



Strength. Performance. Passion.

# Green cement manufacturing towards Sustainable Development



**Sustainable Development Director, Nguyen Cong Minh Bao**

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# Agenda

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Introduction - Abstract	3
About Holcim	6
Sustainability Solutions	9
Climate & Resources	14
Communities	24

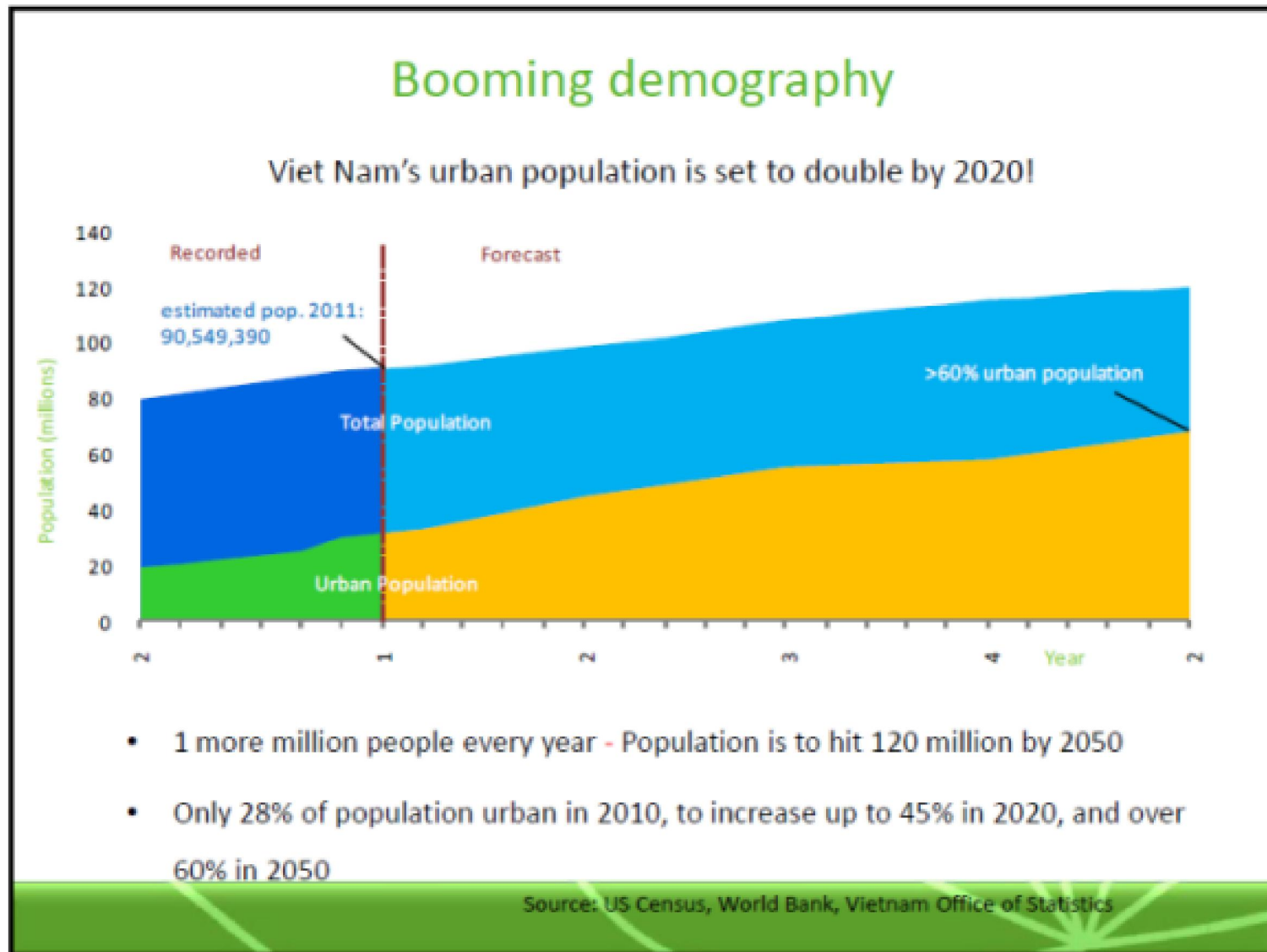
## Introduction - Abstract

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- The increase of greenhouse gases, one of the major contributor to climate change
- It is estimated that by 2050 cement plants worldwide will produce in the region of 5 billion tonnes of carbon dioxide
- Cement-based materials, such as concrete and mortars are used in incredibly large amounts (currently no other construction materials are more sustainable)

# Vietnam Urban Population doubles by 2020....

## How can Vietnam be built in a more sustainable way?



## Introduction - Abstract

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- Cement manufacturers can do more to respond fast enough and to a sufficient extent to improve the sustainability of their operations substantially

➔ How can a cement and concrete manufacturer can contribute to a more sustainable society ?

# About Holcim

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## Holcim Group

### *Centennial heritage*

- Holcim is one of the world's leading suppliers of cement, rmx concrete and aggregates
- The Group holds majority and minority interests in around 70 countries on all continents with over 80.000 people



## Holcim Vietnam

### *Leading cement & concrete supplier in South Vietnam*

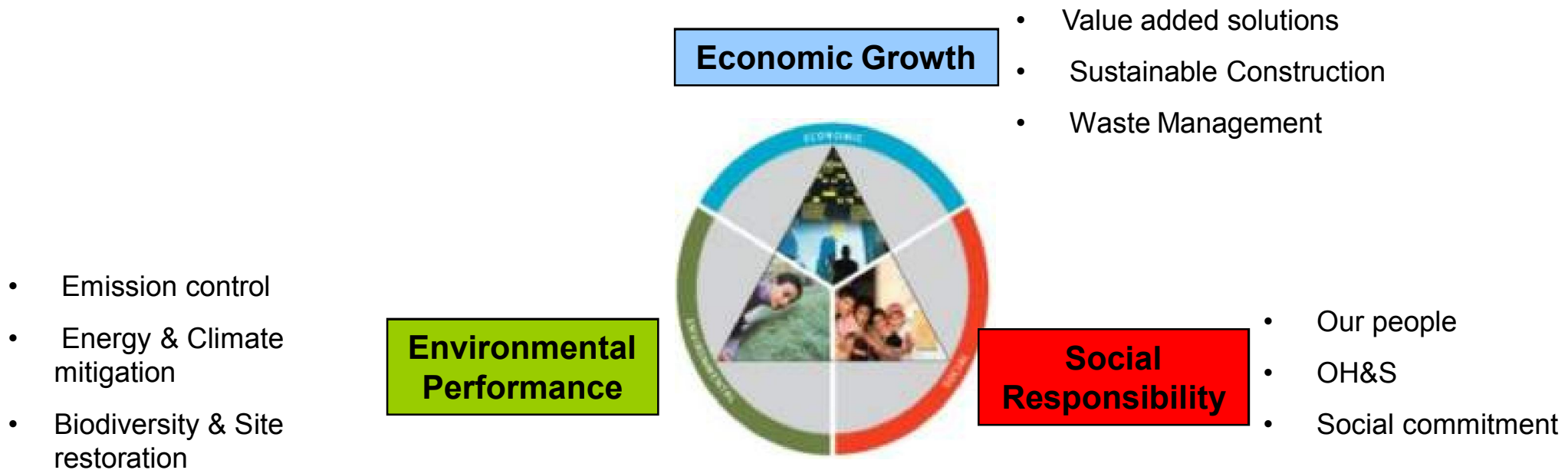
- Holcim Vietnam was established in 1993
- The network of 4 cement plants & 8 batching plants in southern Vietnam offers the highest supply security with a capacity of 5,1 mio t cement & 1 mio m<sup>3</sup> readymix concrete
- In 2008, provided waste management solution with Geocycle establishment
- Certified VILAS 17025, ISO 9001 & ISO 14001, OHSAS 1800, ACERT, SEDEX and moving forward gap analysis ISO26000, ISO50000 and PAS99

# Sustainable Development (SD)

## What does it mean for Holcim Vietnam

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- 2008: established a specific department, dedicated to Sustainable Development, reporting directly to the CEO
- Activities are spread over the triple bottom-line for Sustainable Development



**The challenge is to link and balance the interdependent economic, social and environmental dimensions of SD.**



# Holcim Ambition 2030

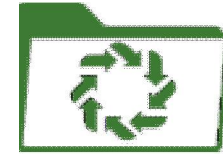
## *Building Ambition, Delivering Value*





# HVL SD Ambition 2020

## Sustainability solutions



- Increase our sales of new sustainable solutions, products and services to the equivalent of **50,000** m<sup>3</sup> of concrete per year
- Ensure that over **80%** of our concrete contains reused or recycled materials

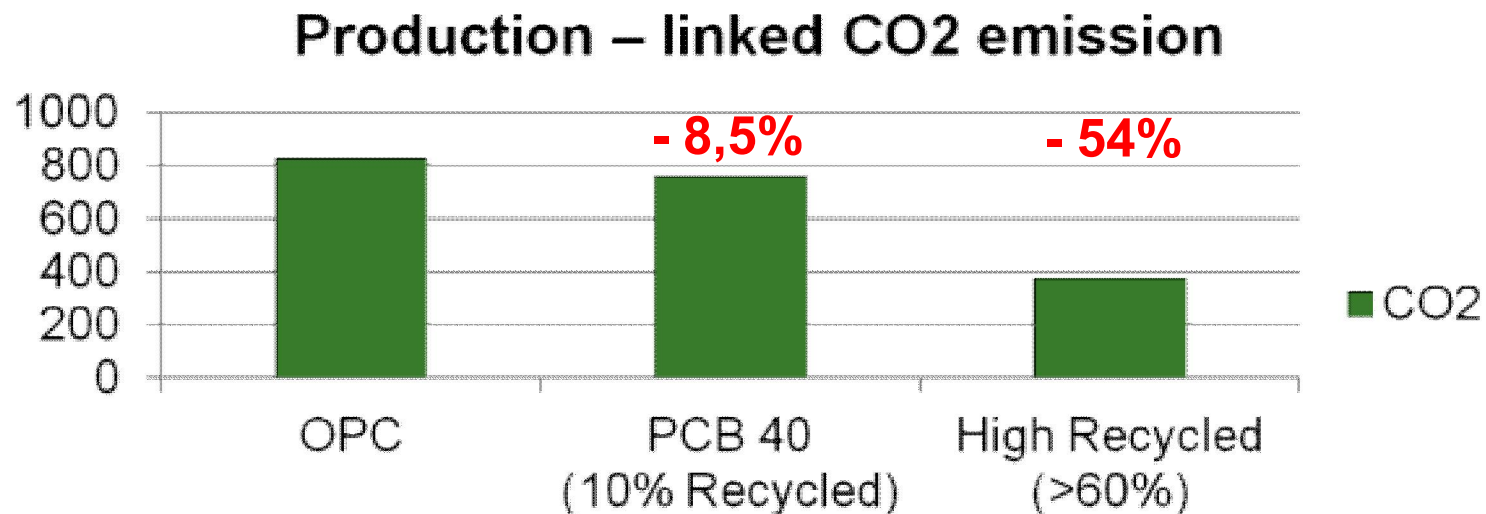


For more than five years, Holcim Vietnam has shared the VGBC's ambition to promote a radical change in the sustainability of the construction industry.

**Yannick Millet**  
*Technical Advisor, Vietnam Green Building Council*

## Green product - Reduce resources to produce

- The use of recycled materials in cement (slag, fly ash)
  - ▶ Recognized by Vietnamese & international standards
  - ▶ Meets the required strength and quality
  - ▶ Improved durability of concrete on long term
- Recognized by Green Building certification schemes  
Lotus / LEED / GreenMark



Comparison for bulk cement for readymix application

# 10% recycled content in cement does have a significant impact

For a large project of  
100,000 m<sup>3</sup>,




a forest of 3500 trees  
during 40y



OR 1700 people,  
taking a return flight  
Vietnam - Europe

# Holcim Sustainable Solutions

## Innovative solutions for Green Building design

Light Weight Beton	Mass Beton	Super Beton	Holcim Green Beton	Drain Beton	Cement Mass Pour	Cement Ready Flow
<ul style="list-style-type: none"> <li>Concrete for light weight applications</li> <li>Heat and noise insulation characteristic</li> <li>Reduce dead load of structure</li> </ul>	Temperature controlled concrete to reduce risk of structure damage linked to thermal cracking	High strength concrete to reduce structure size and material usage	The concrete solution with high recycled content in cement ( <b>up to 60%</b> )	Solution for rainwater collection and storage	High quality cement used for mass beton volume to reduce cracks due to heat	Specially designed for RMX with high flexibility and stable strength
						





# Green product- Concrete application



Phu My bridge used  
Holcim Ready Flow & Holcim Mass Pour



Duyen Hai thermal power project &  
Tan Hoa Lo Gom used Holcim Stable Soil



Dai Ninh hydropower used  
Holcim Mass Pour



Port container SITV used  
Holcim Extra Durable

# HVL SD Ambition 2020

## Climate & Ressources



- Decrease CO2 emissions to

**380** kg/ton of cement produced  
(454 kg/ton in 2012 & **417 kg/ton in 2014**)

- Decrease average dust emissions

at mill stacks to **20** mg/Nm<sup>3</sup> (**12 mg/Nm<sup>3</sup> in 2014** compared to 100 mg/Nm<sup>3</sup> regulated by Vietnamese law)

- Decrease clinker factor to **62**%  
(66% in 2012 & **60% in 2014**)

- Increase thermal substitution rate to **40**%  
(20% in 2012 & **28.6% in 2014**)

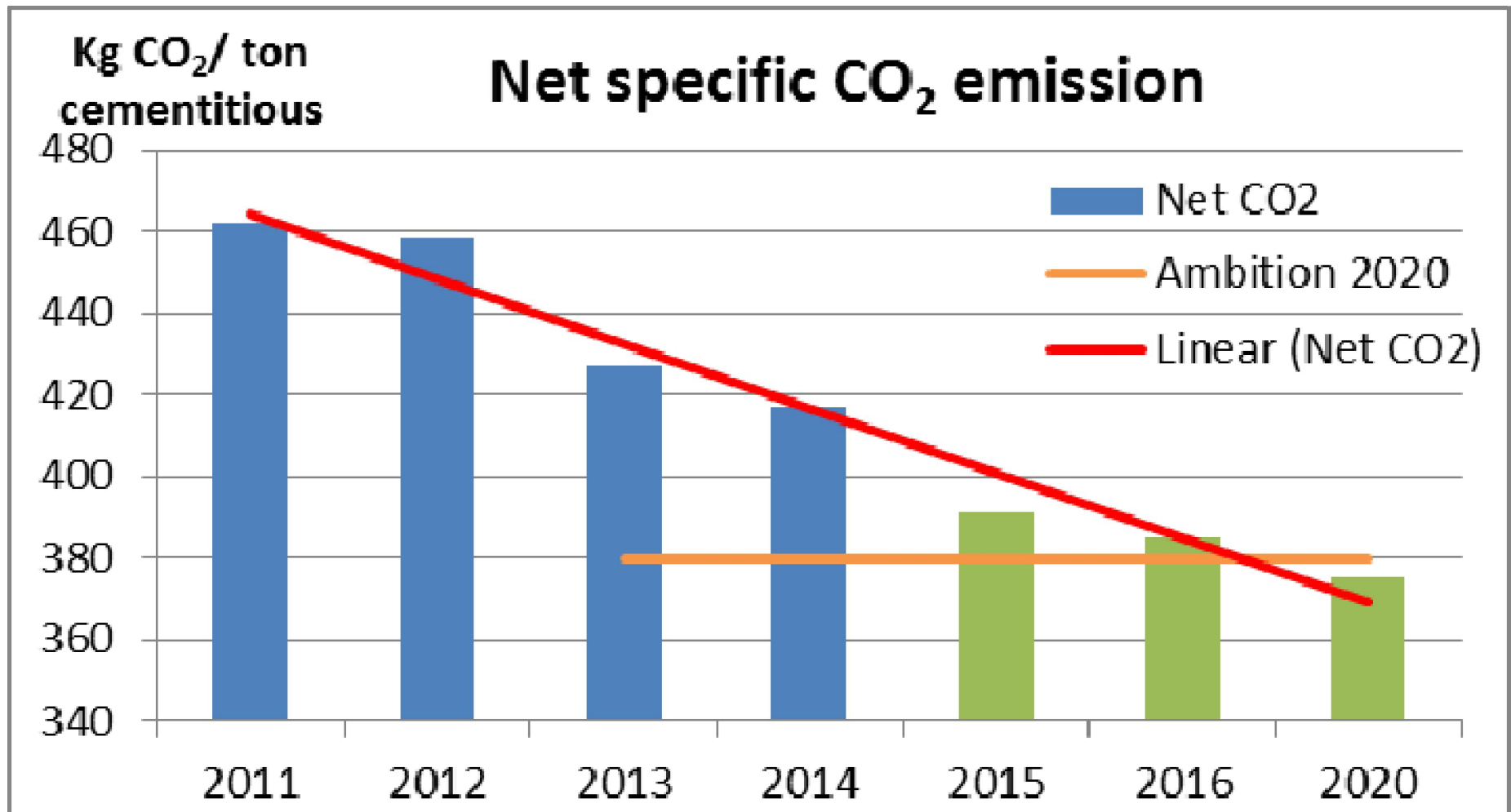


The company not only complies with Vietnamese environmental standards, it also continuously strives to attain the highest global ones.

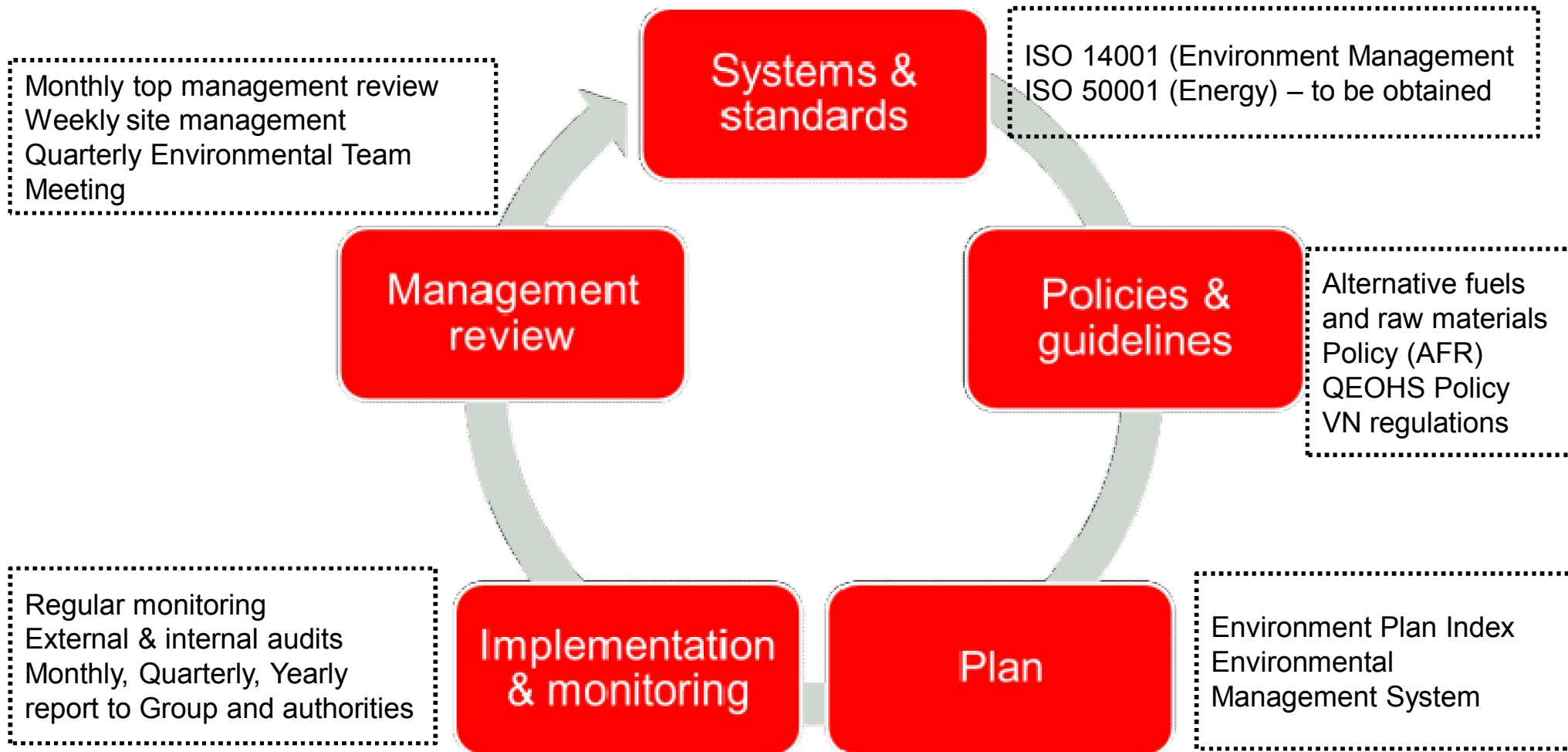
*Ms. Vo Thi Van  
Deputy Director, Kien Giang  
Department of Natural Resources and  
Environment*



# Green Manufacturing - Multi-approach to achieve carbon footprint reduction



# Environment Performance Process



# Green Manufacturing- Energy management excellence

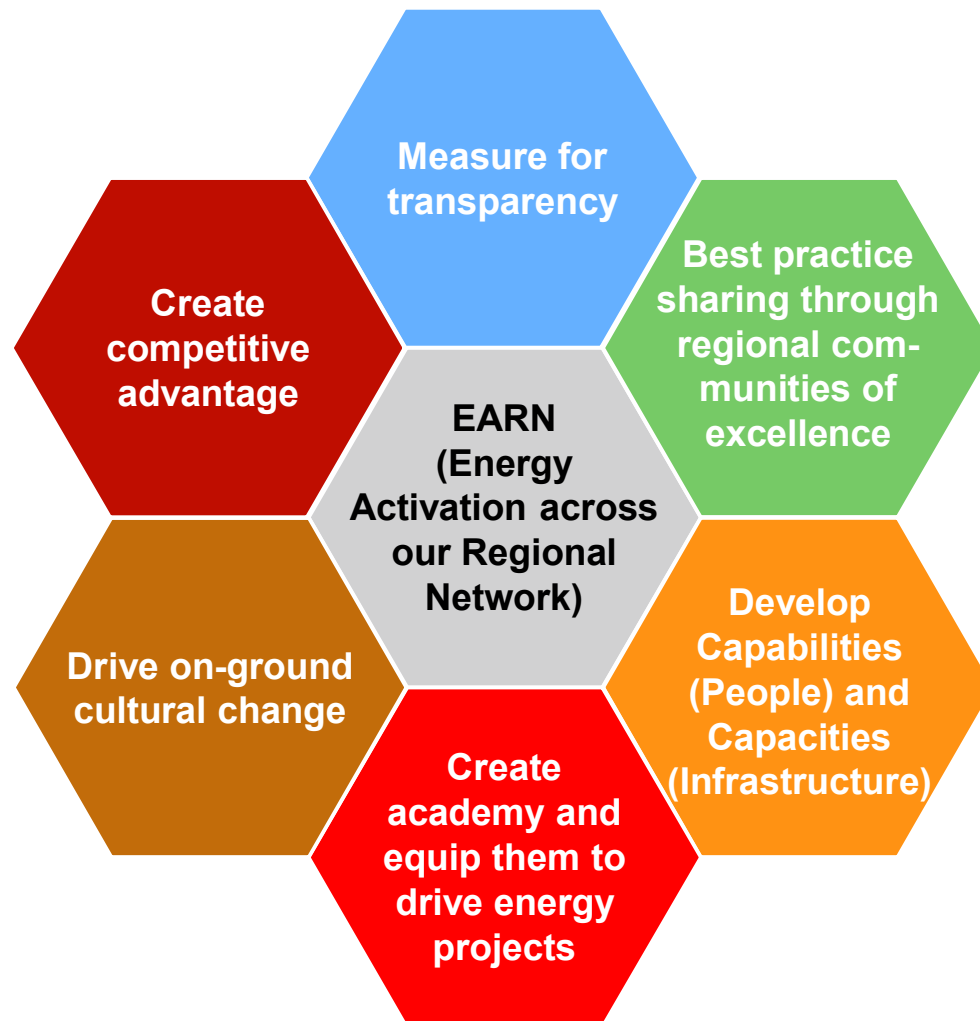
## Where do we want to be?

Reduce energy costs and carbon footprint

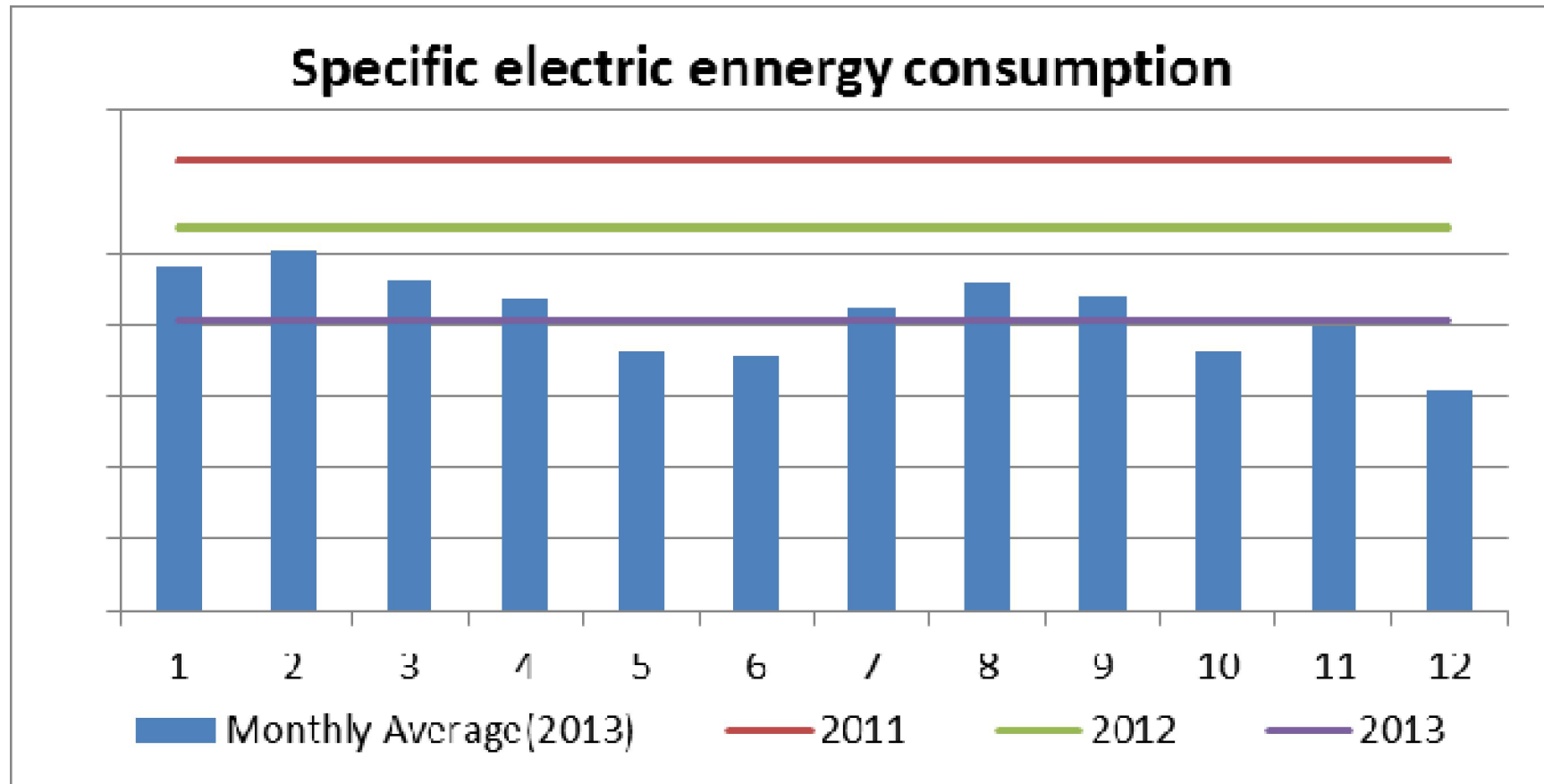
“New energy culture to improve efficiency of production, products and consumption to reduce or limit energy usage”

“EARN is **not** a technical project alone, it is a transformation initiative, to build a lean energy culture with raised competency levels to achieve energy management excellence”

## How will we get there?

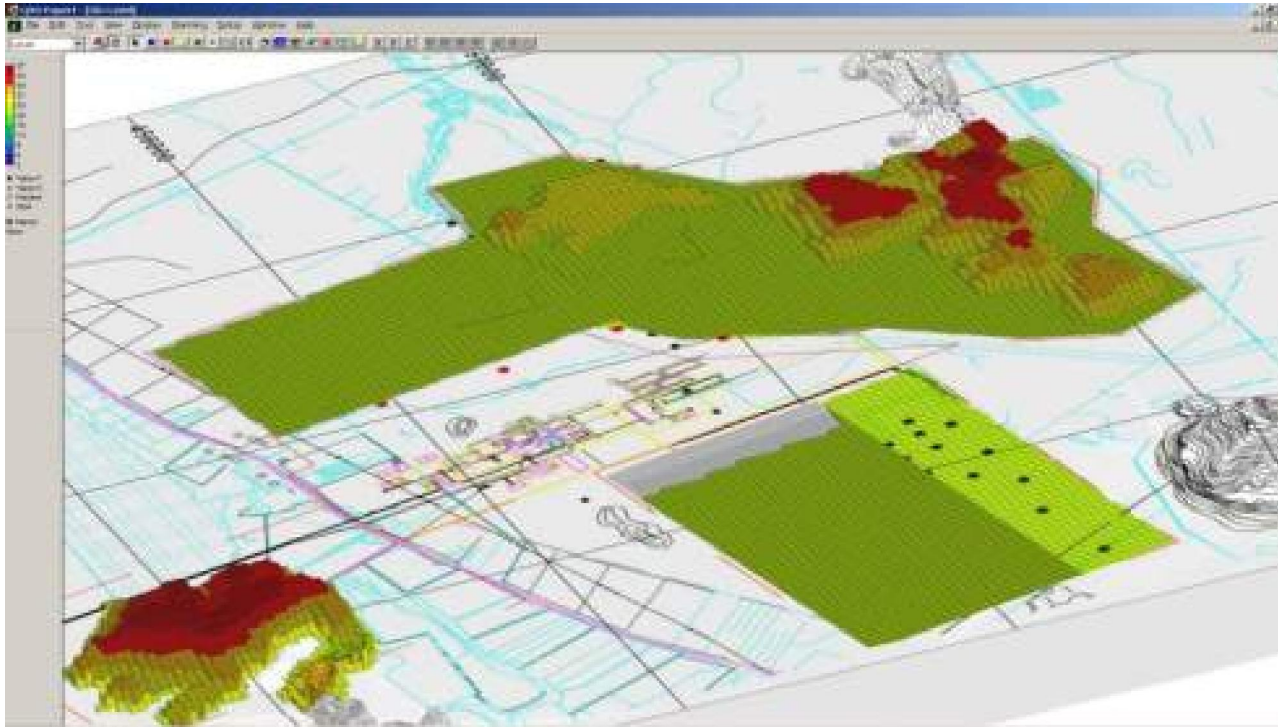


# Green Manufacturing- Energy management excellence -Typical result



- Specific electric energy consumption [Kwh/ ton] year 2012 , 2013 were reduced 5% , 12% in comparison with 2011
- Indirect CO<sub>2</sub> emission was reduced significantly

# Green Manufacturing- Efficient usage of non-renewable raw materials.



**PGNAA equipment**

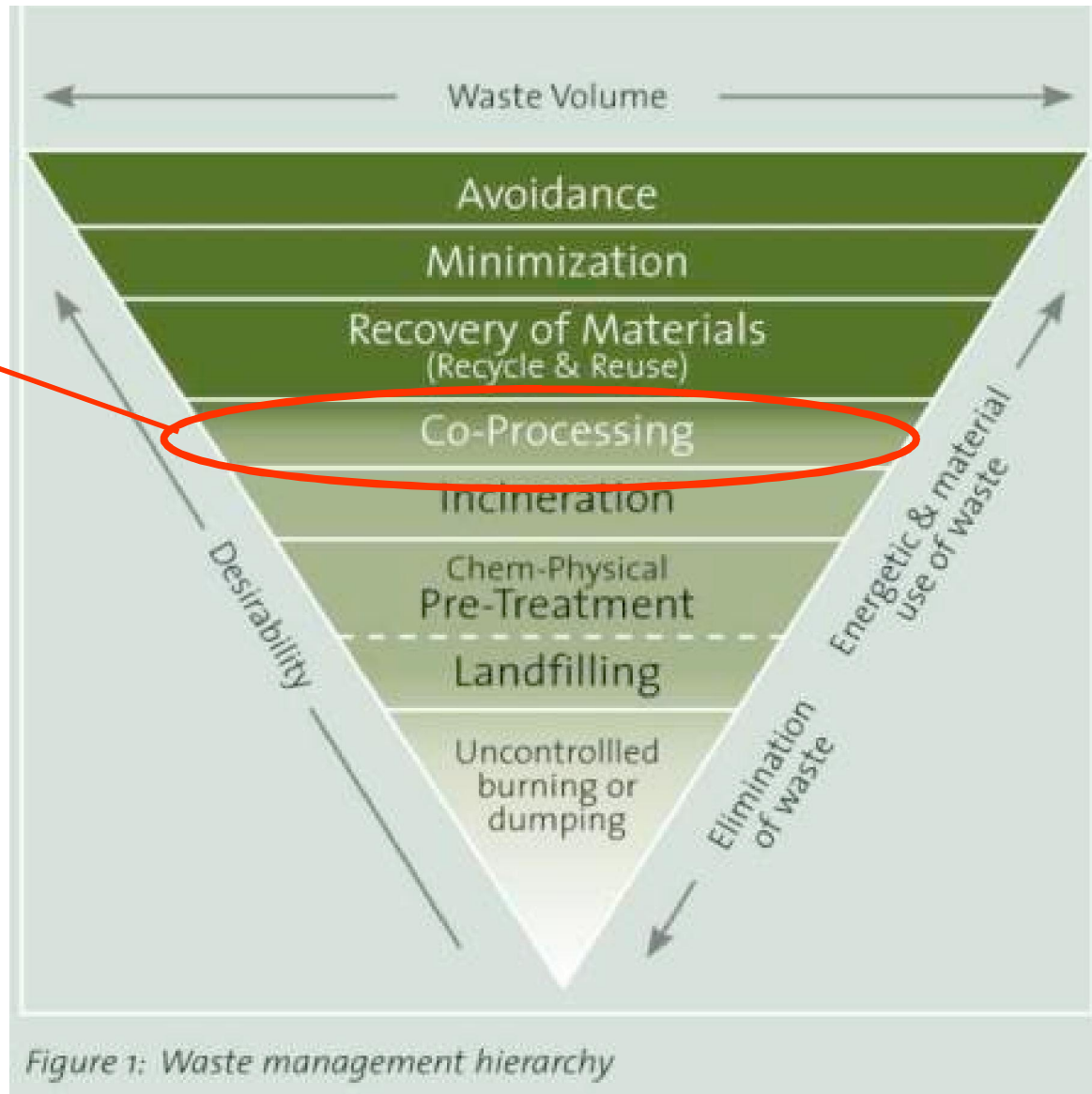
- Long term/ short term planning by modern technology (QSO/ QM softwares)
- Online control mixing materials by cross – belt analyser (PGNAA equipment)
- Usage all of non-renewable raw materials
- Mineral component content in cement while keeping products quality and diversity

# Green Manufacturing- Co-processing of selected waste materials to minimize usage of fossil fuels

In the waste hierarchy, co-processing provides a more desirable solution than incineration or landfilling / chemical treatment



Geocycle a business unit of Holcim





# Green Manufacturing – Co-processing AFR



**Hazardous waste**

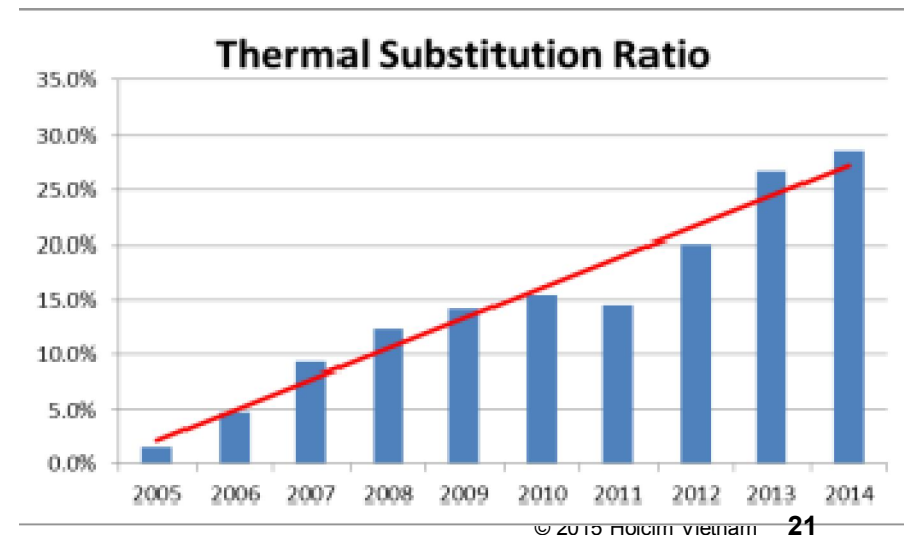


**Rice Husk**



**Plastic (Footwear)**

- In 2014, 94,000 ton wastes were treated. Thermal Substitution Ratio is 28.6%, Reduced 66,000 ton of CO2 emission from fossil fuel.



# Green Manufacturing- Investment new technology



**Waste Heat Recovery System - 2012**

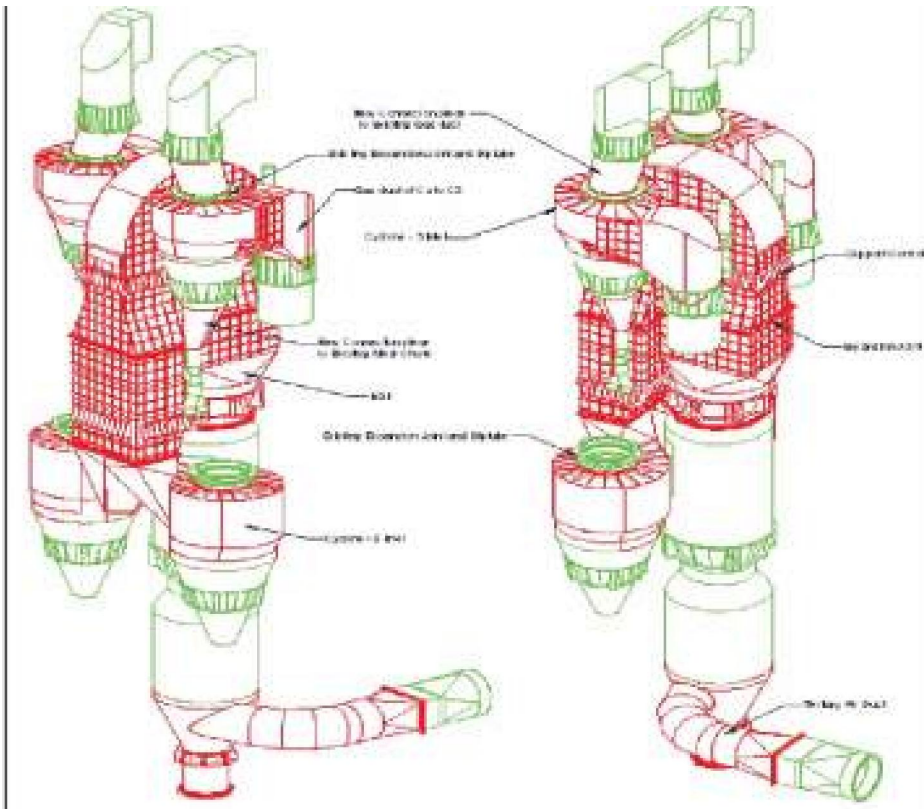
- Waste heat usage generating electric power (6.3 MW).
- 25% of substitution of plant electrical consumption
- Saving 9,000 t/y of coal antracite
- CO<sub>2</sub> reduction of 25,300 t/y



**Kiln stack bag filter - 2013**

- Dust stack emission below 10 mg/Nm<sup>3</sup> (Legal limit 100 mg/Nm<sup>3</sup>)
- Explosion risk elimination compared to electrostatic precipitator

## Green Manufacturing- Investment new technology



## Calciner Extension - 2014

- Better combustion.
- Lower Heat consumption



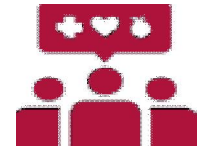
## ATS building - 2014

- 01 building area of 1700 m<sup>2</sup>.
- 03 compartments for 3 different types of Alternative Fuels



# HVL SD Ambition 2020

## Communities



- Ensure approximately **1 Million** members of local communities benefit from our CSR program
- Maintain our staff retention rate above **95%**
- Ensure our lost time injury frequency rate is **0**

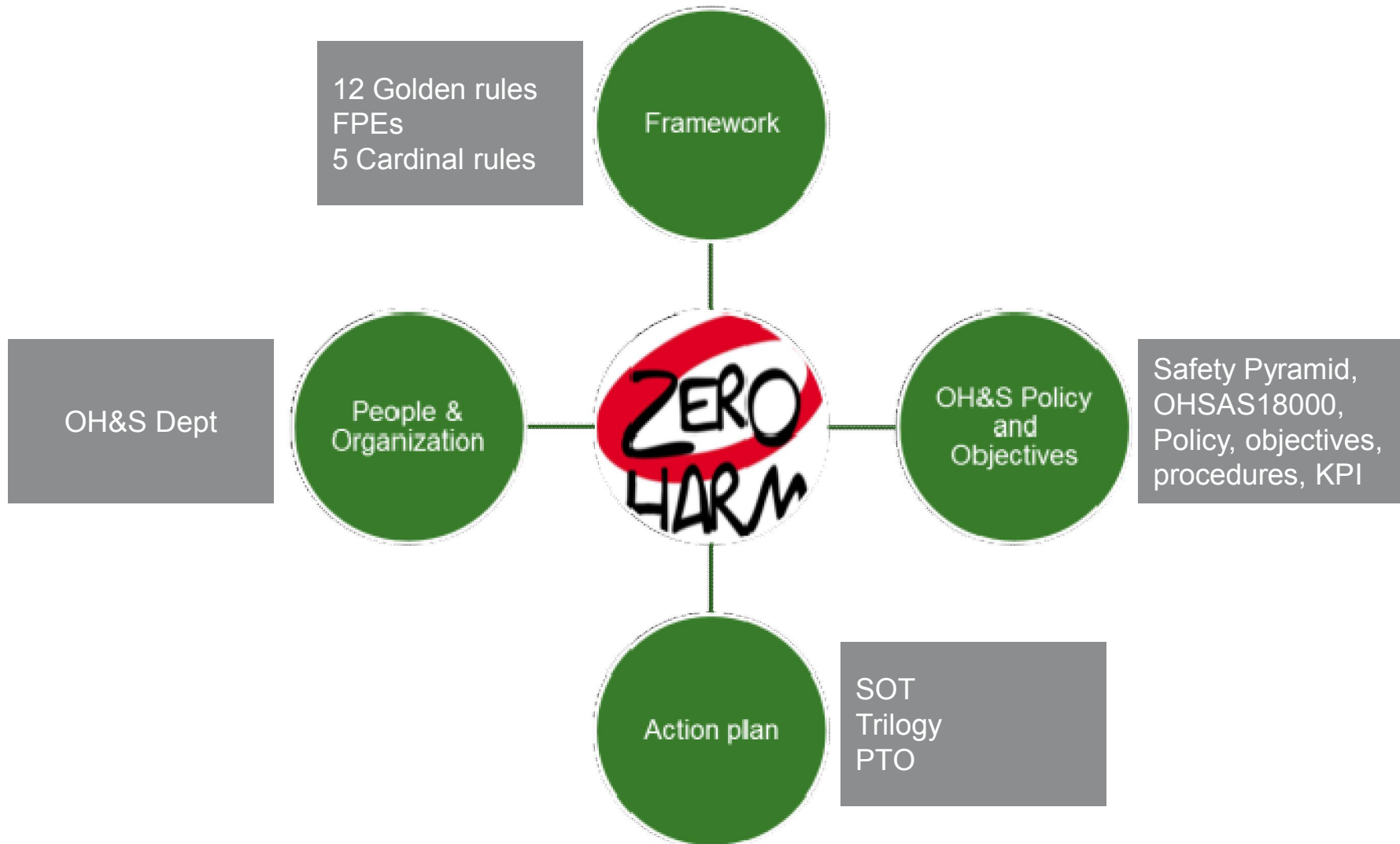


We highly appreciate the seamless contribution of Holcim to foster education, especially the Holcim Prize - a competition that allows students to research and realise their own ideas for sustainable development.

*Associate Professor, Dr. Vu Dinh Thanh  
Rector, HCMC University of Technology*

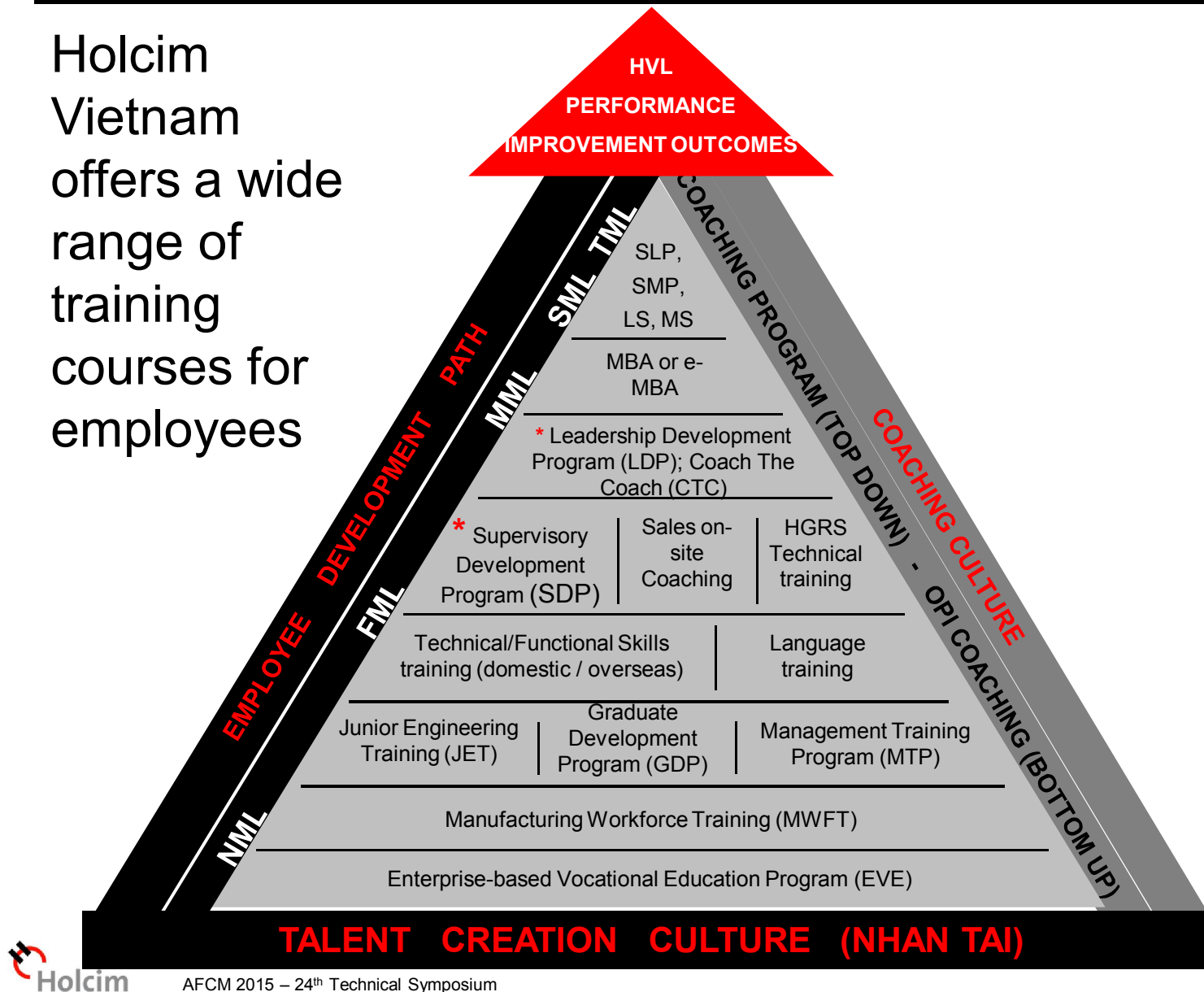
# Occupational Health & Safety is our top priority

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# We care about our people and their development

Holcim  
Vietnam  
offers a wide  
range of  
training  
courses for  
employees



Coach the Coach (CTC)  
(6 months)



(5 courses)

Leadership Development Program (LDP)  
(1 year)



(10 courses)

Supervisory Development Program (SDP) (1 year)



(3 courses)

CT Phát triển tài năng trẻ (GDP, JET) – (1 year)



(4 courses)

Enterprise-based educational program (EVE) – 3 years



(12 courses)

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26



# We care about our customers and their success by focusing on added value services

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## **Technical consultant services:**

- Advice on concrete mix design, optimize mix design
- Consulting during project planning, preparation & execution



## **Customer services program:**

- Frequently survey customer feedback (NPS)
- Customer relationship management



## **Dong Hanh program**

- Support distributor to develop market
- Training for distributor's sales staff



## **Vungxaycuocsong:**

- Consulting building house
- Sharing beautiful house design,...

# We care about our communities

**TOGETHER**  
for communities

**TOGETHER**  
for environment

## Education Promotion



*Scholarships, insurance, bikes and school supplies for school kids*



*Green Summer*



*Holcim Prize*



*Water reservoir*



*Medical center*



*Playground*

## Infrastructure Development

## Community Development

### Volunteering program

- To share our CSR approach through field work
- To enhance employees' pride about their social value
- To enhance relationship with local stakeholders by engaging them in shared v



*Vocational training*



*Housing for low-income families*



*Income generation support*



# Create awareness worldwide

## International competition “Holcim Awards”

### Holcim Awards



### Global Holcim Awards 2<sup>nd</sup> cycle Silver winner

Low-impact Greenfield university campus,  
Ho Chi Minh City, Vietnam



- An international competition of the Holcim Foundation for Sustainable Construction. The competition celebrates innovative, future-oriented and tangible sustainable construction projects and visions from around the globe and provides prize money of **USD 2 million** per three-year competition cycle.
- Target:
  - Main category: architects, planners, engineers, project owners, builders and construction firms
  - Next Generation Prize: students



# Towards a more sustainable society

## Create awareness in Vietnam

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### Research & show-case environmentally-friendly building materials



**CMU (Cement Masonry Unit)**



**CLC (Cellular Lightweight Concrete)**



**CEB (Concrete Earth Brick)**

# Towards a more sustainable society

## Showcase projects for more sustainable buildings

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Binh An medical center



Binh Tri medical center



Nha Be Community house



Binh Chanh playground



Long Thoi – Nha Be playground

# Towards a more sustainable society

## Create awareness

- “Insights”
  - ▶ Fe
- Work with a unive
- Supp
  - ▶ Gr
  - ▶ Tec





# **Can a cement and concrete manufacturer contribute to a more sustainable society?**

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**Yes  
we can**



Holcim