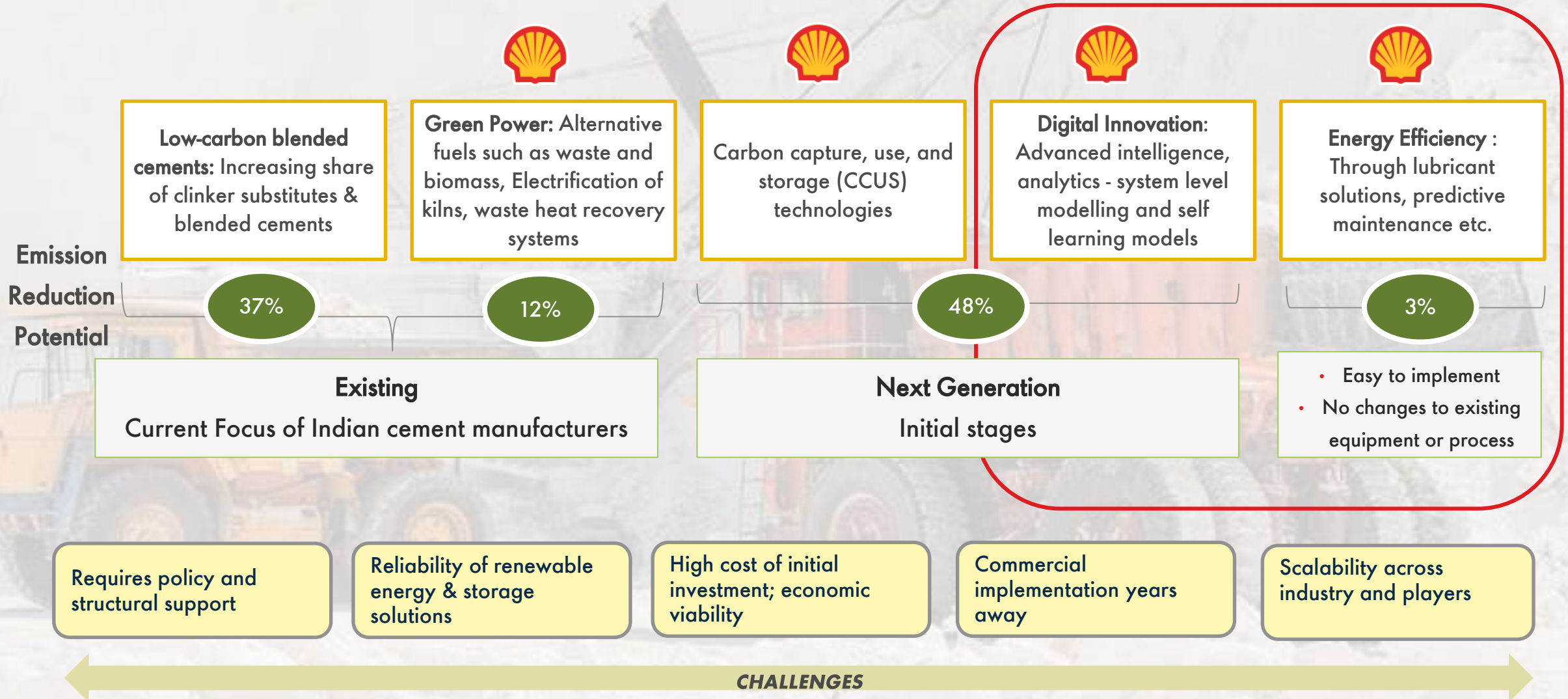
Rising governmental regulations on emissions

Rising demand for greener materials by end users

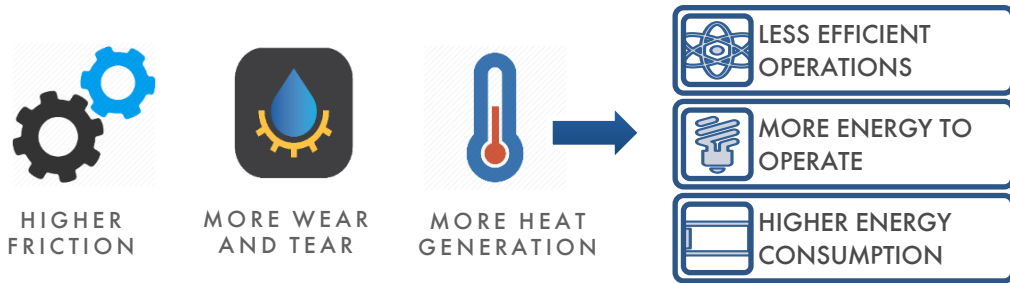
Government Regulations and Schemes for Energy Efficiency

Low Carbon Technology Roadmap: Aims to voluntarily reduce direct CO<sub>2</sub> emission intensity by 45% till 2050 from a 2010 baseline.

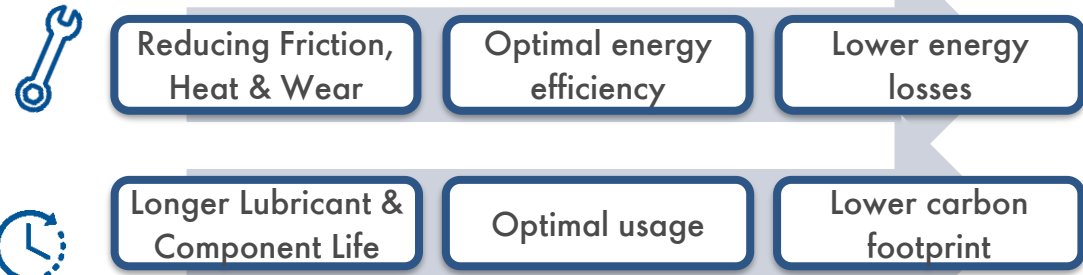
# Decarbonization Levers for Cement



# Tackling emissions and efficiency through lubricants and digital innovation



**Switching to high performance & Synthetic Lubricants demonstrate energy efficiency improvement by**



**Shell LUBRICANTS**



Improper lubricant practices like over lubrication or under lubrication can also lead to higher energy consumption

Copyright of Shell International B.V.

**MACHINEMAX**  
**REVOLUTIONARY WIRELESS TELEMATICS**

Data integrated into booking, billing, CMMS systems etc.  
Data from OEM telematics harmonized and integrated  
Contextual data from other systems and sources  
No limits on user licenses - access it anywhere  
Connect up machines that you don't have data on today in <math>1\text{min}</math>

**Make the most of your fleet with a combination of sensor technology and artificial intelligence**



**Shell Remote Sense**

**DETECT EARLY, AVOID DAMAGE WITH SHELL REMOTE SENSE**

**MIRICO**

Delivering intelligence through high sensitivity real time gas sensing technology

- Fugitive Emissions Monitoring
- Greenhouse Gas Monitoring
- Biomethane Emissions Monitoring

CONFIDENTIAL

# Lubrication offers great potential to increase energy efficiency and reliability, through advanced high-performance Shell lubricants

## Shell Tellus

Hydraulic Oil  
Shell Tellus S4 VE

*Powering performance with Gas to Liquid technology*

- **Up to 21%** lower energy loss from a hydraulic pump
- **TOST up to 10,000 hours** Extended oil life
- **Up to 5% efficiency** in a hydraulic system

## Shell Omala

Industrial Gear Oil  
Shell Omala S4 WE

*Extra protection for extended gear life*

- **75% lower friction coefficient** for high efficiency
- **Over twice the oil life** compared to conventional oils
- **Up to 45% less** spur-gear wear

## Shell Corena

Air Compressor Oil  
Shell Corena S4 R

*Designed To Meet challenges*

- **Over 3 times the oil life** 12000 hours life in service
- **Over 5 times faster air release** for efficiency

## Shell GADUS

Open Gear greases

*Tailored for severe conditions*

- **Reduces lubricant consumption by 50%\***
- Highest shock load and wear protection compared to competitors<sup>^</sup>

\*OG Clear Oil 20000

<sup>^</sup>Gadus S2 and S4 OGH

## CEMENT COMPANY EXTENDS OIL LIFE WITH SHELL OMALA S4 GX 320

TOTAL ESTIMATED ANNUAL CUSTOMER SAVING **US\$48,000**

**COMPANY:** Zibo Ri Qiang Cement

**LOCATION:** China

**APPLICATION:** Loesche vertical mills

**KEY EDGE:** Shell Omala S4 GX 320, Shell LubeAdvisor, Shell LubeAnalyst and Shell LubeCoach

**100%**

**INCREASE IN OIL DRAIN INTERVAL**

**COMPANY:** Tasek Cement Berhad

**LOCATION:** Ipoh, Perak, Malaysia

**APPLICATION:** COMPAIR Cyclon 337 (H26-07) rotary kiln screw compressor

**KEY EDGE:** Shell Corena S4 R 68 and Shell LubeAnalyst

**2.5x**

**INCREASE IN OIL DRAIN INTERVAL**

**Shell Corena**  
Air Compressor Oil

## Shell GADUS

Conch Cement reports **US\$10,457** in annual savings related to reduced grease consumption, improved performance and better protection.

\*All claims measured using industry standard, Shell proprietary, internal competitor benchmarking tests and customer DVRs

# SHELL LUBRICANT SOLUTIONS

Shell offers a range of lubricant solutions to ensure operations are as efficient as possible

- Improved Equipment Efficiency
- Prolonged Equipment Life
- Optimized lubricant use
- Minimized Production Disruptions
- Reducing waste
- Reducing energy consumption



~21%\* of CO<sub>2</sub>e emission from the product life-cycle

## USED OIL RECYCLING



**Compliance**

- EPR norms on used oil implemented
- Safe disposal to mitigate health/ environmental risks

**Environmental**

- Burning unprocessed used oil contaminated with toxic metals leads to increased emissions

**Sustainability**

- Shell acknowledges contribution with a Green Certificate on recycling through authorized vendors

**Real world examples**

- A top automotive OEM averted 270 tons of CO<sub>2</sub> emissions and counting, through responsible used oil disposal of their workshops
- A key mining OEM ensured used oil was collected from their AMC sites and diverted for recycling thereby saving an equivalent of 2000+ trees.

# There is no one single solution for thriving through the energy transition Shell can partner in powering cement industry's transformation through technology leadership and innovation .

**Avoid**  
Emissions



**Reduce**  
Emissions

**Compensate**  
Emissions



**Renewables**  
(Solar, Wind)



**Energy efficient  
Lubrication & Total  
Lubricant Management  
Solutions**



**Low Carbon & Carbon  
neutral products**



**Alternative Fuels:  
LNG**



**Circular economy with  
used oil disposal**



**Carbon credits\***



**Carbon capture,  
Utilization and  
storage\***  
Northern Lights



**Digital & Technology  
Innovations**



**Community &  
environmental projects**



\*Global capabilities

