Innovation at Holcim

The Double Zero Quest for future cementitious building materials: Zero CO2 emissions and Zero natural resources

1st Summit WCSC Lausanne - 14 Jan.2025
Christophe Levy, Scientific Director at Holcim Innovation Center

HOLCIM

HOLCIM INNOVATION CENTER

N°1 PRIVATE R&D FACILITY IN BUILDING MATERIALS INDUSTRY

NEAR LYON, FRANCE

120 start-up partners

21 PhDs in **8** countries

225 researchers

15,000 m²

300+ patent families

22 nationalities

600+ new products/y

80% R&D on CO_2 reduction

R&D PROJECTS TO DRIVE DECARBONIZATION AND CIRCULARITY

GREEN OPERATIONS
Decarbonizing Holcim

BUILDING BETTER WITH LESS
Decarbonizing construction

CIRCULAR CONSTRUCTION
Building new from old

MAKING BUILDINGS SUSTAINABLE
Decarbonizing cities

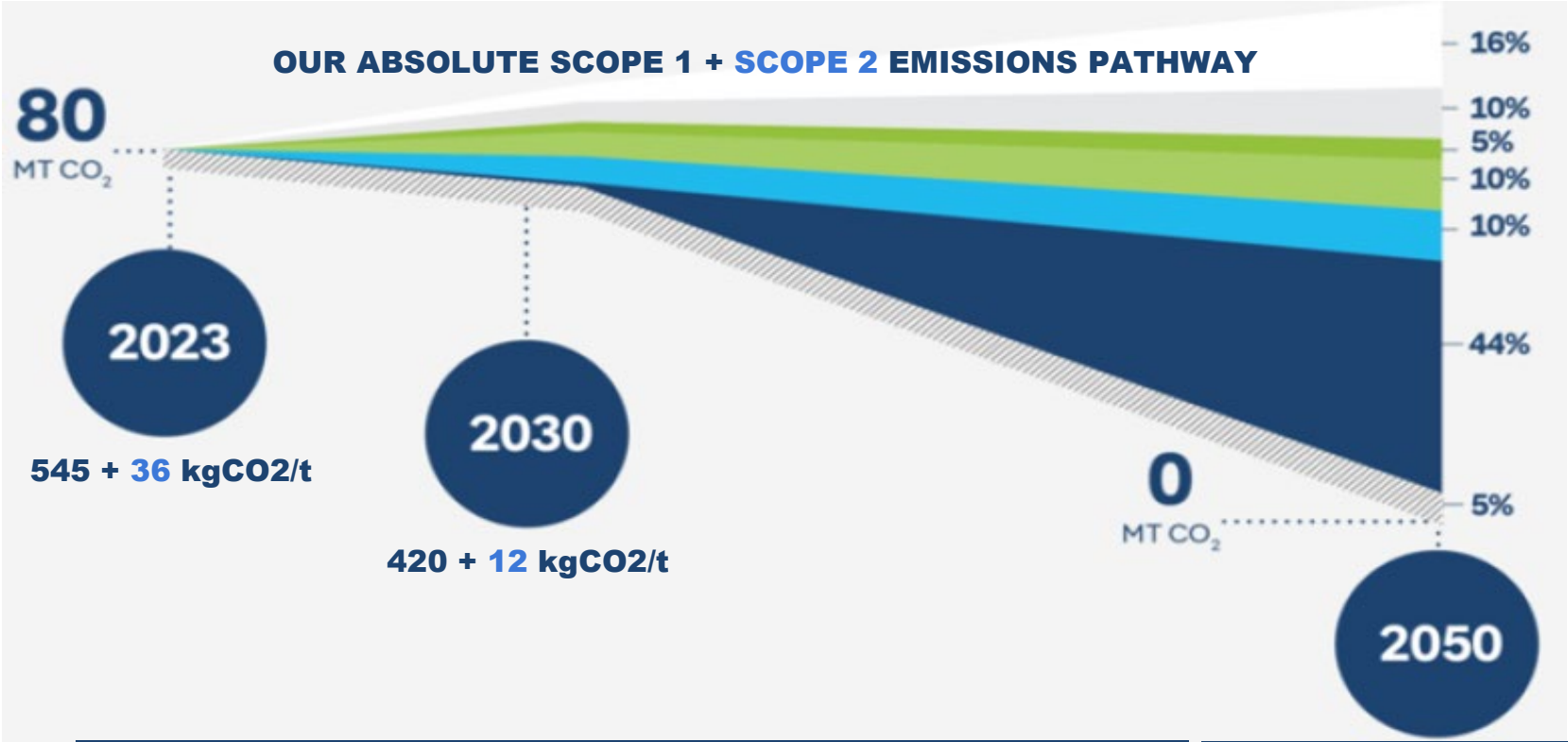
BUSINESS AMBITION FOR 1.5°C

HOLCIM

HOLCIM'S PATHWAY TO NET-ZERO

THERE IS NO SILVER BULLET…

GREEN OPERATIONS
DECARBONIZING HOLCIM



- EFFICIENCY GAINS IN DESIGN + CONSTRUCTION
- EFFICIENCY IN CONCRETE
- DECARBONIZATION OF ELECTRICITY
- LESS CLINKER IN CEMENT (CLINKER FACTOR)
- LESS CO_2 IN CLINKER (ARM, EFFICIENCY)
- CCUS, OTHER TECHNOLOGIES
- PASSIVE RECARBONATION

47%

Raw materials decarbonation
Cement production

25%

Fuels combustion
Cement production

2.5%

Energy generation

0.5%

Aggregates and RMX operations

5%

Purchased electricity

20%

Transportation emissions

BECOMING A NET-ZERO COMPANY

4 MAIN LEVERS TOWARDS NET-ZERO CEMENT

DECARBONIZED ENERGY & GREEN FLEETS

 # 1 PLANT IN AUSTRIA @98% ALTERNATIVE FUEL
100% RENEWABLE POWER IN SWITZERLAND & COLOMBIA

CIRCULAR CONSTRUCTION: A GAME-CHANGER

UPCYCLING CONSTRUCTION DEMOLITION MATERIALS (ARM/SCM)
15% ALTERNATIVE RAW MATERIALS, GROWING

LOW CARBON CEMENT FORMULATION

SCALING UP INNOVATIVE MATERIALS AS SCM
SEPARATE GRINDING IN 23 PLANTS, 24 TO COME

CALCINED CLAY
8 cements, 12 to come

CDM
5 cements, 15 to come

CARBON CAPTURE UTILIZATION & STORAGE

7 EU INNOVATION FUND GRANTS & 50 PROJECTS WORLDWIDE
5MT CO2 CAPTURED IN 2030

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DECARBONIZING CONSTRUCTION

LOW-CARBON MATERIALS

The world's broadest range of low-carbon concrete and cement

ECOPact ECOPlanet

SMART DESIGN

Using minimum materials for maximum structure efficiency

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MORE SUSTAINABLE CITIES

ENERGY EFFICIENCY, GREEN RETROFIT & NATURE

MAKING BUILDINGS SUSTAINABLE
DECARBONIZING CITIES

Insulating foam for building's energy efficiency

Living Walls

Helps reduce urban heat island effect and enhance biodiversity

Cool and green roofs, smog-reducing shingles

Permeable Concrete reducing urban heat by up to 6°C

Bioactive Marine Concrete

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CDM INNOVATION OVERVIEW

CIRCULAR CONSTRUCTION
BUILDING NEW FROM OLD

ENABLE UPCYCLING IN ALL PRODUCT LINES

HIGHEST QUALITY RECYCLED AGGREGATES
Taking recycled aggregates to another level

New technologies to produce quasi-virgin aggregates:
2 plants, 4 coming

Accelerate market adoption of recycled aggregates in RMX

CDM AS ALTERNATIVE RAW MATERIALS
Removal of silica with the CDM coarse fraction

Increase the use of CDM as ARM

Lower clinker CO_2 footprint

CDM AS MINERAL COMPONENT | MINERALISATION
Use CDM for CO_2 sequestration

Lower clinker CO_2 footprint

Additional value creation in cement production

Generate Carbon credits for the voluntary market

CDM AS MINERAL COMPONENT | THERMAL ACTIVATION
Optimal CDM performance as new and controlled MIC

Increase clinker production

Optimal value creation in cement production

Lowest clinker CO_2 footprint

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A WORLD PREMIERE!

100% FULLY RECYCLED CONCRETE STRUCTURE

CIRCULAR CONSTRUCTION
BUILDING NEW FROM OLD

Gennevilliers, Paris area - France

2 residential buildings: G+5 & G+6
220 units, including 70 for social housing
Achieved end 2024

1,600 m³ of fully Recycled Concrete
C25/30 XC4/XF1 Dmax14 S4 Cl0.4

195 kgCO2/m³ (-15% ref.)
6,000+ tons of saved natural resources

HOLCIM

CONCLUSION

We will be successful in reaching the Double Zero Quest worldwide, if:

- ***Construction industry take risks and move fast***
- ***Useful knowledge is shared and transferred***
- ***Governments offer adequate incentives***
- ***All stakeholders collaborate together***

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THANK YOU FOR YOUR ATTENTION!