CUBE SYSTEM

New solutions
for low carbon concrete

MAPEI®

CUBE system

CIS MAPEI

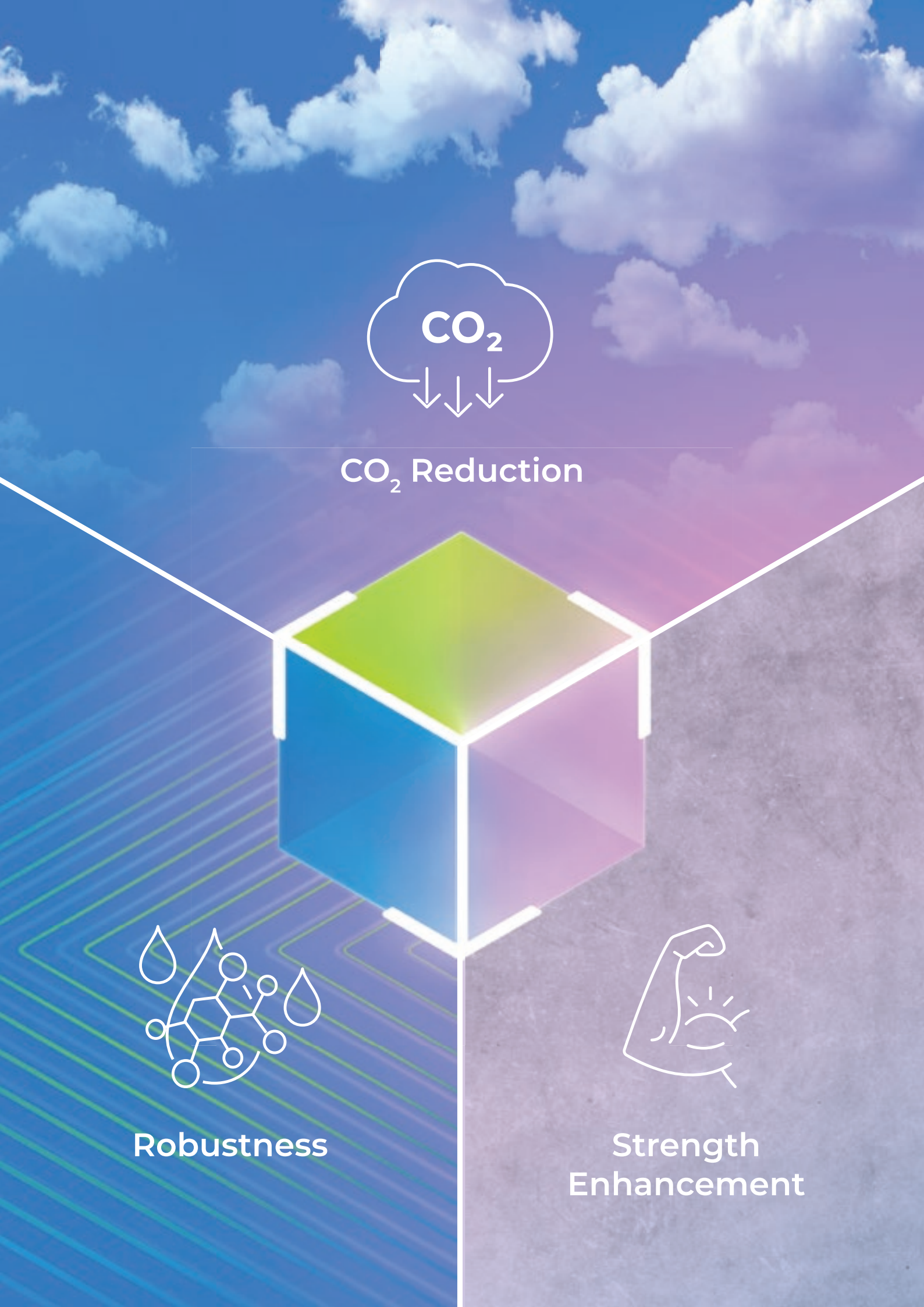
A complete portfolio of solutions as a contribution to reducing the environmental impact of the production of concrete

Concrete is far from being considered as a sustainable material, particularly due to the **massive amounts of CO_2** emissions associated with the production of Portland cement.
Amongst the various levers in the hands of the cement industry to control greenhouse gas emissions, the industry has a number of **innovative technologies** that will assist in reducing its **carbon footprint**. These include **carbon capture** and **reducing clinker/cement ratio**.

One such approach is the use of **Secondary Cementitious Materials (SCM)** (such as blast-furnace slag, fly ash and natural pozzolans) to partially replace clinker in the manufacture of cement. This is a fundamental part of the strategy enabling the entire chain to **reduce CO_2 emissions by 55% by 2030** and to achieve **Carbon Neutrality** by 2050.

The use of **cement with lower clinker content** and **recycled aggregates** in concrete production presents several challenges however for the concrete industry. Mixes generally will demand increased water contents to achieve and maintain optimal rheological properties and the slower development of the mechanical strength at both early and late stage.

At **Mapei** we are committed to improving the sustainability of the construction industry, whilst supporting our customers in this very dynamic environment. To this end, we have developed the **CUBE system**. An integrated approach that helps the concrete industry overcome the difficulties of reduced clinker cements and aggregates of varying quality through the various phases: production, placement and in situ. **CUBE system** actively helps the industry maintain its **high standards** whilst **reducing the climatic impact**.


CO_2
CO_2 Reduction
Robustness
Strength Enhancement

CUBE system

Robustness

Recycled Aggregates

Rheology

Cement Blends

New generation **superplasticizers**

A new concept of **superplasticizers** specifically designed to face the challenges of the sustainable concrete.

Cement blends

Polymers designed to work with CEM III, CEM IV and CEM V and any kind of SCM.

Recycled aggregates

Special **absorption inhibitors** (RE-CON AGG Technology) integrated into the formulations.

Rheology

Specific **gradual-release polymers** guarantee that workability and low viscosity are maintained for longer without delaying the setting phase.

PRODUCT RANGE	
DYNAMON CUBE 800	Superplasticizer with a neutral effect on setting times
DYNAMON CUBE 805	Superplasticizer to extend and maintain workability for long time
DYNAMON CUBE 807	Superplasticizer to extend and maintain workability for very long time

CUBE system

Strength Enhancement

Property **technologies**

Thanks to the use of property technology based on **nano-compounds of silicate hydrates**, our patent pending system, **CUBE system** represents the fundamental cornerstones of the next generation of admixtures for the new cements with reduced clinker content

Secondary nucleation (SN)

The addition of **nano-composite silicate hydrates** produces hydration reactions more rapidly and diffusely in the cement paste.

Augmented pozzolanic reaction (APO)

The combination of **nano-compounds of silicate hydrates** with retarding accelerators produces a more **powerful pozzolanic reaction**, thereby enabling faster development of mechanical strength after both short and long curing cycles.

Alkaline activation (AA)

The new **hybrid cements** have a **smaller carbon footprint** and combine the properties of Portland cement with the properties of alkaline activation materials. Development of the mechanical strength of hybrid cements is promoted by the alkaline activation of their components.

PRODUCT RANGE	
MAPECUBE 1	Strength enhancer after short curing cycles
MAPECUBE 2	Strength enhancer specific for cements with limestone
MAPECUBE 4	Strength enhancer specific for cements with fly ash or slag
MAPECUBE 60	Strength enhancer for all cements and SCM
MAPECUBE 60 W	Strength enhancer for all cements and SCM

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EVERYTHING'S OK WITH MAPEI

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