

DAMS

CONSTRUCTION TECHNOLOGY
FOR LARGE HYDROPOWER PROJECTS

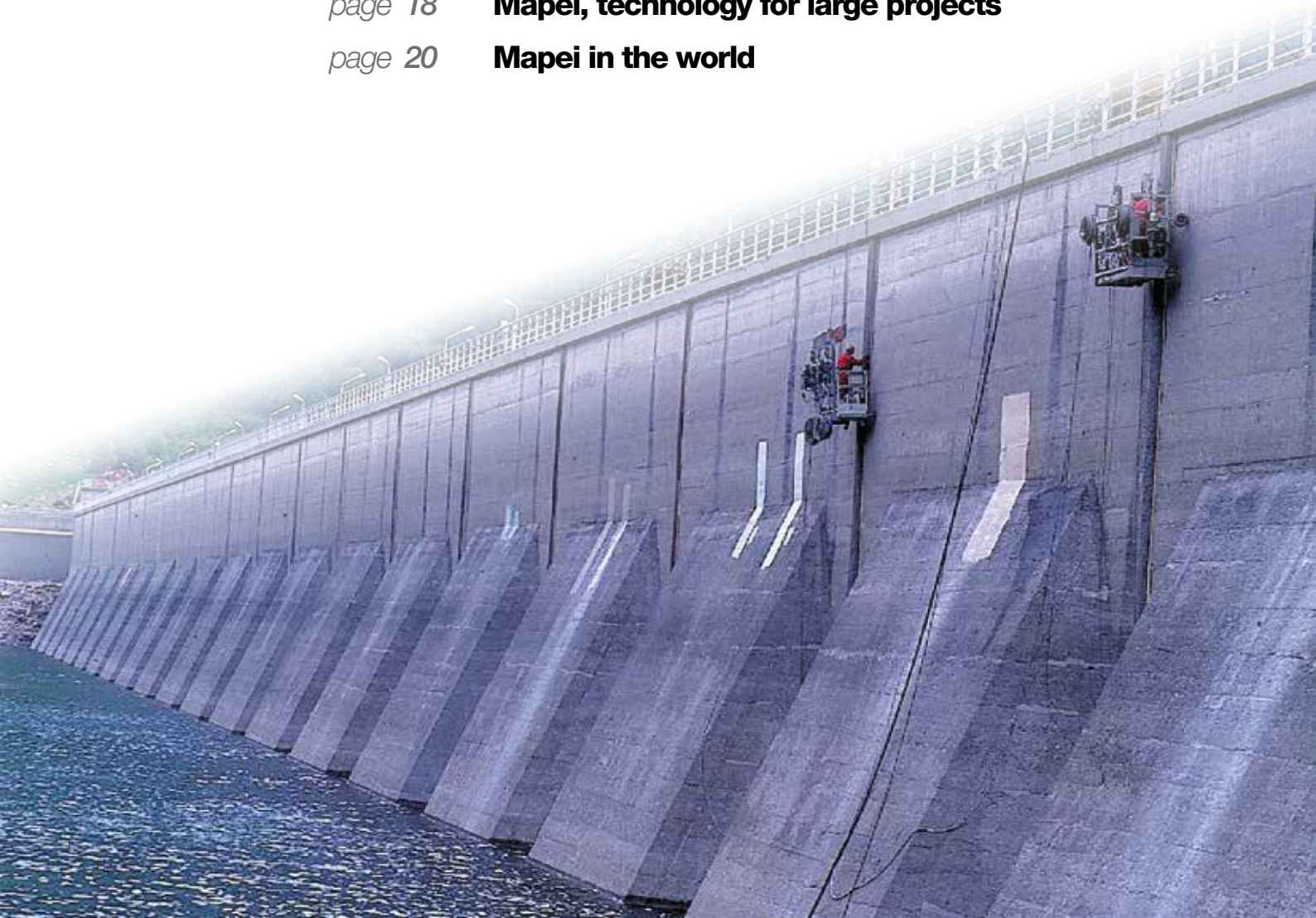


MALGA BISSINIA DAM
VAL DAONE (TRENTO) - ITALY



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FOR LARGE HYDROPOWER PROJECTS
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DAMS

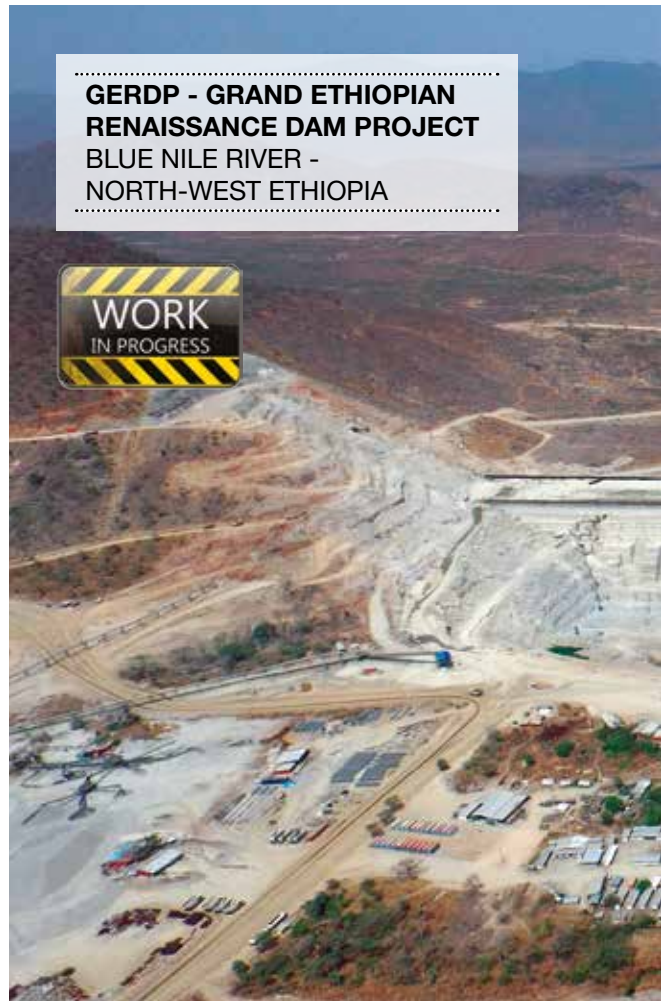
CONSTRUCTION TECHNOLOGY FOR LARGE HYDROPOWER PROJECTS

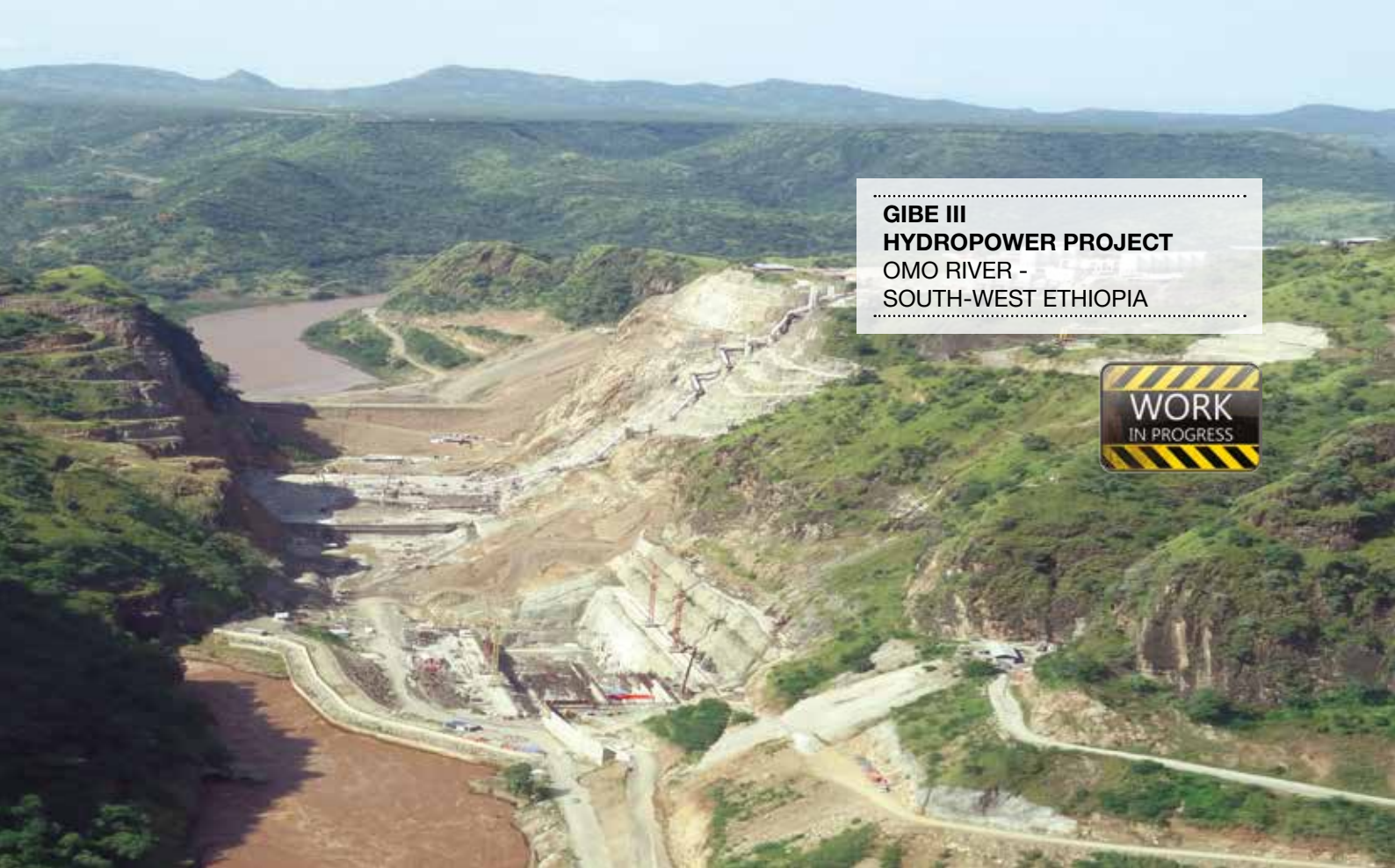
An increase in the world's population and the natural ambition for a better standard of living has made the design, construction and management of dams an increasingly important subject. Dams allow water to be controlled and managed for irrigation purposes, thereby encouraging the cultivation of vast areas of land. It also creates a permanent barrier along a natural water way allowing hydro-electric energy to be generated, which is still the main source of renewable energy. The construction of a dam and its relative basins radically changes the lives of thousands, and sometimes even millions of people. It has a profound effect on the routines and customs of entire populations, as well as their standard of living. It may be used to control the level of a water course to prevent hydro-geological disasters and to promote new ways of transporting goods.

A dam is a fundamental element in establishing a new balance between man and the environment, as well as determining strong growth in social and economic conditions. Although the design and construction of a dam is an important stage, the dam also needs constant monitoring throughout its entire life cycle to avoid incidents such as overflows, clogging of its run-off channels, erosion of the foundations and even collapse. The same care and attention required for the construction of a dam is also necessary when carrying out maintenance operations by adopting appropriate repair procedures.



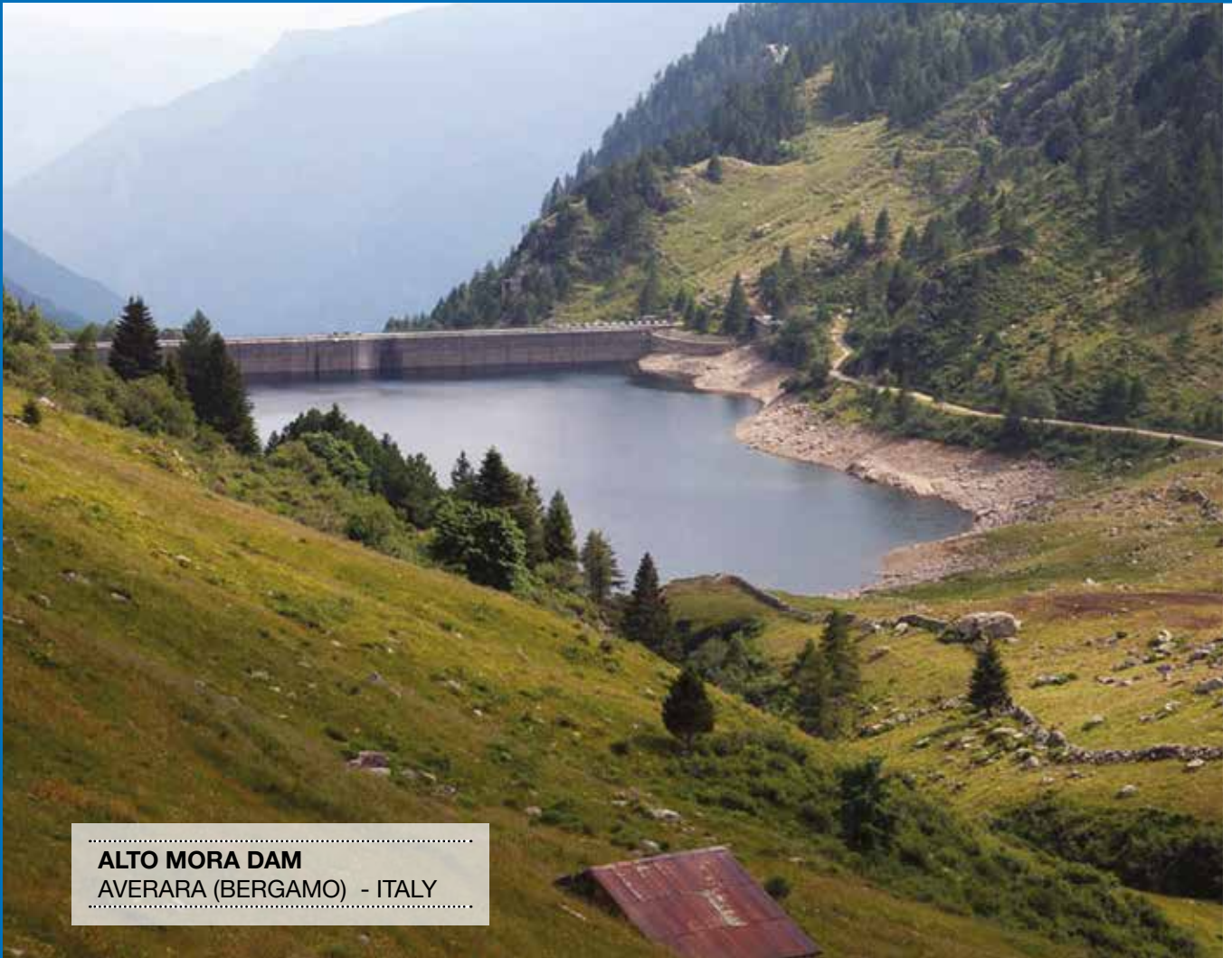
**GERDP - GRAND ETHIOPIAN
RENAISSANCE DAM PROJECT
BLUE NILE RIVER -
NORTH-WEST ETHIOPIA**





**GIBE III
HYDROPOWER PROJECT
OMO RIVER -
SOUTH-WEST ETHIOPIA**



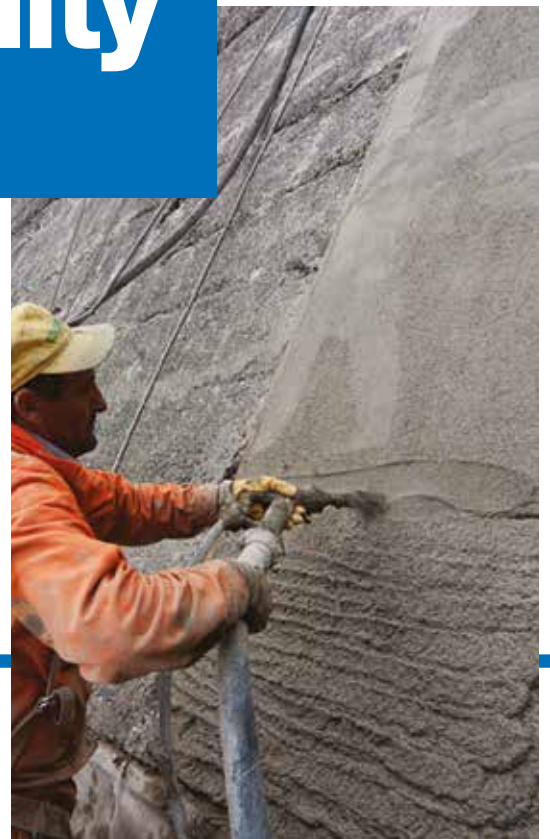


ALTO MORA DAM
AVERARA (BERGAMO) - ITALY

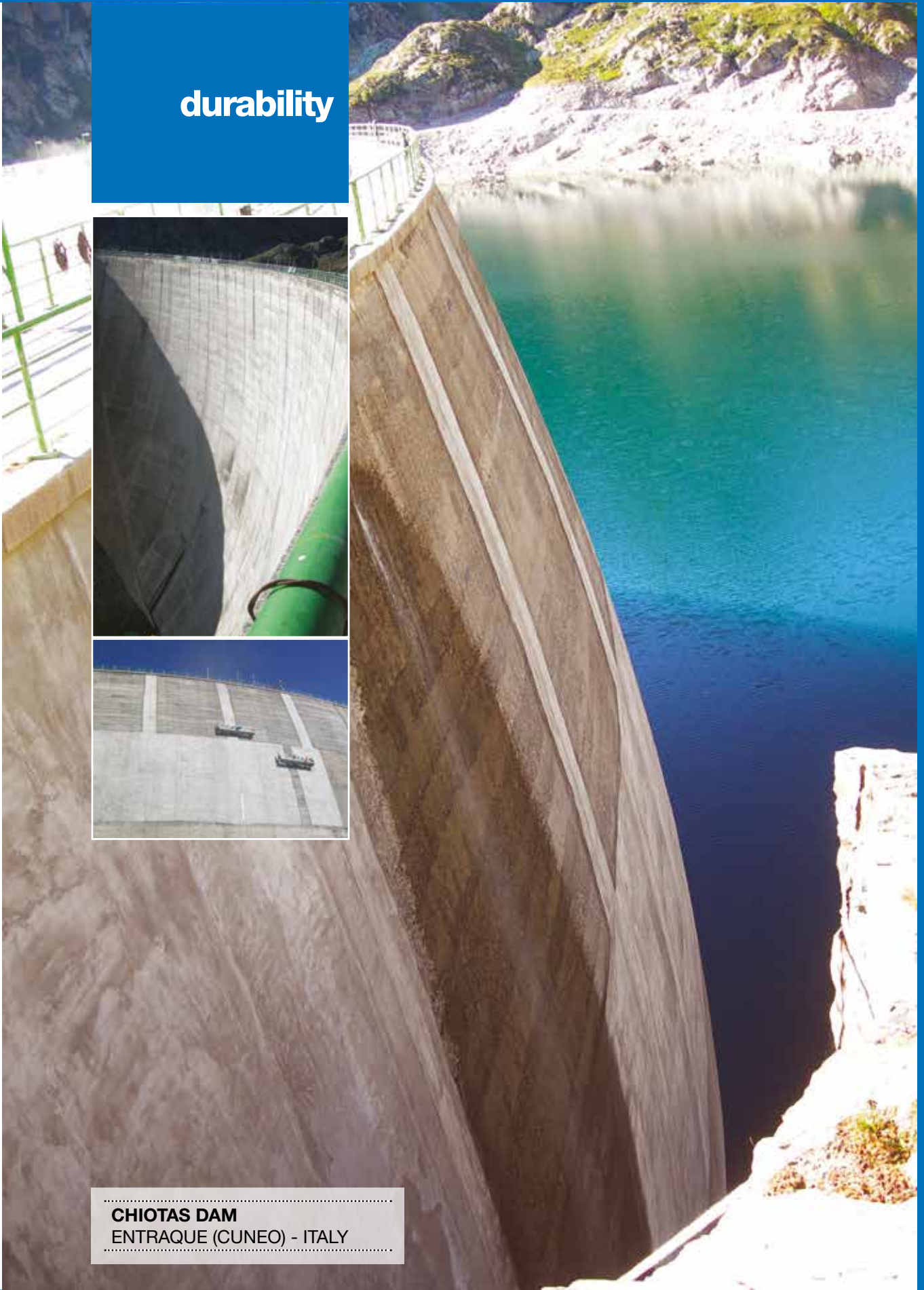
durability

THE PRIMARY COMMITMENT FOR SUSTAINABLE DEVELOPMENT

Over the years, Mapei has made the reliability of their products a key focus point: ensuring increased DURABILITY means preventing or at least delaying further interventions on the structure, and encourages SUSTAINABLE DEVELOPMENT.




durability



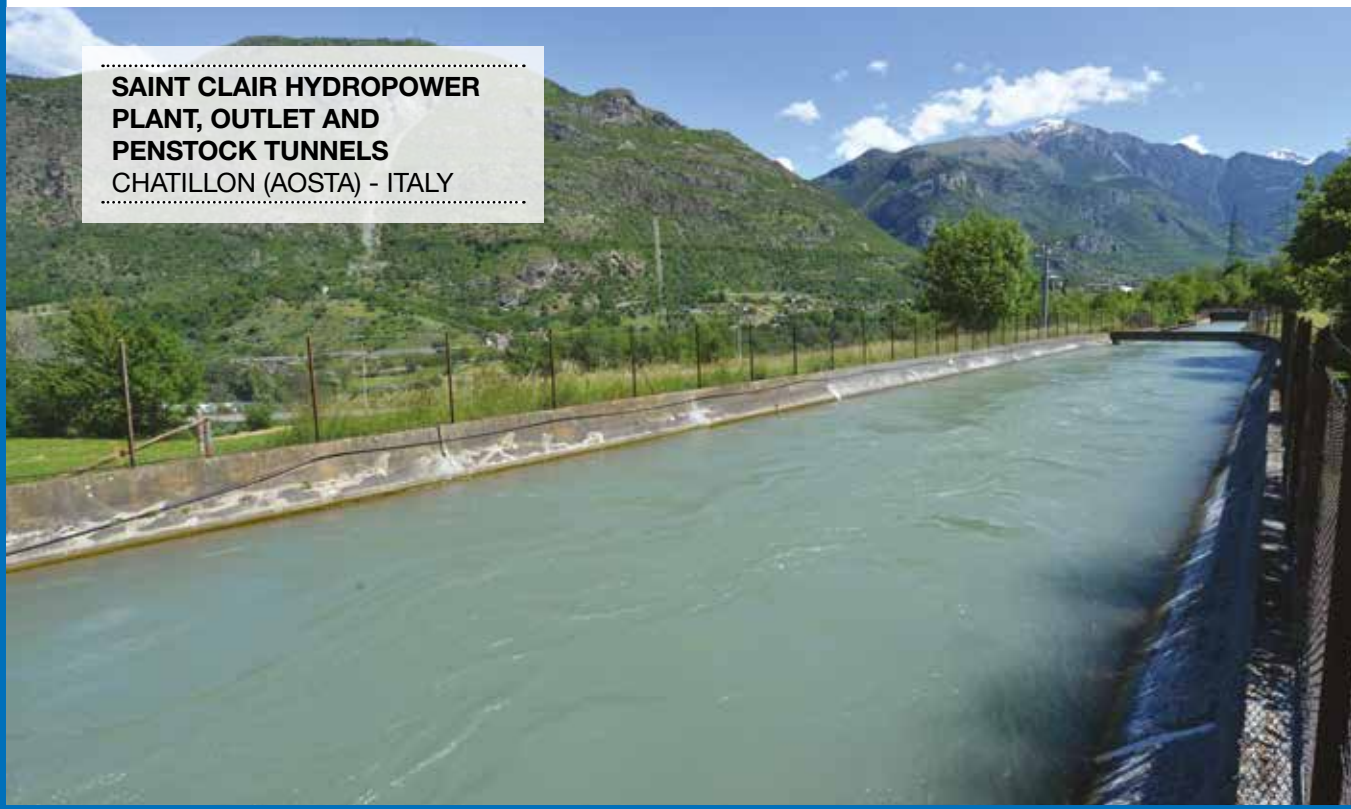
CHIOTAS DAM
ENTRAQUE (CUNEO) - ITALY

research & development

PRODUCTS
FORMULATED FOR
BETTER PERFORMANCE,
IMPROVED SITE SAFETY
AND A REDUCTION
IN THE CONSUMPTION
OF ENERGY



GIOVERETTO DAM
VAL MARTELLO (BOLZANO) -
ITALY



**SAINT CLAIR HYDROPOWER
PLANT, OUTLET AND
PENSTOCK TUNNELS**
CHATILLON (AOSTA) - ITALY



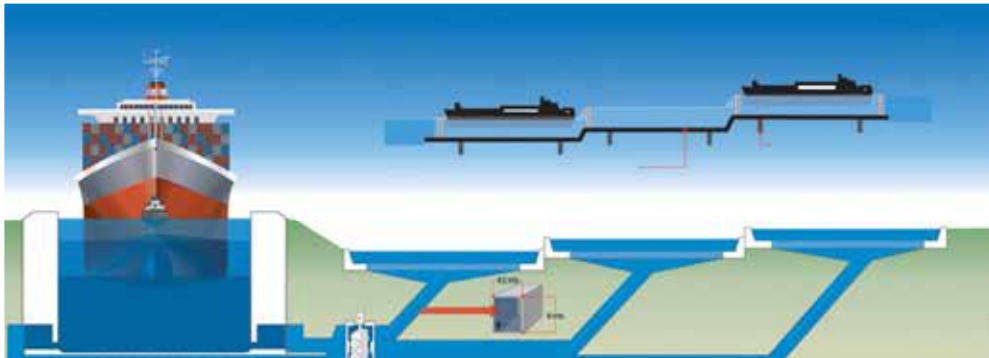
**research &
development**

Mapei products are the result of our commitment to excellence in research, with the goal of developing innovative formulas that may be integrated into complete application systems that are very effective in terms of results. Particular attention is paid to the use of substances that are fully compatible with the health and safety of all those working on site.

Mapei systems are manufactured all around the world using renewable energy sources and limiting the consumption of virgin raw materials, with full respect for the environment.

Mapei has always been highly committed to research, with 5% of annual turnover channelled into investments in R&D. Mapei has 18 main Research Centres and research personnel account for 12% of the total workforce.

technical services

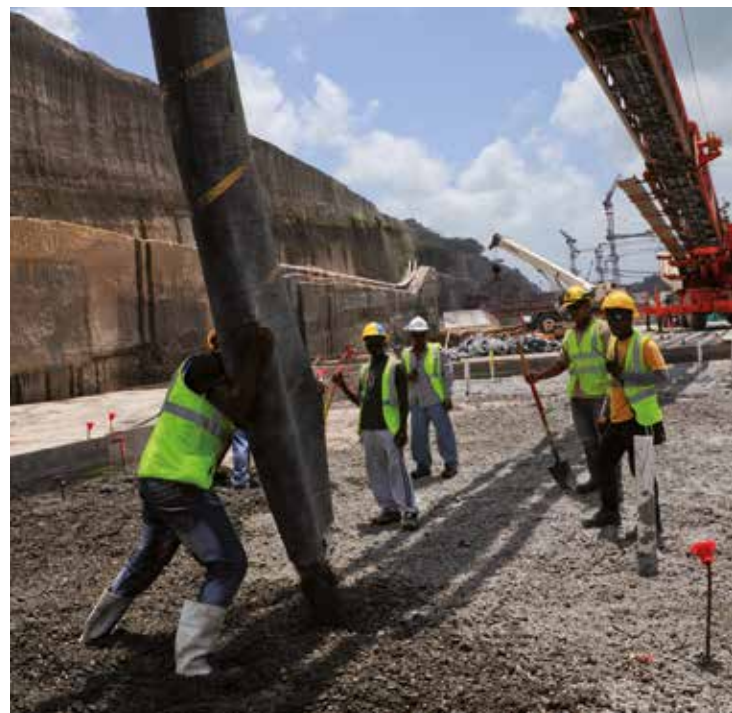


from design ...

Mapei has always been a favoured partner for designers and specialists from this sector. Through our network of technicians, we provide solutions to problems around the world.

This approach has fuelled the company's growth. Operating in terms of problem solving means being prepared to get involved with a hands-on approach. It means incorporating stimuli from external sources and making them our own, but also the ability to constantly innovate, research and experiment.

from design





to construction site

... to construction site

We have made Technical Services one of our strong points.

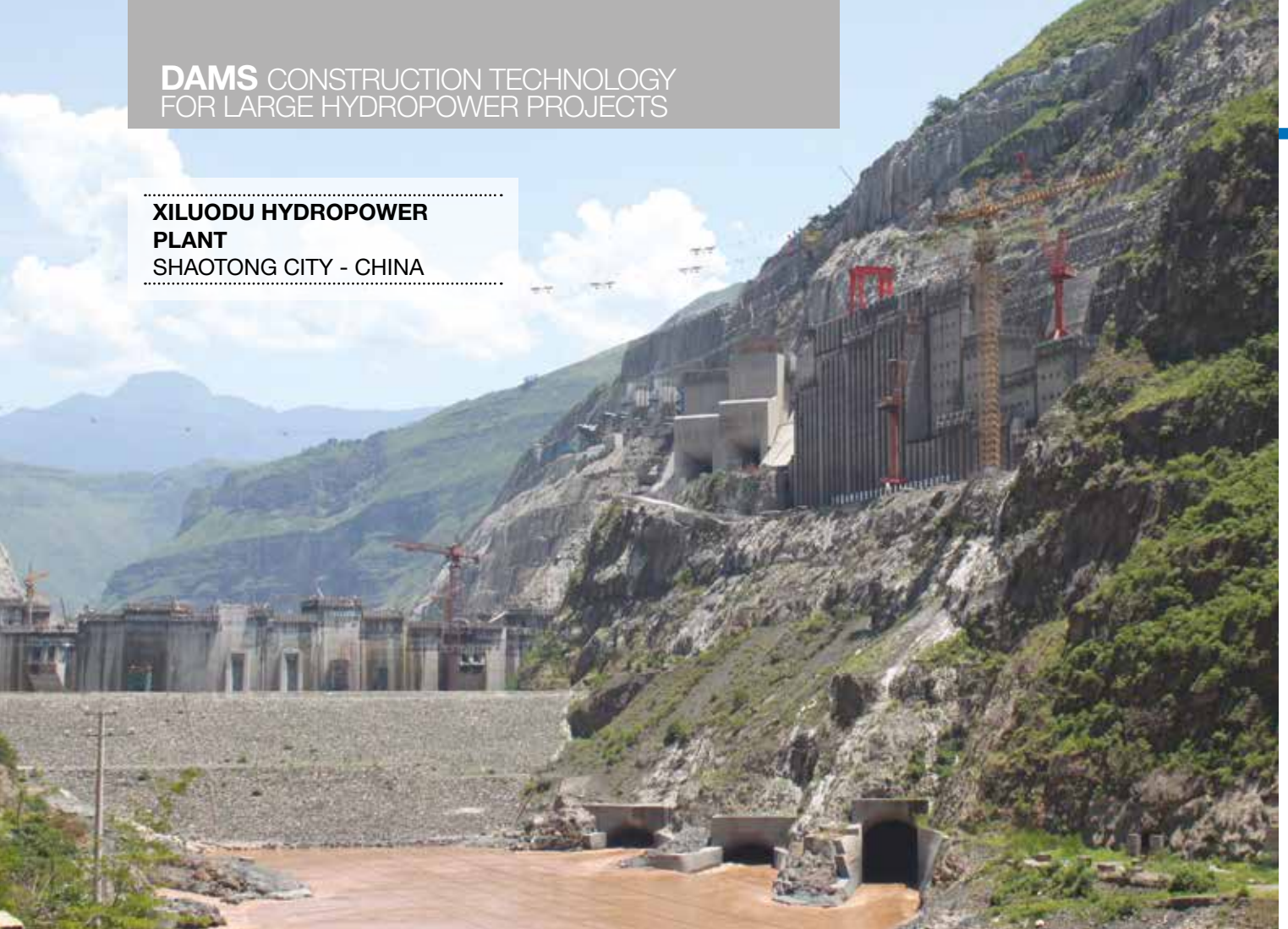
Each day, we are present with qualified technicians on sites in more than 128 different countries around the world. By working alongside teams from large contracting companies, we are able to demonstrate our experience of correct system installation methods and provide our expertise.



**WORK
IN PROGRESS**

**NEW PANAMA CANAL
PANAMA CITY AND COLON
PANAMA**

**XILUODU HYDROPOWER
PLANT
SHAOTONG CITY - CHINA**



new construction

Dams may be constructed using rocks and earth (embankment dams) or concrete.

Concrete dams may be divided into two categories: gravity dams (made from RCC), and arch dams (made from normal concrete).

Mapei develops and supplies technologically advanced products and systems used in the construction of various elements for the construction of dams, particularly dam walls, water channels and hydraulic tunnels.





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**PONT VENTOUX HYDROPOWER
PLANT**
SUSA (TURIN) - ITALY
.....



**GERDP - GRAND ETHIOPIAN
RENAISSANCE DAM PROJECT**
BLUE NILE RIVER -
NORTH-WEST ETHIOPIA



construction

ADMIXTURES FOR CONVENTIONAL CONCRETE
ADMIXTURES FOR RCC
ADMIXTURES AND FIBRES FOR SHOTCRETE
ADMIXTURES FOR HIGH STRENGTH CONCRETE
ADMIXTURES FOR INJECTION SLURRIES
**PRODUCTS FOR MECHANICAL EXCAVATION
AND CONDITIONING**
WATERPROOFING SYSTEMS
TREATMENTS FOR FACING WALLS
JOINTS
MORTARS





.....
GIBE III
HYDRO-ELECTRIC PROJECT
OMO RIVER -
SOUTH-WEST ETHIOPIA
.....



.....
THREE GORGES DAM
SICHUAN - CHINA
.....

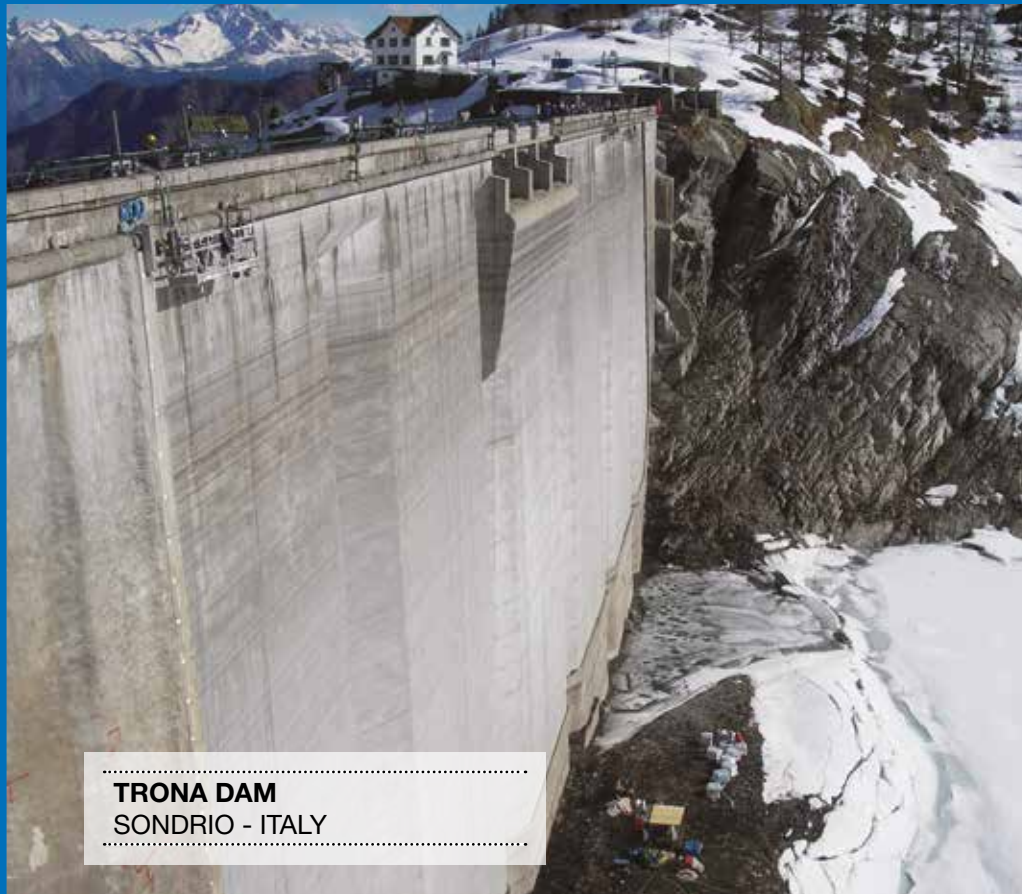
The long life span of a dam often imposes repair work to be carried out in order to maintain and guarantee the overall efficiency of the structure. Sometimes upgrading is required to withstand a variation in working conditions.

Over the years, Mapei has developed a range of products that offer a valid solution to each problem that may arise.

The experience gained by Mapei makes them a reliable partner in this sector.



repair work



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TRONA DAM
SONDRIO - ITALY
.....



PIODA FEEDING AND
COMPENSATION BASIN
VAL MASINO (SONDRIO) - ITALY

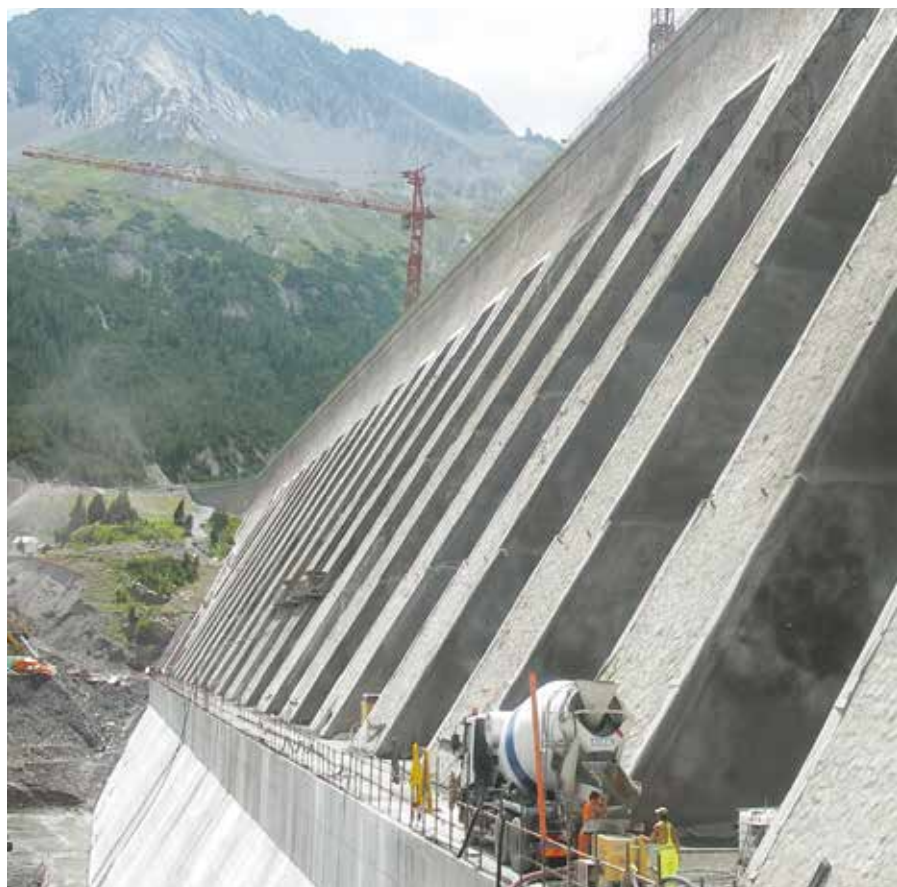


SAN GIACOMO DAM
VALDIDENTRO (SONDRIO) - ITALY



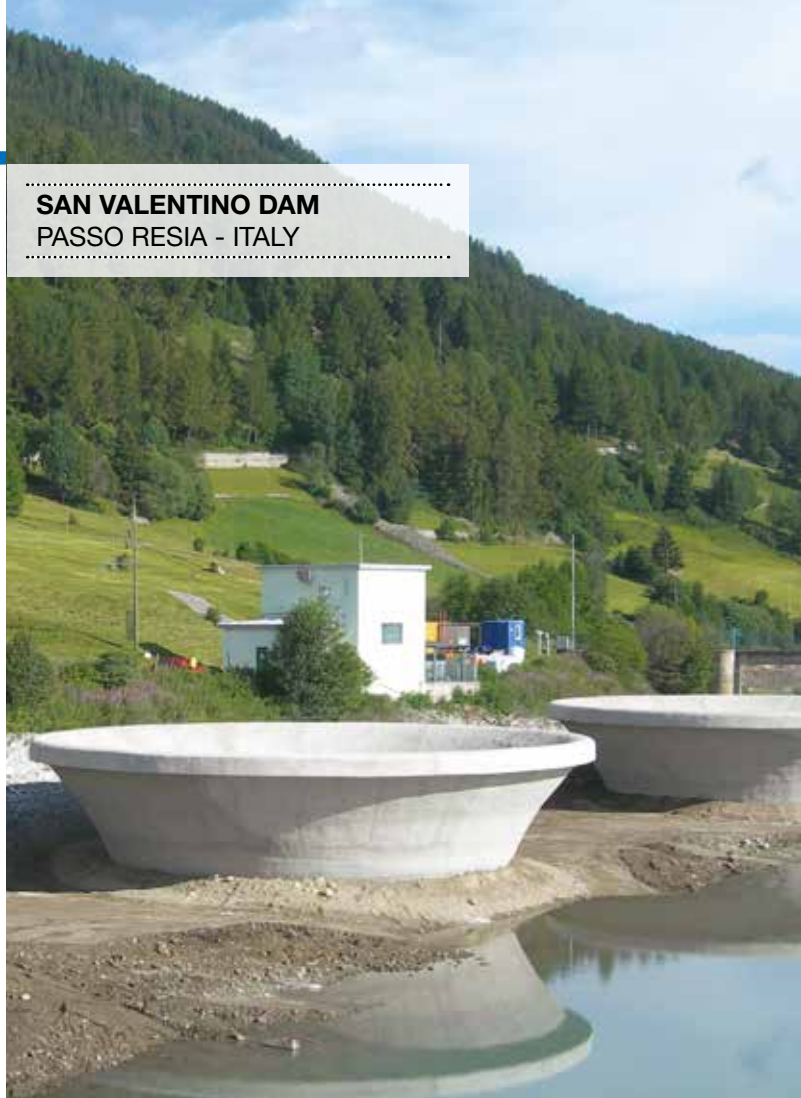
repair work

REPAIR MORTARS
STRUCTURAL STRENGTHENING
ADMIXTURES FOR CONCRETE
WATERPROOFING SYSTEMS
TREATMENTS FOR FACING
WALLS
JOINTS





SAN VALENTINO DAM
PASSO RESIA - ITALY



PANTANO DAM
ALTA VALLE CAMONICA - ITALY



Mapei, technology for large projects

❑ **ADMIXTURES FOR CONVENTIONAL CONCRETE**

❑ **ADMIXTURES FOR ROLLER COMPACTED CONCRETE**

❑ **ADMIXTURES FOR HIGH STRENGTH CONCRETE**

❑ **ADMIXTURES FOR INJECTION SLURRIES**

❑ **ACCELERATING PRODUCTS FOR SHOTCRETE**

❑ **MINERAL ADMIXTURES**

❑ **STRUCTURAL SYNTHETIC FIBRES**

❑ **JOINTS AND WATERSTOP**

❑ **SEALANTS**

❑ **ANCHORING MORTARS AND RESINS**

❑ **CONCRETE REPAIR SYSTEMS**

❑ **STRUCTURAL STRENGTHENING**

❑ **CRACK INJECTION SYSTEMS**

❑ **TBM SYSTEMS**

❑ **SYSTEMS FOR TRADITIONAL EXCAVATION (DRILL & BLAST)**

❑ **CONSOLIDATING SYSTEMS**

❑ **WATERPROOFING SYSTEMS**

❑ **SURFACE PROTECTION SYSTEMS**

❑ **RESIN AND CEMENTITIOUS FLOORING SYSTEMS**

VENEROCOLO DAM ALTA VALLE CAMONICA - ITALY

MALGA BISSINIA DAM VAL DAONE (TRENTO) - ITALY

INTERVENTION repairing of upstream side body dam

PRODUCTS MAPEGROUT THIXOTROPIC, MAPEFINISH

GIBE III HYDRO POWER PROJECT OMO RIVER - SOUTH-WEST ETHIOPIA

INTERVENTION body dam construction, spillways construction, protective system of upstream surface, waterstop joints

PRODUCTS MAPETARD CBS1, DYNAMON SR3, MAPEPLAST SF, TRIBLOCK PP, BIBLOCK, PURTOP 1000, MAPEBAND FLEX ROLL

GERDP - GRAND ETHIOPIAN RENAISSANCE DAM PROJECT BLUE NILE RIVER - NORTH-WEST ETHIOPIA

INTERVENTION construction of the body dam and conventional concrete structures

PRODUCTS MAPETARD P, MAPEFLUID N100KSA, BIBLOK, PLANIGROUT 300

ALTO MORA DAM AVERARA (BERGAMO) - ITALY

INTERVENTION repairing works of downstream side and crest joints

PRODUCTS MAPECURE SRA, MAPEGROUT EASY FLOW, MAPEGROUT LM2K, MAPEFINISH, MAPEFLEX PU45

CHIOTAS DAM ENTRAQUE (CUNEO) - ITALY

INTERVENTION surface repairing and waterproofing protection of upstream side

PRODUCTS MAPECURE SRA, MAPEGROUT EASY FLOW GF, MAPEBAND+ADESILEX PG4, MAPELASTIC

GIOVERETTO DAM VAL MARTELLO (BOLZANO) - ITALY

INTERVENTION upstream side surface and cracks repairing, protective system of downstream side, crest protection, crest joints repairing

PRODUCTS MAPEGROUT EASY FLOW, MAPEGROUT EASY FLOW GF, MAPELASTIC GUARD, MAPEBAND, ADESILEX PG4, ANTIPLUVIOL S, MAPEFLEX PU45, MAPE-ASPHALT REPAIR 0/8, IDROSILEX PRONTO, TRIBLOCK FINISH

SAINT CLAIR HYDROPOWER PLANT, OUTLET AND PENSTOCK TUNNELS CHATILLON (AOSTA) - ITALY

INTERVENTION repairing and strengthening of bottom walls, joints repairing

PRODUCTS MAPEGROUT EASY FLOW, STABILCEM, PRIMER AS, MAPEFLEX PU45

NEW PANAMA CANAL PANAMA CITY AND COLON - PANAMA

INTERVENTION construction of the new set of lock chambers, repairing of existing locks, waterproofing of the recycled water basins

PRODUCTS DYNAMON XP2, DYNAMON XP2 EVOLUTION 1, MAPECURE SRA, PLANITOP 15, SIBELON PVC MEMBRANE*

XILUODU HYDROPOWER PLANT SHAOTONG CITY - CHINA

INTERVENTION construction of body dam

PRODUCTS DYNAMON X404

PONT VENTOUX HYDROPOWER PLANT SUSA (TURIN) - ITALY

INTERVENTION construction of the body dam, canals and diversion tunnels

PRODUCTS DYNAMON SR3, EPOJET LV, MAPEGROUT BM, MAPEGROUT GUNITE, MAPEGROUT FAST-SET, STABILCEM T, PLANITOP T1, MAPEQUICK AF1000, MAPEQUICK AF2000

THREE GORGES DAM SICHUAN - CHINA

INTERVENTION spillways construction

PRODUCTS MAPEFLUID X404

TRONA DAM SONDRIO - ITALY

INTERVENTION upstream side repairing

PRODUCTS MAPEGROUT T60, PLANITOP HDM

PIODA FEEDING AND COMPENSATION BASIN - VAL MASINO (SONDRIO) - ITALY

INTERVENTION repairing of concrete structures

PRODUCTS MAPEGROUT T60, MAPELASTIC, MAPENET 150, MAPEBAND TPE

SAN GIACOMO DAM VALDIDENTRO (SONDRIO) - ITALY

INTERVENTION repairing and strengthening of the toe and downstream side dam, strengthening of captioning structures, construction of the bottom outlet

PRODUCTS MAPEQUICK AF1000, DYNAMON SX, MAPEGROUT BM, MAPEGROUT FMR, MAPEGROUT T60, MAPEGROUT HI-FLOW, MAPELASTIC

SAN VALENTINO DAM PASSO RESIA - ITALY

INTERVENTION repairing and strengthening of concrete structures

PRODUCTS MAPEGROUT EASY FLOW, MAPEGROUT EASY FLOW GF, MAPEWRAP, EPOJET, MAPEFER 1K, MAPELASTIC GUARD

PANTANO DAM ALTA VALLE CAMONICA - ITALY

INTERVENTION repairing of upstream side dam

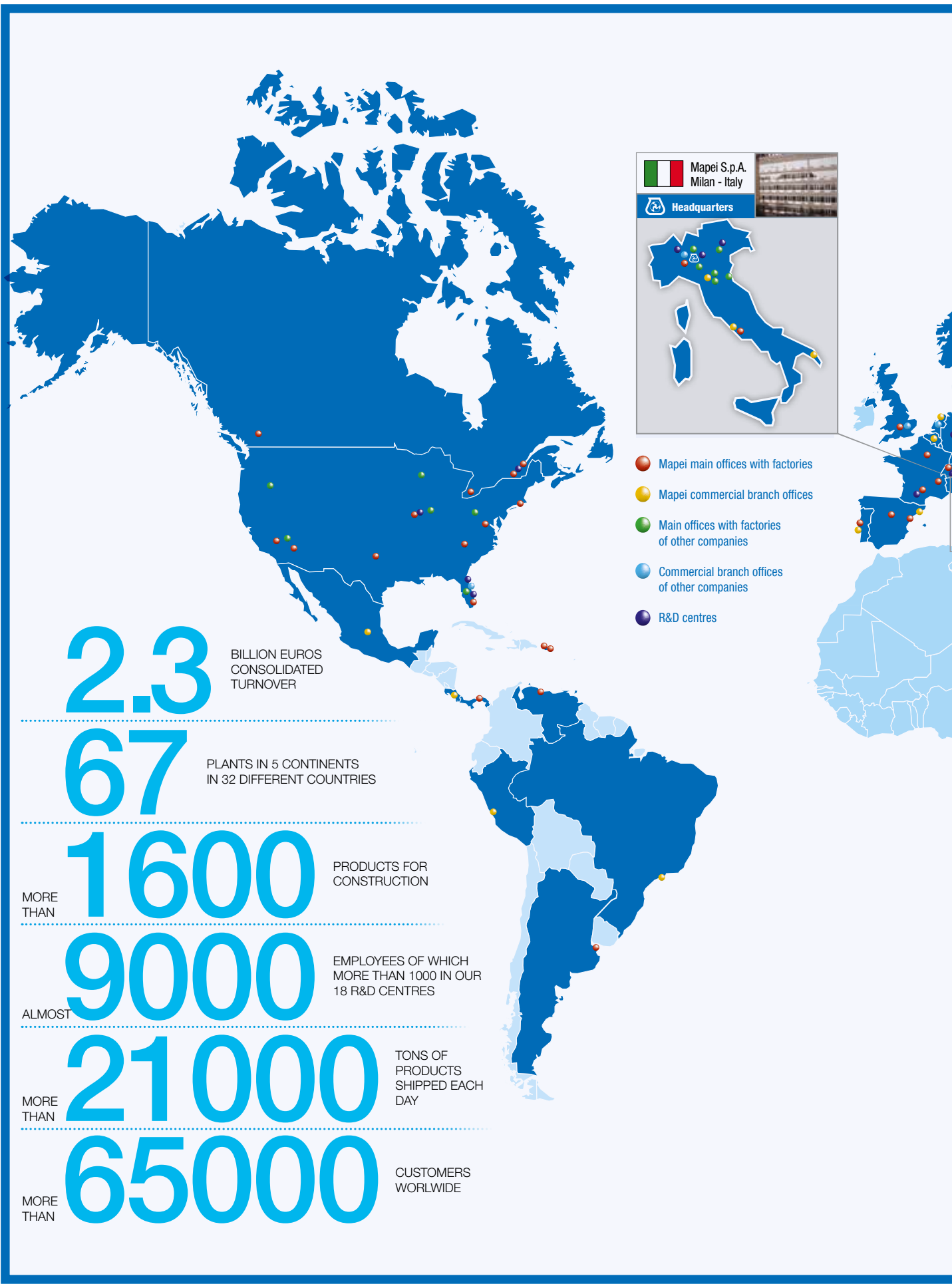
PRODUCTS MAPECURE SRA, MAPEGROUT EASY FLOW, MAPEFLEX PB27, MAPEFLEX PB25, MAPEFLEX PU40, MAPECURE S, MAPEGRID G120

VENEROCOLO DAM ALTA VALLE CAMONICA - ITALY

INTERVENTION joints repairing, waterproofing of upstream side, joints and cracks sealing of downstream side, waterproofing of the new crest slabs

PRODUCTS MAPEGROUT EASY FLOW, MAPEFLEX PU45, MAPELASTIC, MAPEGROUT HI-FLOW, IDROSILEX PRONTO, TOPCEM PRONTO

* Sibelon PVC Membrane is a CARPI TECH property trade mark



 Mapei S.p.A.
 Milan - Italy



- Mapei main offices with factories
- Mapei commercial branch offices
- Main offices with factories of other companies
- Commercial branch offices of other companies
- R&D centres

2.3 BILLION EUROS CONSOLIDATED TURNOVER

67 PLANTS IN 5 CONTINENTS IN 32 DIFFERENT COUNTRIES

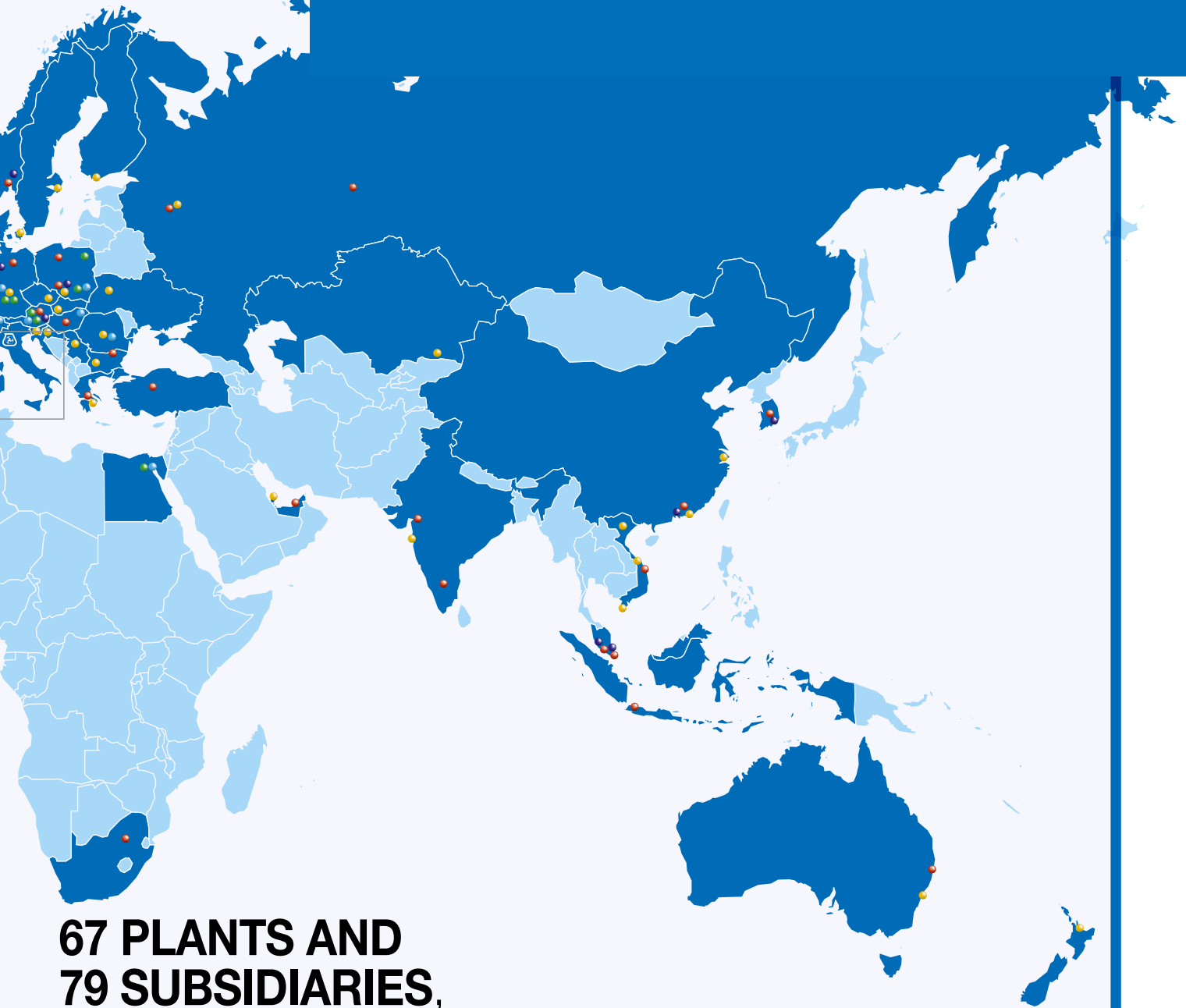
MORE THAN **1600** PRODUCTS FOR CONSTRUCTION

ALMOST **9000** EMPLOYEES OF WHICH MORE THAN 1000 IN OUR 18 R&D CENTRES

MORE THAN **21000** TONS OF PRODUCTS SHIPPED EACH DAY

MORE THAN **65000** CUSTOMERS WORLDWIDE

Mapei in the world



**67 PLANTS AND
79 SUBSIDIARIES,
7 OF WHICH ARE
NON OPERATIONAL
COMPANIES, SYNERGY
TO CREATE ADDED VALUE.**

The dialogue between Mapei set-ups worldwide and building professionals strengthens the group and helps everyone have their share of the developments. **Mapei continues to grow** by building on the knowledge and relationships from both **within and outside the company**.



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