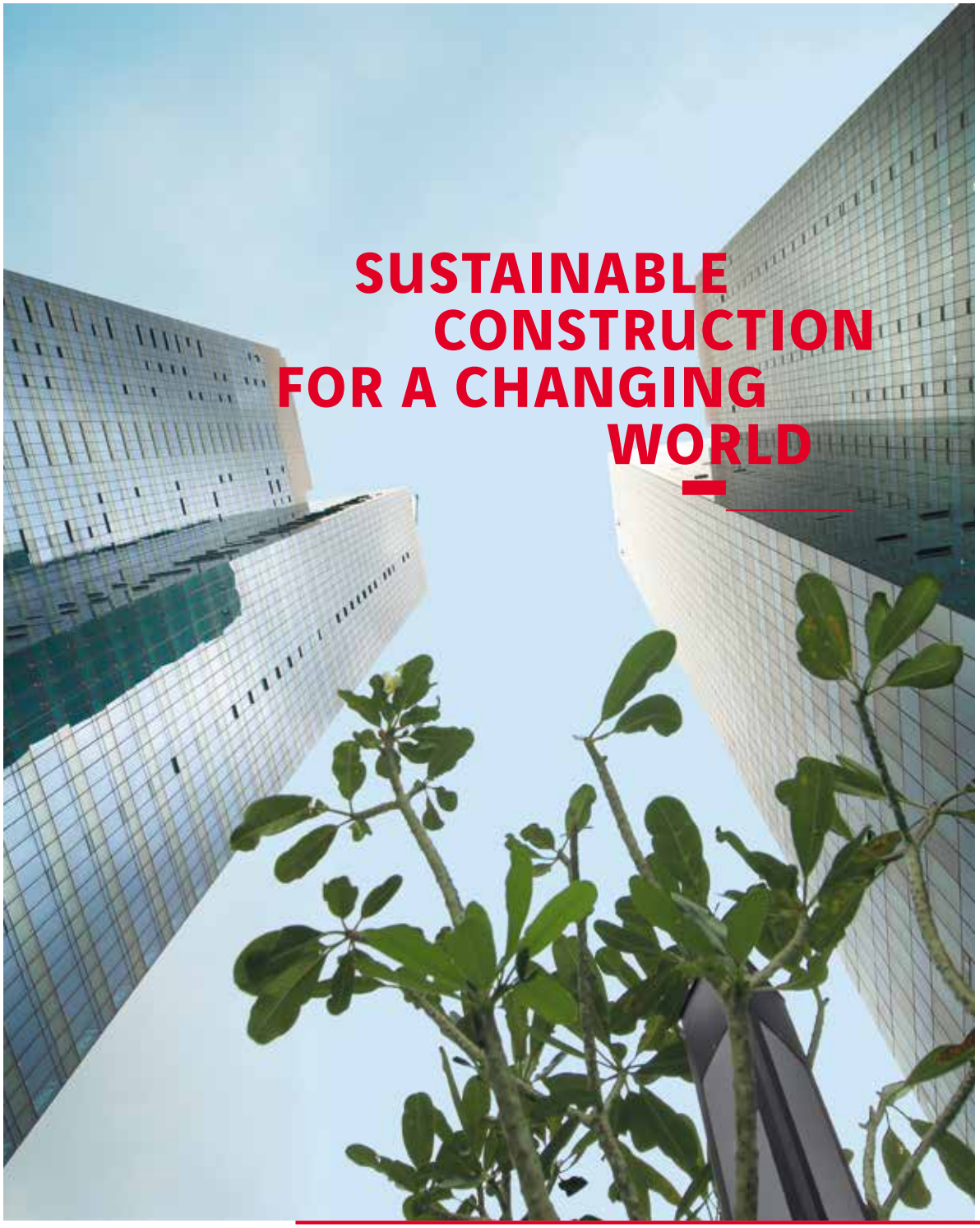


SUSTAINABLE CONSTRUCTION FOR A CHANGING WORLD

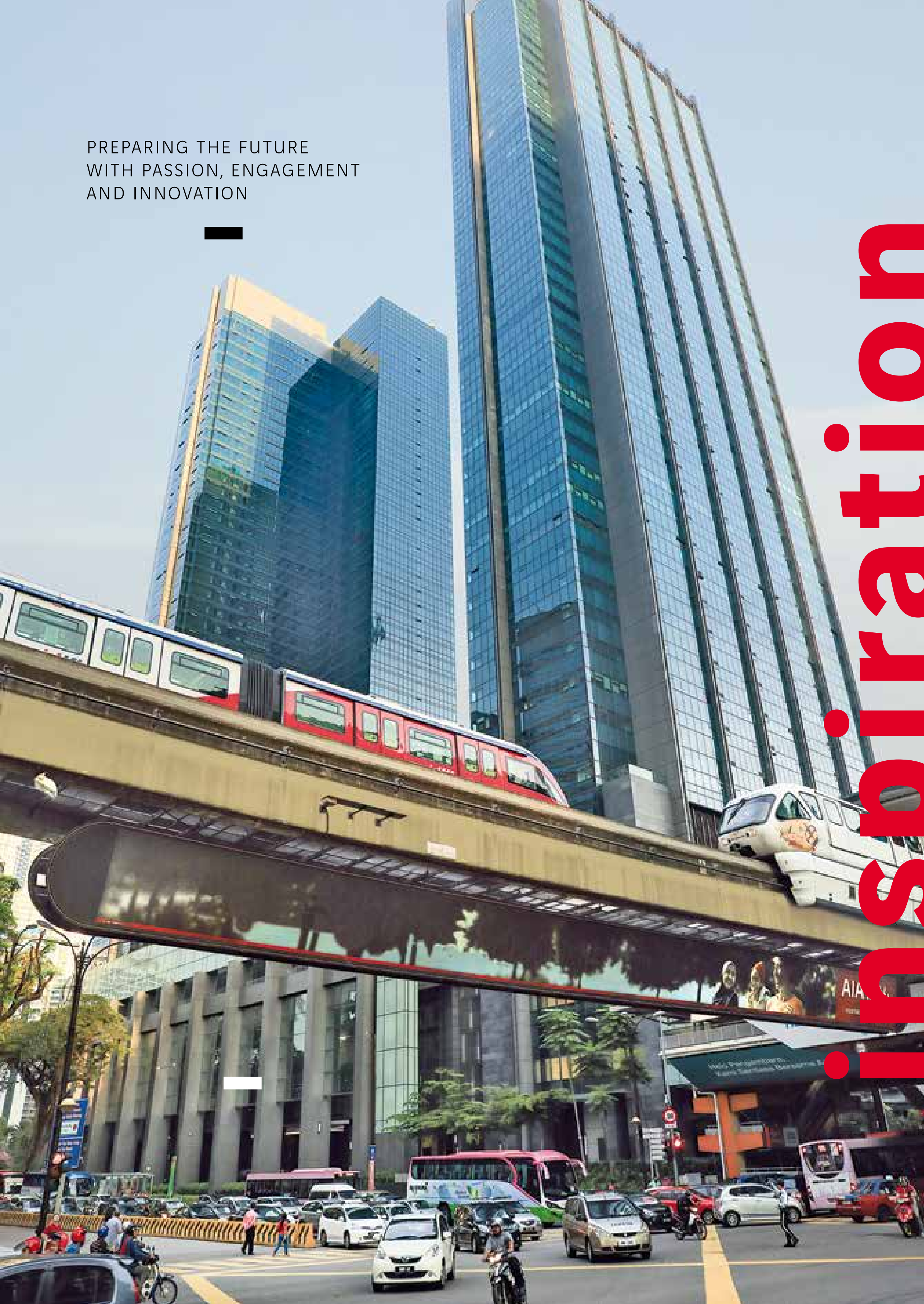
ACTIVITY REPORT 2016

VINCI CONSTRUCTION

Find us on
www.vinci-construction.com

PREPARING THE FUTURE
WITH PASSION, ENGAGEMENT
AND INNOVATION

inspiration



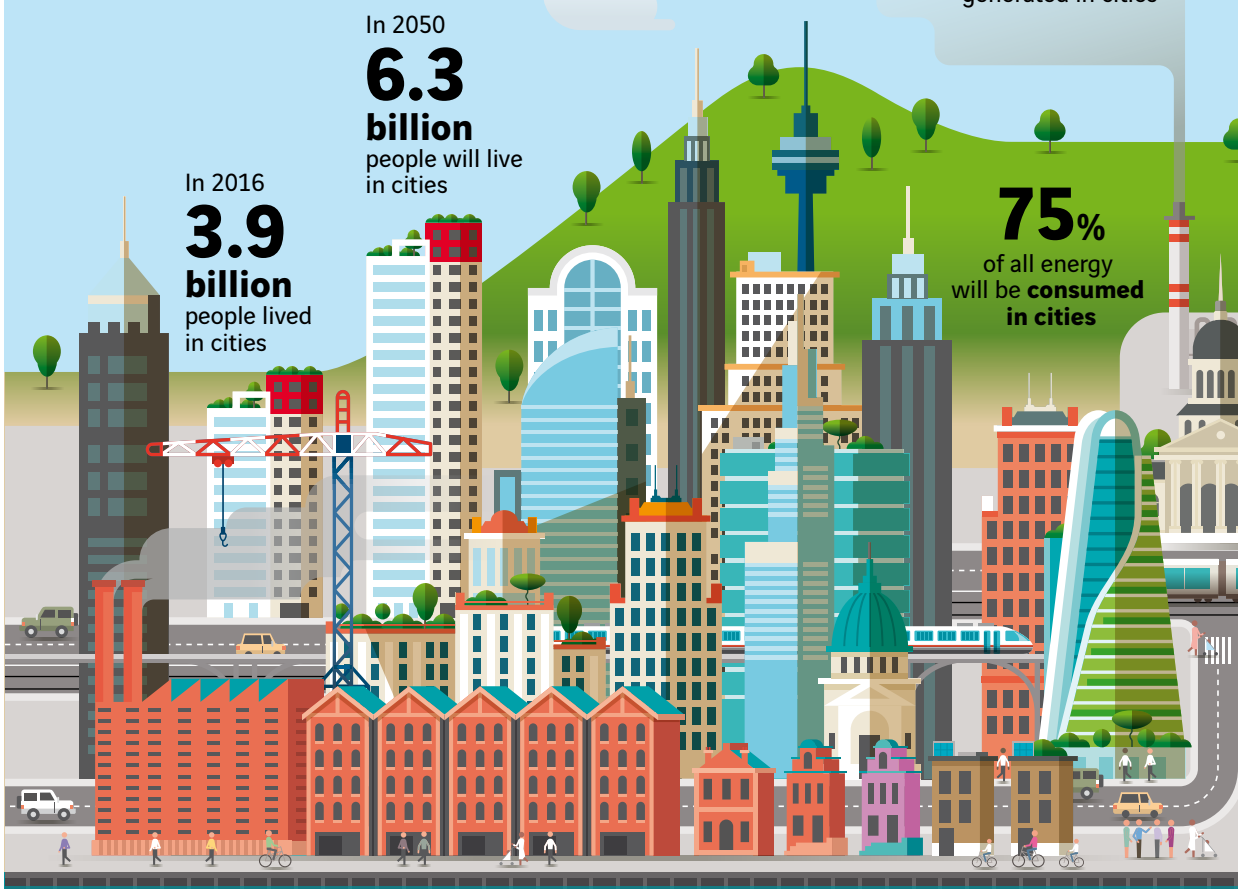
NEARLY TWO-THIRDS OF THE WORLD POPULATION WILL BE URBAN IN **2050**

In 2016
3.9
billion
people lived in cities

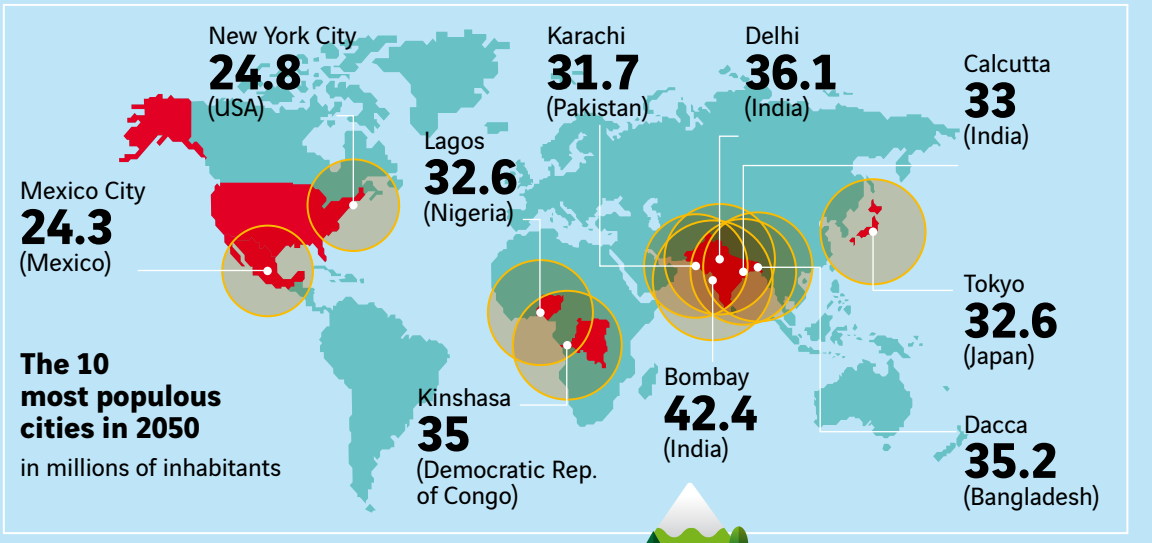
In 2050
6.3
billion
people will live in cities

In 2050
as in 2016
80%
of global CO_2 emissions will be generated in cities

75%
of all energy will be **consumed in cities**



In 2030 **250million**
new housing units will be needed in the 12 countries that account for 61% of the world population



The 10 most populous cities in 2050

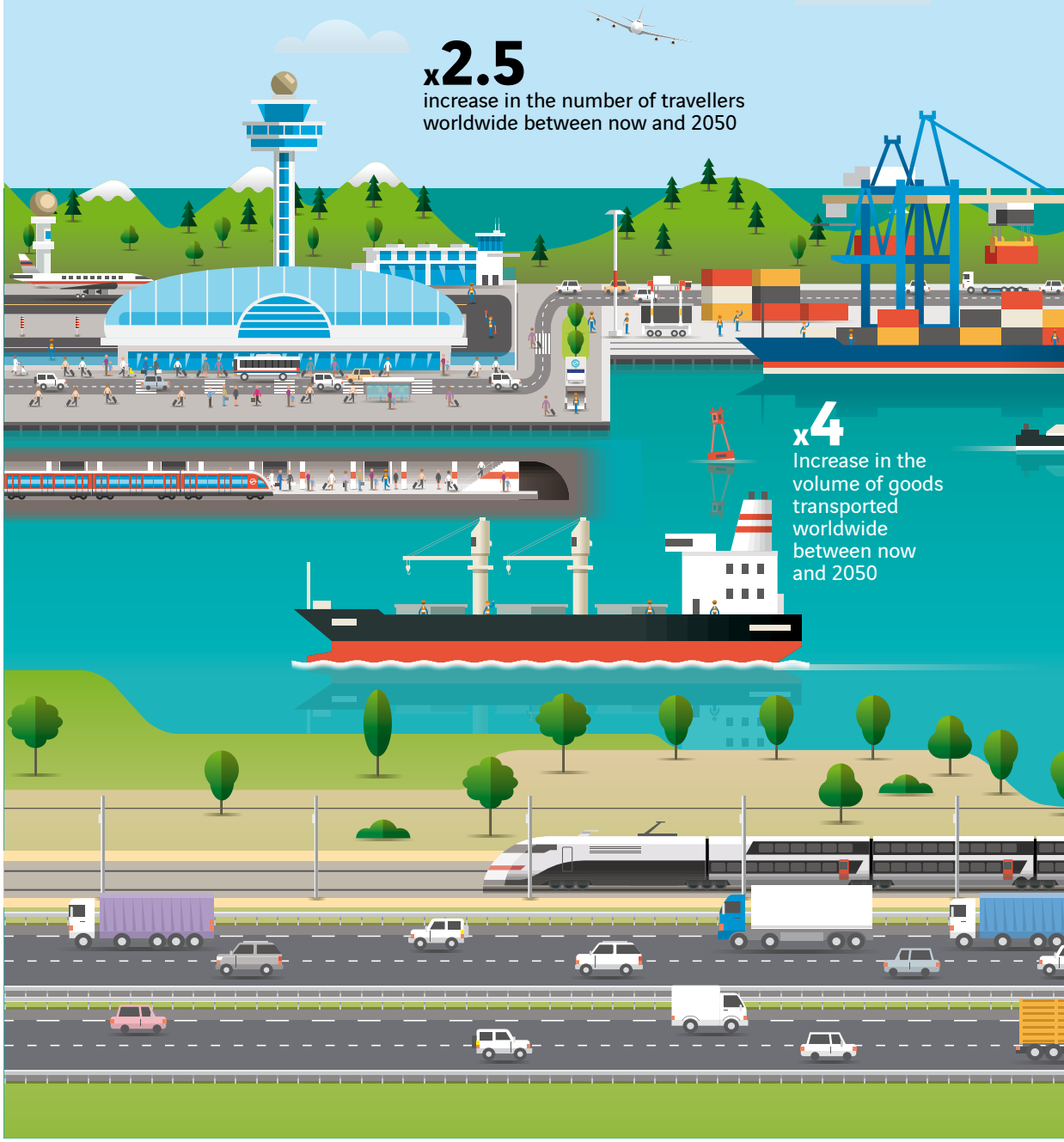
in millions of inhabitants

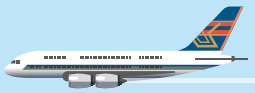
In 2050

70% of the world population will be urban

Sources: OECD, United Nations, Navigant Research, Global Cities Institute Toronto

PASSENGER TRANSPORT WILL INCREASE **80%** BETWEEN NOW AND **2050**





In 2014

3.3

billion

people travelled by air

By 2030

6

billion

people are expected to travel by air every year

x2

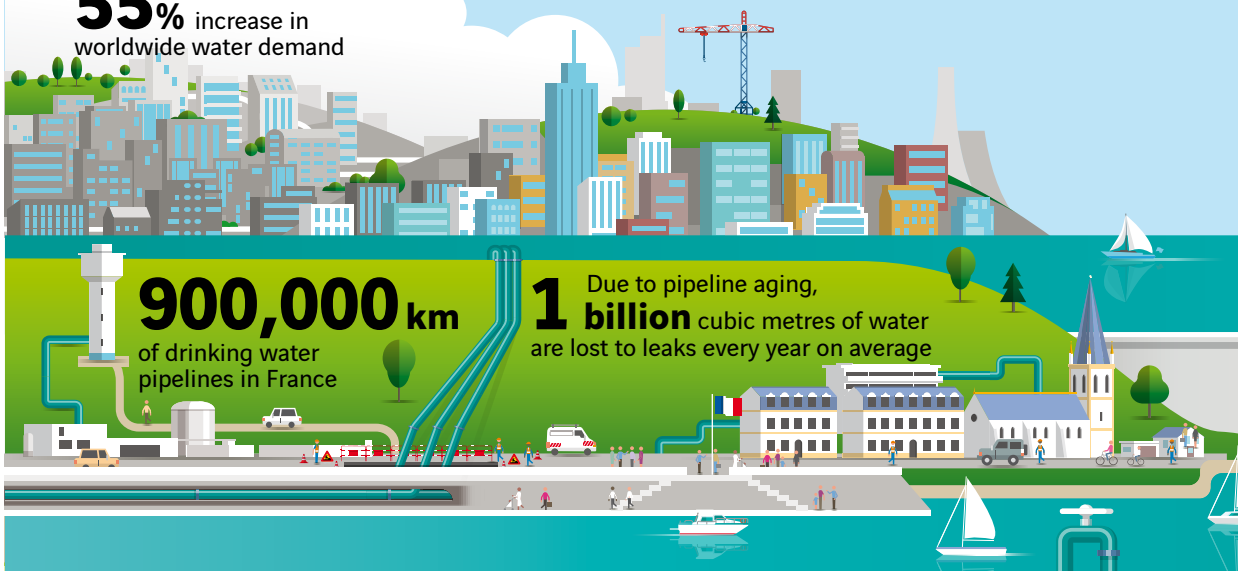
increase in the distance covered by all travellers in Asia between 2000 and 2010 (similar to the level in the OECD countries)

50% of passenger and goods transport by road (medium distance) will be transferred to railway and inland waterways

Sources: Institut Montaigne, IPCC, International Civil Aviation Organisation (ICAO), Eurostat

748 MILLION PEOPLE DO NOT YET HAVE ACCESS TO SAFE DRINKING WATER

In 2050
55% increase in worldwide water demand

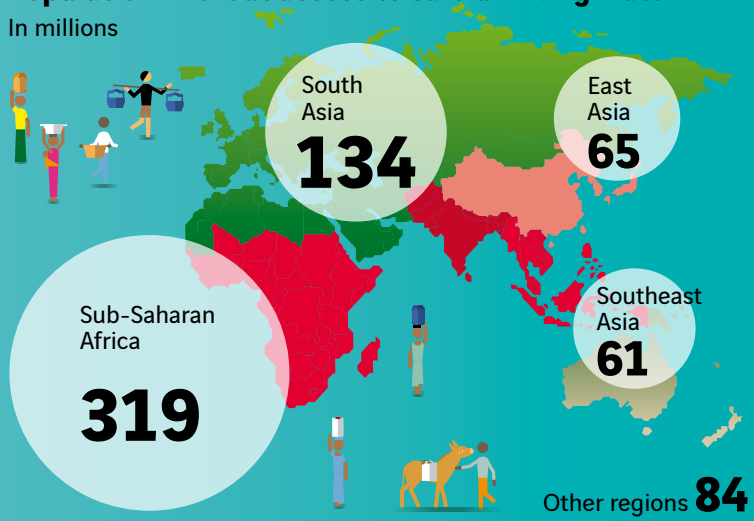


900,000 km
of drinking water pipelines in France

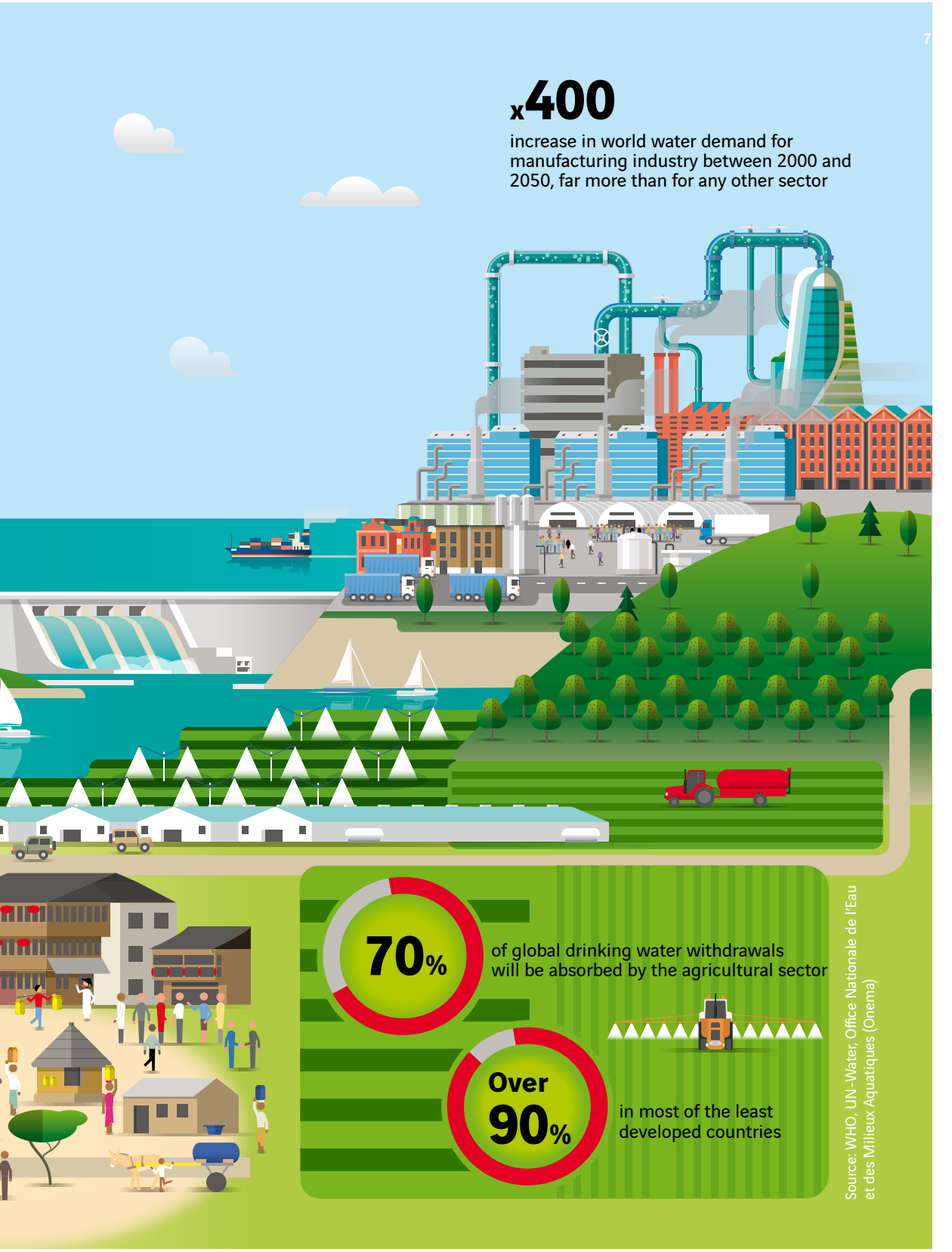
1 billion cubic metres of water are lost to leaks every year on average due to pipeline aging,

Population without access to safe drinking water

In millions



2.5 billion
people still have no access to improved sanitation systems



x400

increase in world water demand for manufacturing industry between 2000 and 2050, far more than for any other sector

70%

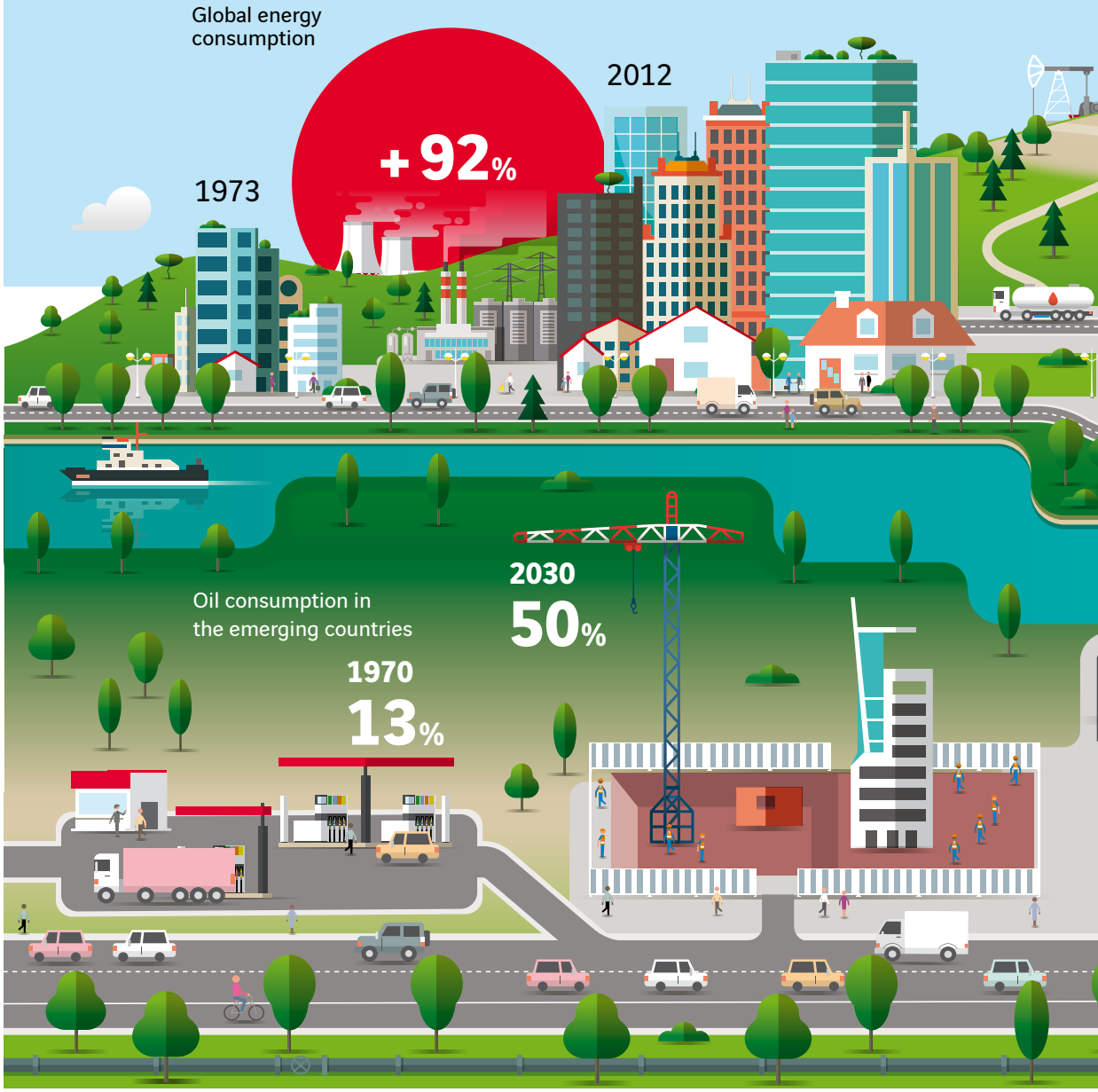
of global drinking water withdrawals will be absorbed by the agricultural sector

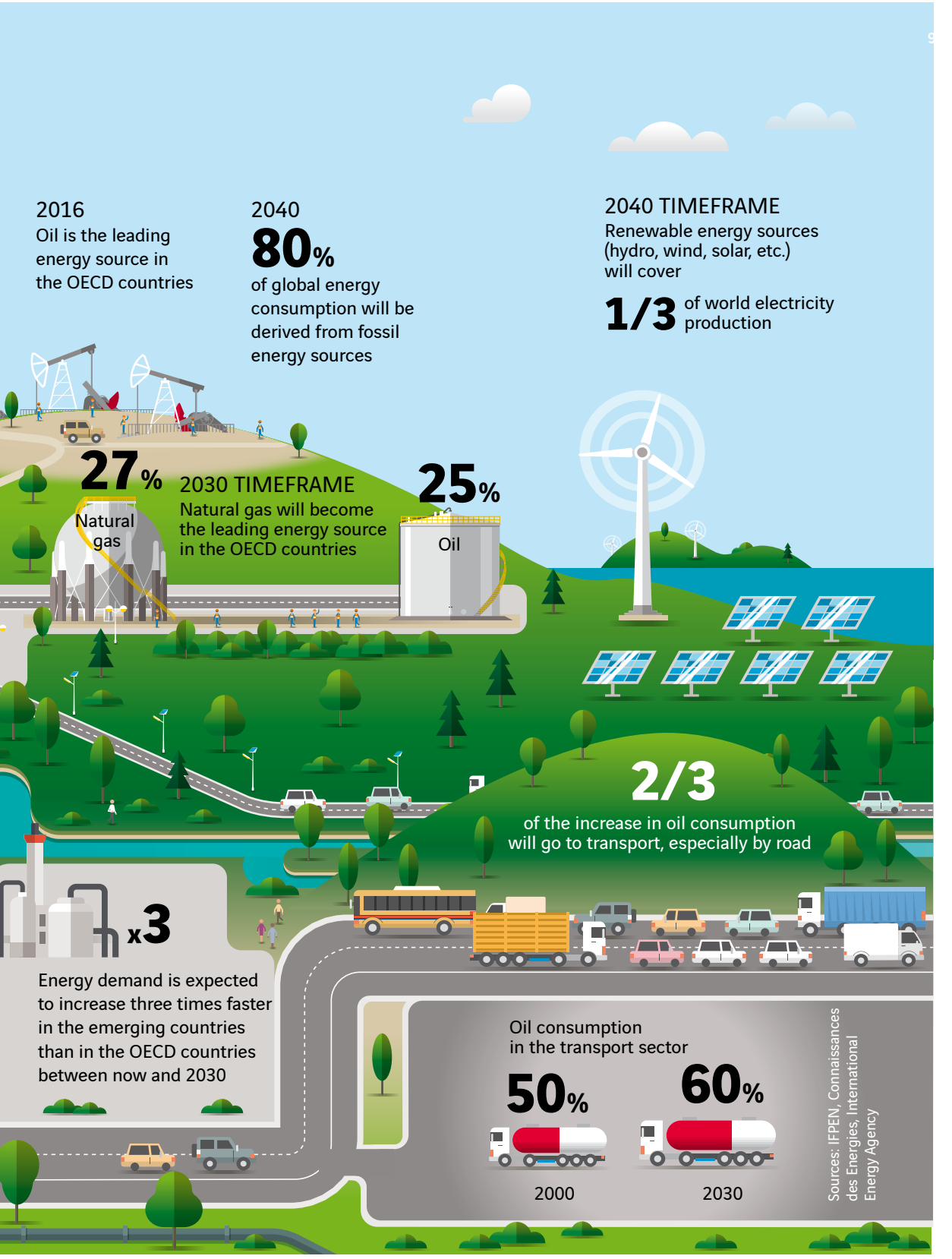
Over 90%

in most of the least developed countries

Source: WHO, UN-Water, Office Nationale de l'Eau et des Milieux Aquatiques (Onema)

WORLD ENERGY DEMAND IS EXPECTED TO INCREASE **37%** BETWEEN NOW AND 2040




2016
Oil is the leading energy source in the OECD countries
2040
80%
of global energy consumption will be derived from fossil energy sources
2040 TIMEFRAME
Renewable energy sources (hydro, wind, solar, etc.) will cover
1/3 of world electricity production
27%
Natural gas
2030 TIMEFRAME
Natural gas will become the leading energy source in the OECD countries
25%
Oil
2/3
of the increase in oil consumption will go to transport, especially by road
x3
Energy demand is expected to increase three times faster in the emerging countries than in the OECD countries between now and 2030
Oil consumption in the transport sector
50%
2000
60%
2030
Sources: IFPEN, Connaissances des Energies, International Energy Agency

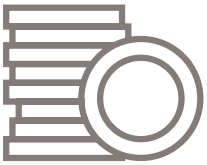
VINCI CONSTRUCTION IN 2016

VINCI Construction is a global construction group and European leader with nearly 67,000 employees and 700 companies across five continents. Firmly rooted in our areas of operation, we design and build structures and infrastructure that address major issues facing society – global warming, population growth and increasing mobility.

We build on our integrated business model to deliver a full array of capabilities (financing, design, construction and maintenance) across the entire project life cycle in eight business areas: buildings, functional facilities, transport infrastructure, water infrastructure, energies, environment, oil and gas and mining *(see pages 36-37)*.

For VINCI Construction, every project is a new challenge. We bring attentiveness, respect, social and environmental responsibility, trust, stakeholder partnership, passion and expertise to our work to support our customers in a changing world.

€ 13,681
million revenue



€ 330
million operating income from ordinary activities

700
consolidated companies

27,343
projects

Over
47%
of our revenue generated outside France

67,000
employees

2016 IFRS data

TAKING THE LONG VIEW
IN A CHANGING WORLD

VINCI Construction rises to the challenges of mobility, distance, quality of life, liveability and urban biodiversity. At a time of increasing attention to urban development issues, our teams help make the city above, within and below the city a reality. We set the standard in construction by building on our vision.

vision

INTERVIEW WITH JÉRÔME STUBLER,
CHAIRMAN OF VINCI CONSTRUCTION

AS GROWTH RESUMES IN 2017, WE HAVE WHAT IT TAKES TO SUPPORT THE CHANGES UNDER WAY IN INFRASTRUCTURE AND BUILDINGS”

HOW WOULD YOU DESCRIBE VINCI CONSTRUCTION'S PERFORMANCE IN 2016?

We made substantial progress. Our revenue held steady, order intake increased and income improved significantly. The groundwork we did – to reorganise the company, focus it on our projects and spread the best practices identified in our entities so that everyone can learn from them – is beginning to bear fruit. Our organisation and productivity system, Orchestra, can take a lot of credit for that. In early 2017, our order book is increasing, and this will put a stop to the negative impact of the decline in the oil price and in public spending in France.

PART OF YOUR STRATEGIC CAP 2020 PLAN SETS THE GOAL OF GENERATING 60% OF YOUR REVENUE OUTSIDE FRANCE. ARE YOU ON TRACK TO ACHIEVE THAT TARGET?

Our efforts to make the company more international are paying off. Our annual revenue growth rate slowed with the completion of the SEA Tours-Bordeaux high-speed railway line, but we made up for it by rapidly expanding, notably in the Americas. The contracts we won there include the Regina Bypass in Canada, which we signed together with Eurovia and VINCI Concessions, the motorway concession between Bogotá and Girardot in Colombia, the Línea Amarilla toll expressway in the centre of Lima, Peru, also with VINCI Concessions, and of course the contract for the airport in Santiago, Chile, on which work is now getting under way.

AGAINST THAT BACKDROP, IS FRANCE STILL A PROMISING MARKET FOR VINCI CONSTRUCTION GOING FORWARD?

Yes, absolutely! France has a lot going for it, including its technological creativity, its head start in public private partnerships and its investment in projects focused on the future. To give an example, the Grand Paris programme will alter the space-time equation in the Greater Paris area by creating major transport infrastructure. This will be a tremendous growth driver and will also generate substantial spin-off in terms of regional development, job creation and construction of new living environments including neighbourhoods, railway stations, offices, housing, shopping centres and museums.

ONE OF THE CENTURY'S MAIN CHALLENGES IS THE STRUGGLE AGAINST CLIMATE CHANGE. WHAT ARE VINCI CONSTRUCTION'S STANDOUT CAPABILITIES IN THIS FIELD?

To struggle against climate change we must save energy, develop cleaner sources of energy and protect our infrastructure from the effects of global warming. VINCI Construction is actively involved in all three areas. For example, we are working on a new generation of eco-designed positive energy buildings; we are helping develop new sources of energy by designing very tall turbines that can capture high-altitude winds; and we are pioneering methanisation and waste-from-energy technologies. We won the call for proposals to develop the floating wind turbine pilot project off the coast of western France. Lastly, we have the expertise required to strengthen flood barriers and raise port facilities in response to rising sea levels and more violent storms caused by global warming.

CITIES WILL PLAY A KEY ROLE IN THE WORLD OF THE FUTURE. WHAT IS YOUR VISION?

Urban density is set to rise with population growth, and people now want to live within the city to take advantage of all it has to offer. These trends will prompt greater mixed-use development, diversity and interconnections. The move to give the city back to pedestrians, make it greener and diversify the use to which neighbourhoods are put is generating enormous growth opportunities for the construction sector. The new concepts of the city over the city, under the city and within the city drive creativity and support wellbeing and movement. In the city of the future, people will feel at home everywhere.

ARE YOU CONFIDENT FOR 2017 AND THE PERIOD THEREAFTER?

Yes, more than ever. I have no doubt that we can rise to the challenges that lie ahead. We operate in a market that is growing overall, driven by strong infrastructure requirements and demand for improved living environments. The construction sector is also undergoing rapid change, with the emergence of new methods that are prompting us to re-think our business activities. Our recent partnerships with XTreeE to develop new 3D printing technologies in construction and with Sunpartner Technologies to develop photovoltaic facades are cases in point. Similarly, the creation of Sixense, which designs digital services and solutions for the construction industry, reflects the new approach. These new developments call for a different way of working.
I would add that we unremittingly strive to boost productivity and to set the standard for safety on our worksites. We will build on our adaptability, drive and intellectual and managerial flexibility to succeed far beyond our expectations in making VINCI Construction the emblematic positive, human-focused partner of our customers that we aspire to be.

MANAGEMENT TEAM

Jérôme Stubler
Chairman, VINCI Construction

Alain Bonnot
Chairman,
VINCI Construction Grands Projets

Hugues Fourmentraux
Chairman,
VINCI Construction France

Manuel Peltier
Chairman, Soletanche Freyssinet

Gilles Godard
Chairman,
VINCI Construction International Network

Benoît Lecinq
Chairman, Entrepose

Hervé Meller
Human Resources Director,
VINCI Construction

Jean-Philippe Bréot
Health and Safety Director,
VINCI Construction

Yann Grolimund
Chief Administrative and Financial
Officer, VINCI Construction

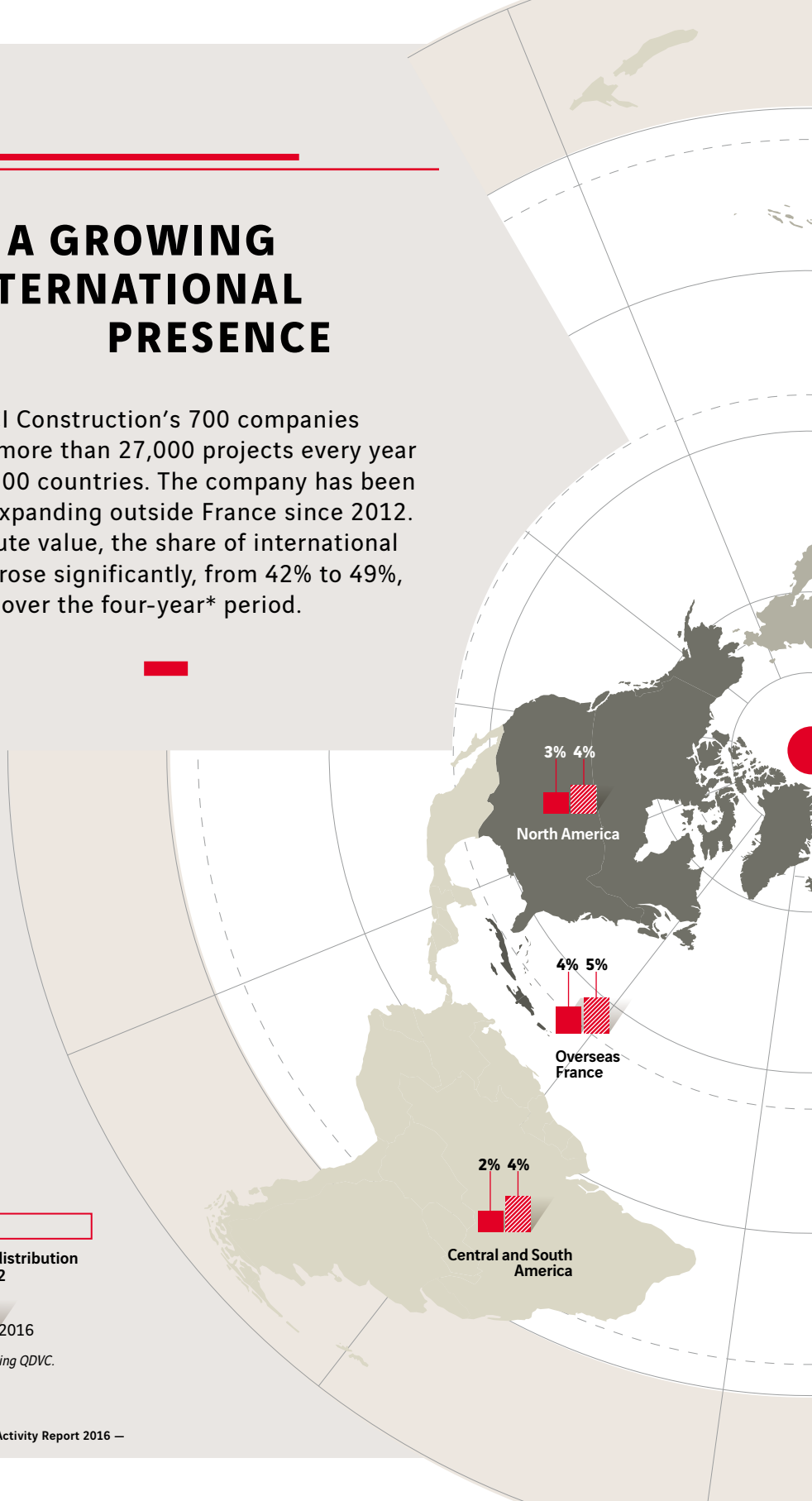
Philippe Venambre
Information Systems
Director, VINCI Construction

Manuel Saez-Prieto
Communications
Director, VINCI Construction

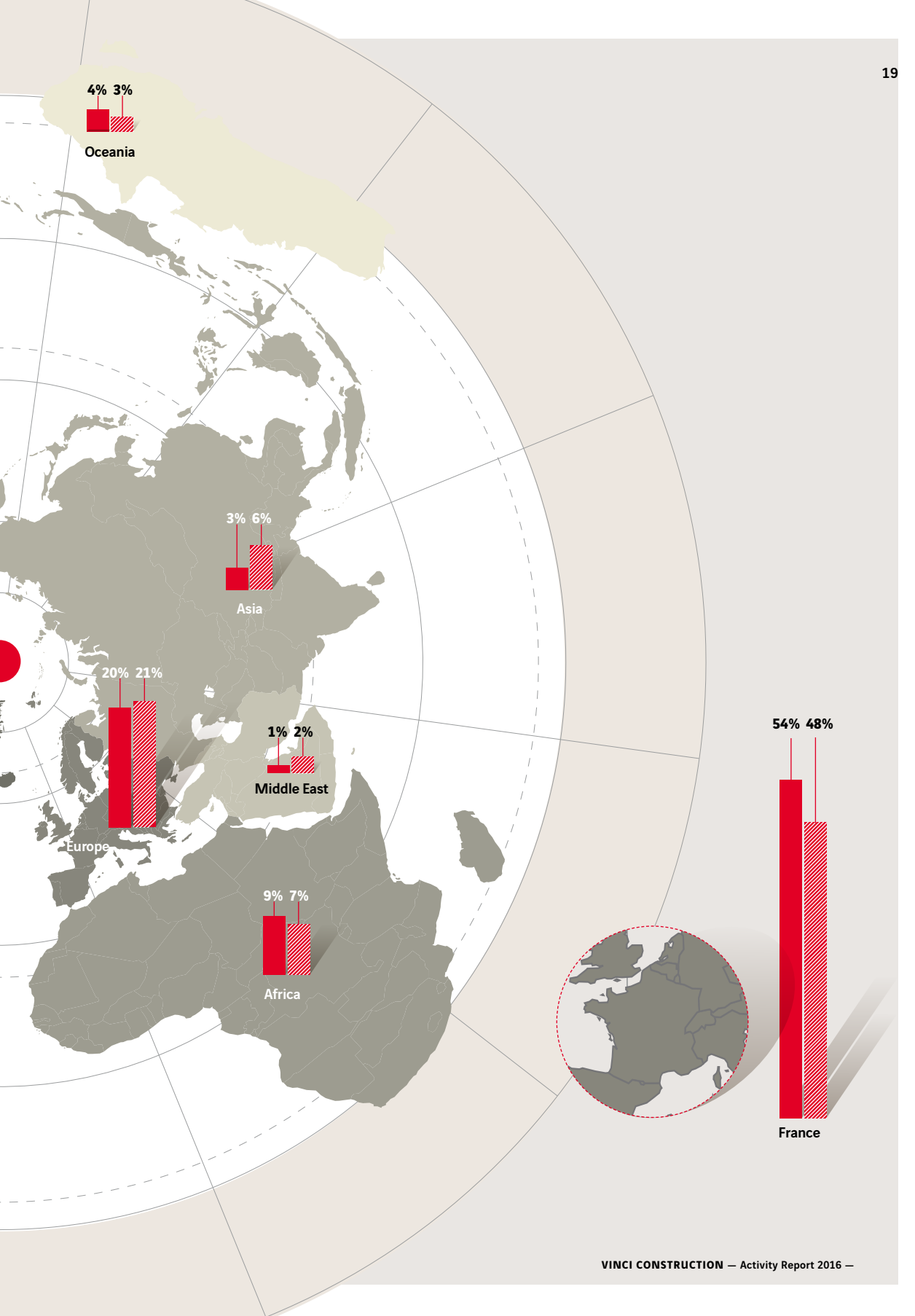
"IN A CHANGING WORLD,
DECISIONS MUST BE MADE RAPIDLY
IN THE INTEREST OF THE PROJECTS
AND BASED ON AN APPROACH
SHARED WITH OUR CUSTOMERS"

A GROWING INTERNATIONAL PRESENCE

VINCI Construction's 700 companies carry out more than 27,000 projects every year in about 100 countries. The company has been steadily expanding outside France since 2012. In absolute value, the share of international revenue rose significantly, from 42% to 49%, over the four-year* period.



** Managed revenue including QDVC.*


4% 3%
Oceania
3% 6%
Asia
20% 21%
Europe
1% 2%
Middle East
9% 7%
Africa
54% 48%
France

3 PILLARS TO PROVIDE EFFECTIVE

A NETWORK OF LOCAL SUBSIDIARIES

Operating close to our customers

The network brings together a wide range of companies with strong roots in their regions in France and abroad. Its basic entity is a team focused on a main business activity operating in a region close to its customers. These subsidiaries build on their familiarity with local markets and local issues to deliver solutions that meet customers' needs in projects of all sizes.

A MAJOR PROJECTS DIVISION

Managing major projects around the world

The companies of the Major Projects Division operate individually in the countries where the local network does not yet exist and in synergy with the other VINCI Construction entities in countries where the group is already present. They deliver a high level of expertise across the full range of complex civil engineering structures, earthworks and buildings, and provide outstanding engineering and project management capabilities that minimise project risk.

SPECIALIST SUBSIDIARIES

Delivering technology and a high level of expertise

These subsidiaries bring together engineers with strong expertise in geotechnical, structural, digital, nuclear, oil, gas and renewable energy engineering to deliver solutions with high technological content. Operating in more than 80 countries, they can work as general contractors, joint contractors or subcontractors.

SUPPORT FOR OUR CUSTOMERS

€8,277 M
revenue

37,303
employees

MAIN COMPANIES
- VINCI Construction France
- VINCI Construction UK
- VINCI Construction International Network:
  - VINCI Construction Dom-Tom (Overseas France)
  - Sogea-Satom (Africa)
  - Warbud, Průmstav, SMP and SMS (Central Europe)
  - HEB Construction (New Zealand)

€1,600 M
revenue

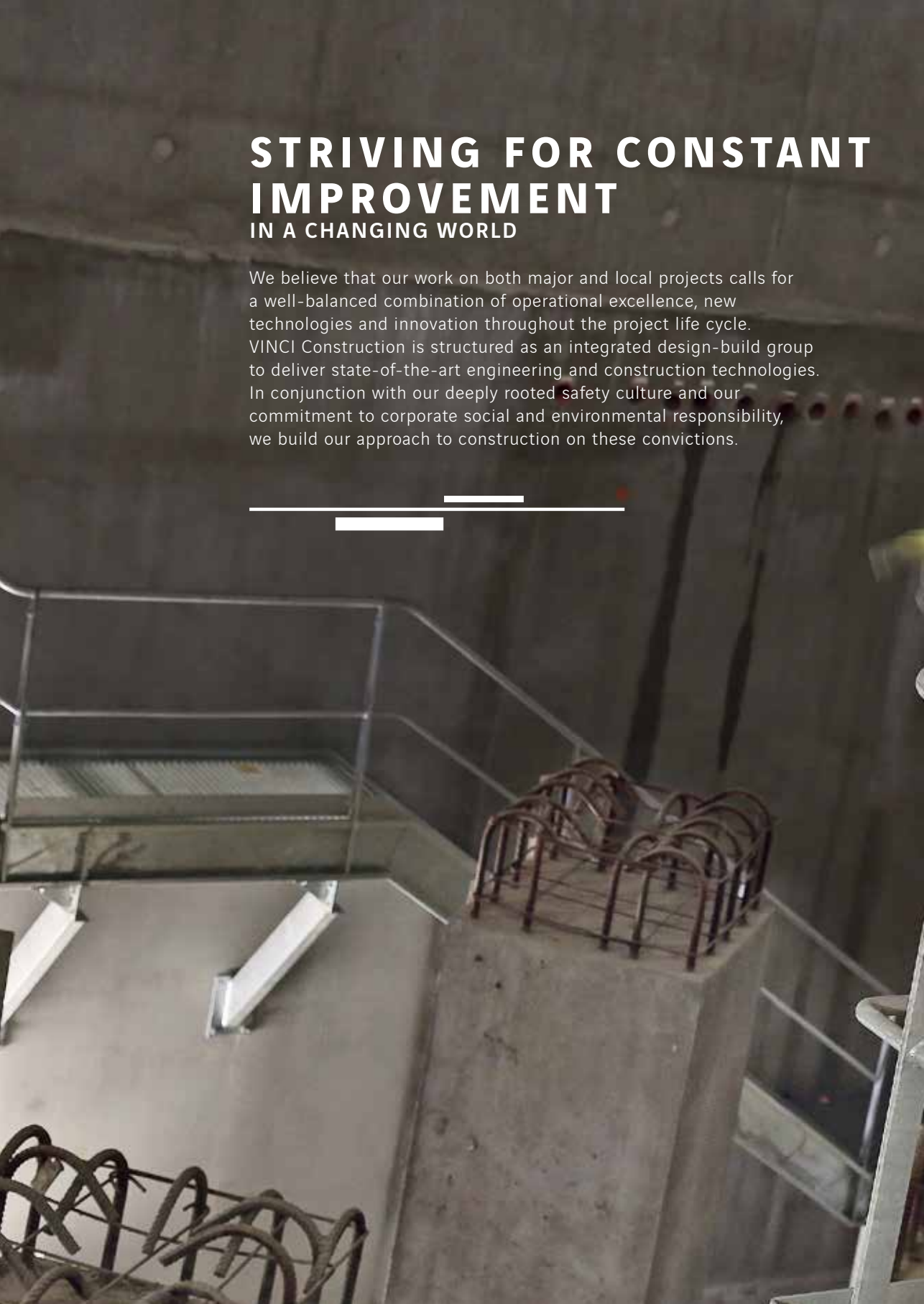
6,334
employees

MAIN COMPANIES
- VINCI Construction Grands Projets
- VINCI Construction Terrassement
- Dodin Campenon Bernard

€3,804 M
revenue

22,586
employees

MAIN COMPANIES
- Soils: Soletanche Bachy and Menard
- Structures: Terre Armée and Freyssinet
- Nuclear: Nuvia
- Digital services for construction: Sixense
- Oil and gas: Entrepose Group
- Environment: VINCI Environnement



STRIVING FOR CONSTANT IMPROVEMENT

IN A CHANGING WORLD

We believe that our work on both major and local projects calls for a well-balanced combination of operational excellence, new technologies and innovation throughout the project life cycle. VINCI Construction is structured as an integrated design-build group to deliver state-of-the-art engineering and construction technologies. In conjunction with our deeply rooted safety culture and our commitment to corporate social and environmental responsibility, we build our approach to construction on these convictions.


conviction

MAKING SAFETY OUR TOP PRIORITY EVERY SINGLE DAY

VINCI Construction's absolute priority is Zero Accidents. Our safety policy is designed to involve all our employees and managers in our effort to develop a common health and safety culture and promote best practices.

In 5 years

the number of lost time accidents affecting employees and temporary workers has been more than halved.

-

Over **8,000**

managers have taken the Managing Safety training course in recent years.

For several years, VINCI Construction has been working hard to achieve our goal of becoming the safety benchmark in the construction industry. We have reduced our lost time accident frequency rate by more than half over the past five years, placing us among the safest companies in our sector. To achieve our Zero Accidents goal, VINCI Construction is focusing on two major programmes: manager involvement and dissemination of a common culture.

ENLISTING MANAGEMENT IN THE HANDS-ON EFFORT TO ACHIEVE OUR ZERO ACCIDENTS TARGET

Safety is a constant concern and is a focus of every decision taken throughout the company around the world, however complex the project. Managers have a key role in this endeavour. They must set an example in identifying dangerous situations, monitoring compliance with the applicable rules, disseminating best practices and exercising vigilance at all times. The Managing Safety training course, for which a new module will soon be issued, has enabled them to take this common approach on board.

ANTICIPATING THE RISK OF ACCIDENTS

VINCI Construction leaves nothing to chance when it comes to safety on our worksites and the safety of the teams working there. The Orchestra worksite preparation and organisation system spells out every phase of the work in detail to deliver a high-quality project on time and in compliance with the commitments made at the start.

At the PreStart Meeting held to review worksite preparation, methods and associated risks, worksite supervisors go over all worksite parameters with their teams, placing particular emphasis on safety, before the start of work on each task. Similarly, whenever an incident or accident occurs, there is a debriefing to analyse the causes, provide feedback and ensure continuous improvement.

INSTILLING AND DISSEMINATING A COMMON SAFETY CULTURE

VINCI Construction fosters this safety culture by disseminating and spelling out

our four commitments and 12 principles and by holding our International Safety Week, a collective event that includes lectures, training, workshops and role-playing simulations designed to strengthen risk awareness on the part of all those working on our sites – our own employees and our temporary workers, subcontractors and partners.

INNOVATING FOR SAFETY

Innovation is another way to improve safety. In France, VINCI Construction France formed an unprecedented exclusive partnership with tool manufacturer Leborgne to improve safety by giving employees tools designed to make their work less arduous and reduce the incidence of musculoskeletal disorders (MSDs). This programme helps improve the health and safety culture and highlights the advantages of a practical, proactive approach.

But in special cases, when the equipment provided by manufacturers does not fully meet the specific needs of our worksite teams, the latter may take the initiative of creating their own tools. Once developed and standardised, these innovations can be distributed throughout the Group. Some of them have won Safety prizes in the VINCI Innovation Awards Competition (and VINCI Construction employees have entered 250 safety projects in the 2017 edition).

IDENTIFYING AND LEVERAGING LOCAL BEST PRACTICES

VINCI Construction entities take a dynamic, resourceful approach to safety. Soletanche Freyssinet initiated awareness campaigns tailored to each local context. In Mexico, Colombia and Singapore, for example, the focus was on traffic hazards; and in Latin America and Asia, the emphasis was on emergency situations and preventing falls from height, via centres dedicated to working at height. Meanwhile, the major projects division introduced its Safety in Design programme in 2014, which consists in optimising the safety of structures in both the design and worksite preparation phases.

PUTTING CORPORATE SOCIAL RESPONSIBILITY INTO PRACTICE

Corporate social responsibility is an integral part of VINCI Construction's design-build activity. It includes striving for better energy efficiency and investing in the community.

MINIMISING OUR ENVIRONMENTAL FOOTPRINT

Since the very first legally binding universal climate agreement was adopted in Paris in December 2015, the struggle against global warming has become a shared priority. At the COP 22 meeting in Marrakech, Morocco in November 2016, non-state actors came together to take practical global steps to protect the climate. In keeping with the objectives of the VINCI Group, VINCI Construction several years ago introduced a policy designed to minimise our environmental footprint. Our more specific commitment is to reduce our greenhouse gas emissions per square metre in the construction phase by 30% between now and 2020. Against this backdrop, we are resolutely focusing on eco-design of buildings. The new connected photovoltaic facades developed by VINCI Construction in a joint venture with Sunpartner Technologies are an outstanding example of energy efficiency and a way to contribute to the city of the future. Similarly, to meet urban environmental goals, VINCI Construction is expanding the use of the Biodi(V)strict® diagnostic tool as part of the AgroParisTech-VINCI scientific partnership. The innovative measurement and decision support tool can be employed in the design stage of an urban or suburban construction or development project to take biodiversity on board and implement appropriate solutions.

In another example, along the alignment of the SEA Tours-Bordeaux high-speed rail line, for which VINCI holds the concession and which it built, 850 ecological structures were built with the help of local nature conservation partners, who are also involved in tracking the effects of the biodiversity protection measures.

VINCI Construction Terrassement, meanwhile, set up an environmental engineering unit designed to conserve and expand biodiversity through suitable action (studies, works, management) in the ecosystems affected by its work. The unit was responsible for a number of commercial and operational successes. VINCI Construction Terrassement also worked with training and research

Planting a variety of species to renature water courses along the A63 motorway project (in the south west of France).

organisations to develop training courses in environmental engineering.

Outside France, the Lewis and Clark Bridge (East End Crossing project) received an Envision™ Platinum Sustainability Award for its strong teamwork and collaboration on sustainability aspects. It was the first time a French company had been awarded the high distinction *(see also page 58)*.

STEPPING UP OUR CSR PROGRAMME

Civic engagement is also part of VINCI Construction's corporate social responsibility programme. Everywhere we build structures and infrastructure, we strive to become a long-term partner of the region. This goal is a special focus of the network of VINCI Group corporate foundations. All provide financial support for the projects of non-profits sponsored by employees that are designed to facilitate access to jobs, housing, and mobility and to create social bonds in priority neighbourhoods. In France, the Fondation VINCI pour la Cité supported 184 non-profit projects – including 52 projects sponsored by VINCI Construction employees – with €2.6 million in funding in 2016. Outside France, in Africa, the Issa (Sogea-Satom initiatives for Africa) programme initiated 23 economic and social development programmes in 2016, for which it provided nearly €412,000 in funding.

VINCI Construction Terrassement introduced SolidariTerr', a similar system, in 2016. It uses a payroll micro-donation operation and a company contribution to fund projects carried out by non-profit organisations that are proposed and supported by company employees. Once a project has received approval, the employee may work with the local non-profit for a day to help set up the project.

Meanwhile, construction joint venture COSEA's Sillon Solidaire endowment fund supported 25 projects designed to combat social exclusion in the departments along the SEA Tours-Bordeaux high-speed rail line, which was inaugurated on 28 February 2017. In a similar move, VINCI Construction created the Chantiers et Territoires Solidaires fund to support the municipalities along the future Grand Paris Express line, part of the Grand Paris programme.

CHOOSING INLAND WATERWAY TRANSPORT

To transport waste from the Samaritaine refurbishment project in Paris, VINCI Construction France decided to use the river barge solution provided by Paprec Recyclage and CRH-Raboni. The use of barges to transport 35% of the total volume of waste reduces the distance covered by trucks by a factor of 3.5 and carbon emissions by a factor of 5.

EFFICIENTLY PREPARING OUR FUTURE

VINCI Construction's HR 2020 action plan, focusing on talent support, recruitment, mobility and training, is designed to make a long-term difference in a market undergoing major change.

Nearly
1 million hours of training
provided by VINCI Construction in 2016

-

Proportion of women in managerial staff:
16% in 2011
19% in 2016

Target
25% in 2020

-

72% is the proportion of local African supervisory staff at Sogea-Satom in Africa

The success of VINCI Construction's design-build activity depends first and foremost on the quality and skills of our approximately 67,000 employees. To achieve excellence in this area, the company has set up a bold and resolutely international human resources policy that ties in with its strategic CAP 2020 plan aimed at making it the undisputed benchmark in the sector. VINCI Construction's CAP for Talents initiative is also designed to make the most of our expertise and develop attractive career plans for all jobs covered.

STRUCTURED INITIATIVES TO SUPPORT THE CAREER DEVELOPMENT OF OUR EMPLOYEES

Given VINCI Construction's more than 27,000 projects around the world, the position of project director is clearly crucially important. The project director is responsible for project management, for ensuring viability of the resulting structure and for defining and implementing strategies and processes.

The CAP* for Projects initiative was launched in order to attract more candidates to apply for the position and to support employee development through specific systems. The project director career path holds out substantial opportunities for progress and promotion.

Similarly, the projects VINCI Construction is called on to design and/or build require a combination of strategic and technical vision. This is the crux of its design-build positioning. The approximately 3,000 people working in engineering offer outstanding expertise in structural, methods and cost studies. The CAP for Engineering programme is therefore designed to better identify and leverage their skills and expertise and to help them grow.

Lastly, VINCI Construction has a population of top managers who are mobile and who coordinate the Group's 700 companies based on our common management methods and culture, under The CAP 2020 strategy. The CAP for Management training focused on the CAP 2020 values and culture is earmarked for them.

TESTIMONIALS

“ The company likes to rapidly give young engineers responsibility. You can take on as much responsibility as you like. I jumped at the opportunity. I loved it. It enables you to move up quickly. For me, that is a unique feature of the company. I have come a long way professionally since I joined it five years ago. Every day brings a new experience that teaches me something.”

-

Killian Coghlan,
Business Development Manager, Menard (Division Export)

OFFERING REAL OPPORTUNITIES

The existence of these three programmes reflects the store VINCI Construction sets by these career paths. With the introduction of an attractive mobility policy, an ambitious training policy and an appealing career path internationalisation policy, VINCI Construction employees can consolidate their expertise and achieve long-term promotion within the company. Sogea-Satom, which created its Africa Pro programme in Morocco in 2015, is a perfect illustration. The Africa Pro training hub is designed for employees of the African subsidiaries and is designed to develop their managerial skills and strengthen their common culture. In 2016, the first training course was rolled out for newly hired and experienced managers.

Similarly, VINCI Construction has for several years been expanding the recruitment of local managers and has set up academic partnerships with more than 35 engineering schools and universities around the world. In practical terms, these partnerships come in a variety of forms such as sponsorships of school graduating classes, technical conferences, site visits, participation in trade fairs, and internships. They facilitate contacts with young graduates and enable the Group to recruit the best among those who wish to work in the construction industry.

FUTURE PROSPECTS

In coming years, VINCI Construction will obviously remain focused on the major issues facing society and on the related needs of our customers. To best address them, the VINCI Construction human resources policy will continue to rest on the core values that underpin the Group and on the Group-wide projects included in our 2020 HR action plan. This will be a long-term endeavour. But building on our vision and our consistent policy, VINCI Construction has what it takes to rise to these challenges.

** Construction Advanced Program.*

“ When I visited the TBM (Tunnel Boring Machine) on the Cairo metro, I saw six Egyptian engineers working closely with French engineers. Sharing our expertise is a positive approach and to me it is the hallmark of long-term cooperation.”

-

Dr Ashraf Abu Krisha, Head of Technical and Planning Department, NAT, Cairo Metro

INNOVATING TO ADDRESS THE CHALLENGES OF THE FUTURE

Innovation boosts competitiveness and drives added value. It lies at the heart of VINCI Construction's strategy and offering. The progress we make through innovation helps set us apart and signals our head start in a market undergoing transformation.

VINCI Construction operates in a world in which the major climate, population and urban issues facing society are growing more acute. Similarly, over the past several years the projects on which we work have tended to become more complex and subject to tighter constraints. We face new technological challenges, especially in the fields of energy performance, architecture and digital transformation.

CONSTRUCTION AND DESIGN ARE CLOSELY LINKED

Building on its design-build positioning, VINCI Construction plans to cope with the shifting landscape by moving up the value chain to deliver strong, lasting and potentially disruptive solutions for our customers. To improve our performance and build useful and sustainable structures and infrastructure, we have made innovation into one of our development drivers. In our organisational structure, resources and commitments we therefore naturally emphasise R&D and engineering, which enable us to stand out in the construction market and to provide innovative smart solutions.

PARTICIPATORY INNOVATION OR THE STRENGTH OF COLLABORATIVE WORK

VINCI Construction's innovation policy focuses on three areas. The first involves participatory innovation, epitomised in the VINCI Innovation Awards Competition. The biennial event is open to all Group employees and is designed to encourage their creative potential, make the most of the practical initiatives they take in the field by disseminating them throughout the Group and capitalise on their knowledge and feedback. The 2017 competition has added a new Digital Transformation prize and organised an international student challenge on the topic of the city of the future.

DISTINCTIVE R&D

The second focus is on research and development, which is carried out in-

The solar window at different stages of opacification.

house at VINCI Construction, where R&D is a focus of attention and is carefully thought out, coordinated and structured. Soletanche Freyssinet and VINCI Construction France both have substantial R&D staff and a proactive R&D policy enabling them to file a large number of patents, enhance their expertise and boost their competitive edge. In 2016, Soletanche Bachy introduced the gripper Hydrofraise®, which it developed to cope with complex terrain around the world and meet the requirements of the Grand Paris Express project in France.

Across VINCI Construction as a whole, 21 patents were filed in 2016. VINCI Construction has an overall portfolio of 3,172 active patents, a substantial source of creativity and competitiveness.

A partnership with substantial potential

“ Our vision is straightforward and ambitious: any glazed surface can be made smart. Sunpartner Technologies is helping to bring about this revolution by installing transparent or invisible photovoltaic solar panels on facades and windows. With the creation of Horizon, we will soon have a range of curtains walls and of smart, opacifying and connected windows that reduce energy consumption, enhance comfort and are connected to the Building Management System (BMS).”

–

Ludovic Deblois,
CEO, Sunpartner Technologies

OPEN INNOVATION, DRIVING TRANSFORMATION

The third focus, Open Innovation, consists in reaching out to external partners in industrial, academic and basic research. For example, VINCI Construction France worked with Lafarge on concrete tracking. Their innovative solution is based on embedding RFID tags in concrete to collect and locate information about the material, enhance quality control throughout the life of the building and create “smart concrete”.

VINCI Construction is developing further promising partnerships with major international partners.

3D printing is used to produce complex concrete shapes such as this 4-metre pillar supporting the covered courtyard at a middle school in Aix en Provence (France).

3D PRINTING, A KEY PART OF THE UPHEAVAL IN THE CONSTRUCTION SECTOR

“ 3D printing holds out the prospect of a revolution in the construction sector. The purpose of our long-term partnership with VINCI Construction is to expand the use of 3D printing to take advantage of this breakthrough technology. We believe that it will play a key role in the major changes on the horizon in the construction industry.”

-

Philippe Morel,
Chairman of XtreeE

As part of the Open Innovation approach, VINCI Construction also became a shareholder in startup XTreeE and thereby a benchmark player in 3D concrete printing. Similarly, VINCI Construction is helping to develop technologies that give buildings energy autonomy. One example of this approach is the decision to set up a joint venture with Sunpartner Technologies to become a specialist in photovoltaic facades with the Horizon range of products. This solution can be combined with GreenFloor, an innovative air-based climate control system jointly developed by VINCI Energies and VINCI Construction that improves comfort for end users while consuming less energy.

The multi-faceted, wide-ranging and detailed innovation policy positions VINCI Construction as a key player in building the city of the future at a time when issues relating to city over the city, within the city and under the city are an increasing focus of attention and are generating changes in construction methods.

Sixense: digital services for construction

VINCI Construction created the Sixense brand to deliver a range of digital solutions and services for infrastructure, soils and the environment. The purpose of the brand is to help the customer meet the challenges of construction project management, asset management and risk management by tracking behaviour across the entire structure life cycle, from design to construction and operation. Key projects in 2016 included the digital construction project monitoring solution (Digital Site software for tablet and smartphone) used on the airport project in Santiago de Chile and the Saint Gobain tower project in France. Additional Sixense expertise included engineering, consultancy and risk analysis for the Línea Amarilla motorway in Peru, 2D/3D mapping for the SEA Tours-Bordeaux high-speed railway project in France, detection and monitoring for the metro in Bucharest, Romania, and integrated measurement and structural, acoustic and vibration expertise for the Thames Tideway Tunnel project in London.

GETTING IT RIGHT
IN A CHANGING WORLD

It takes a clear, broad and integrated range of solutions and services to deliver effective, lasting solutions that meet the needs of a globalised world. Adapting to the needs of our customers, VINCI Construction has organised its activities in eight major business areas and expanded its ability to work in partnership with the full range of project stakeholders and cover diverse, complex, global demand for construction.

DELIVERING A COMPREHENSIVE, INTEGRATED RANGE OF SOLUTIONS AND SERVICES

With our eight business areas and a clear-cut, broad and integrated range of solutions and services, VINCI Construction can take on diversified, complex projects all over the world.

P. 42

— BUILDINGS

Improving the living environment

Residential and office space, hotels

P. 50

— FUNCTIONAL FACILITIES

Optimising urban facilities

Shopping centres, schools, universities, cultural and heritage buildings, stadiums, sports facilities, hospitals and industrial and service sector facilities.

P. 58

— TRANSPORT INFRASTRUCTURE

Making the world more mobile

Roads, bridges, viaducts, marine and river infrastructure, railway and airport infrastructure

P. 66

— WATER INFRASTRUCTURE

Making the most of water resources

Dams, canals, locks, pipelines, wells

P. 72

— RENEWABLE AND NUCLEAR ENERGY

Fostering access to safer, more sustainable energy

Nuclear, wind, hydroelectric, geothermal

P. 79

— OIL AND GAS

Providing safe and lasting infrastructure

Oil drilling, oil pipelines, gas pipelines, jetties, storage, processes

P. 83

— ENVIRONMENT

Contributing to a cleaner planet

Water treatment, waste recycling, soil remediation

P. 87

— MINING

Providing access to new resources

Roads, tunnels, drilling, soil investigation, cavities

BUILDINGS

BECAUSE QUALITY OF LIFE STARTS WITH THE LIVING ENVIRONMENT

To keep pace with population growth and increasing urban density, VINCI Construction works to help meet the need for housing, office and hotel infrastructure. Combining innovation capacity and ability to adapt to a wide variety of socioeconomic environments, VINCI Construction works to help cities and governments address major societal issues.

Kota Kinabalu, Malaysia

Jesselton Residences

In Borneo, VINCI Construction Grands Projets completed work on the three towers making up the Jesselton Residences in February 2017. This second project on the island covers about 125,000 m^2 of apartments and shops.

RESIDENTIAL

Girondins development zone in Lyon, France: construction of 837 housing units.

FRANCE

ADDRESSING GROWING NEEDS

Ongoing population growth is generating strong housing demand. The number of units is increasing but there is still a gaping shortfall.

The recovery of the housing market was confirmed and amplified in 2016. In France, the number of approved housing starts increased 14.2% from 2015 to 453,000 units. The main driver of this momentum was apartment buildings, for which building permits grew 19% during the year. The number of construction starts followed the same trend, growing 10.4% from the previous year, with growth in apartment buildings alone coming in at 13.4%.

A POPULATION OF OVER 70 MILLION IN 2030

The recovery is partly due to reduced interest rates and a favourable institutional environment (Duflot Law on rental investment), but it also reflects higher demand. Demand is expected to rise over coming decades due to the natural growth of the French population, which will reach 70 million in 2030, an increase of 10% from 2006. Another factor pushing demand, and more particularly demand for social housing, is the steady decline in the number of individuals per household (2.9 in 1975, 2.26 in 2010) as a result of the aging of the population (households consisting of older people with no dependent children) and a trend away from marriage and domestic partnerships. The number of households is projected to increase by 235,000 per year between now and 2030. VINCI Construction business units are in a position to meet this demand by applying the full range of their expertise to new construction and renovation projects.

PARIS, FRANCE

A LARGE-SCALE REFURBISHMENT

CHALLENGE

Located in the 13th arrondissement of Paris, the Glacière-Daviel social housing complex comprises 756 units divided between five four-to-nine-storey buildings and a 13-storey high-rise. Built in the 1960s, it was in need of substantial modernisation. In addition, the public housing authority, Paris Habitat OPH, wanted to create additional units in order to meet urban density goals.

SOLUTION

To meet the double refurbishment and new construction requirement, VINCI Construction France carried out two concurrent projects in one of France's largest urban renewal programmes. The teams worked on occupied apartments to upgrade bathrooms, electricity, heating, plumbing and/or painting. They installed 3,500 double-glazed windows. To enhance comfort, lifts were installed in the buildings, which had previously lacked them – 14 outside and a further three inside the building. Meanwhile, the two four-storey buildings were raised using wooden structures to create an additional 73 units. The project, which aims to acquire BBC Renovation certification, is currently nearing completion.

GUADELOUPE

HELPING MEET THE DEMAND FOR SOCIAL HOUSING

In Le Lamentin, a large development project is underway to build 264 social housing units. GTM Guadeloupe, a subsidiary of VINCI Construction Dom-Tom, is in charge of structural work. The project is being carried out for the Société Immobilière de Guadeloupe (SIG) in two parts: the Moko residence, with 180 units, and the Rivière Saint Charles residence with 84.

A total of 37 buildings with a ground floor and an upper floor will be built over a seven-hectare site. The structural work began in September 2016 and will take 18 months to complete. To meet the deadline, three cranes will be used in rotation to complete one unit per day.

In a similar project, Dodin Guadeloupe is lead company of two joint ventures that are building 120 social rental units in Le Lamentin and 61 units of the same type in Le Gosier, southeast of Pointe à Pitre. Handover is scheduled in 2017.

RESIDENTIAL

UNITED KINGDOM

A RETIREMENT HOME IN BATTERSEA

VINCI Construction UK completed a retirement village in Battersea on the outskirts of London. The complex, designed for people over the age of 65, includes 109 houses, a 30-bed nursing home and community facilities including a library, restaurant, café and swimming pool. The £31.7m (about €37.4m) project was carried out in partnership with LifeCare Residences, a British property developer.

HOTELS

LAUNCH OF THE PLENDI BRAND

HIGH-END CONSTRUCTION

DEMAND

Reflecting the increasing number of affluent clients around the world, luxury hotel and property projects are flourishing on all the continents, and more particularly in major international capitals such as Paris, London, New York, Singapore and Hong Kong. These exceptional projects call for very high standards at all stages of construction, from design to finishing. Clients expect builders to have a perceptive feel for the spirit of the project, pay careful attention to each of its components and ensure outstanding execution and painstaking customisation.

RESPONSE

VINCI Construction has been designing, renovating and building exclusive hotels and residences for three decades. The PLENDI by VINCI Construction brand to was created to serve this market, covering all stages of a premium project, from design studies to handover. PLENDI supports each customer with a full range of expertise, calling on construction engineers and specialists in interior spaces – craftspeople, decorators, layout and interior design specialists – in an integrated approach that is reassuring for the client, ensures compliance with specifications, budgets and schedules at every stage of the project and provides the painstaking attention to detail that makes all the difference.

TESTIMONIAL

XAVIER ARM,
Managing Director of PLENDI

“ **To refurbish the Mandarin Oriental Hotel in Hyde Park, London,** we integrated a project management team and signed a pre-construction services agreement (PCSA) with the client covering a range of services prior to construction to ensure that we were involved in the project studies and design. In other words, we brought together a team of interior decorators to be involved in the early engineering and design of the project. This enabled us to meet the customer’s particularly high standards, respect the spirit of the building and deliver very high quality project execution..

ADVANTAGES

▸ **Exceptional project references**

▸ In addition to the Mandarin Oriental Hyde Park in London and the Mandarin Oriental in Paris, VINCI Construction has several exclusive project references: the Plaza Athénée and The Peninsula hotels in Paris, the Four Seasons in Prague, the Government Palace in Ashgabat and the Hilton hotel in Hanoi.

OFFICE BUILDINGS

PARIS, FRANCE

A NEW HEAD OFFICE FOR THE DPJ

"36, Quai des Orfèvres", the legendary headquarters of the Direction de la Police Judiciaire (DPJ), the criminal investigation unit of the national police (the equivalent of Britain's Scotland Yard), moved into an ultra-modern building meeting exceptionally high security standards in the heart of the Clichy-Batignolles development zone in Paris's 17th arrondissement. The €96.4 million complex was built by VINCI Construction France subsidiary Campenon Bernard Construction, as lead company of a project management joint venture. A total of 1,700 civil servants working within the police force investigating organised crime, gangs, drugs and financial crime have been brought together for the first time in the 34,000 m^2 building. In addition to the high-profile project, VINCI Construction companies are taking part in the development of the new Clichy-Batignolles neighbourhood.

AUSTRALIA

BARANGAROO URBAN RENEWAL PROJECT

West of the port of Sydney, Soletanche Bachy and Menard are working to convert the Barangaroo industrial zone, a huge project covering 22 hectares, into a mixed-use commercial and residential complex.

The site, which was highly polluted as a result of its industrial use, calls for innovative methods to meet its many technical and environmental challenges. After completing the foundations for the high-rise buildings, which are anchored at a depth of more than 25 metres, and the peripheral wall, the Soletanche Bachy major projects division, Menard and AFS Bachy Soletanche won two further contracts in 2016 to build the retaining walls for a soil remediation and construction project.

HERE AND EVERYWHERE

HIGH-RISE BUILDINGS ARE SOARING

VINCI Construction offers world-renowned expertise in the construction of the high-rise buildings that form an emblematic part of the skyline in the cities where they stand.

A TOWER FOR MARSEILLE

In Marseille, VINCI Construction France is building the 135-metre La Marseillaise high-rise, which will become part of the city's new seafront district (pictured opposite). Designed by Jean Nouvel, the elegant building will offer 37,779 m^2 of office space on 33 levels and 31 storeys and will accommodate 2,474 workstations. The futuristic structure epitomises the urban renewal under way in Marseille and will offer local, national and international companies an outstanding location in the port city.

NEW MATCHING TOWERS IN KUALA LUMPUR

Meanwhile, 10,000 km from Marseille, VINCI Construction Grands Projets began handing over the second Berjaya Central Park tower (cover photo) in Kuala Lumpur, Malaysia in October 2016. The residential and office complex (which has a total of 185,000 m^2 of floor area across both towers) reaches a height of 200 metres. The second tower will house a five-star Ritz Carlton hotel built on a general contracting basis. The reinforced concrete post-tensioned flat slab structure uses an alternative design. The entire facade consists of curtain walling. This is VINCI Construction's second successful project for the Berjaya Group. In 2003 it handed over the Berjaya Times Square project, one of the Malaysian capital's largest shopping centres.

THE ART OF FOUNDATIONS

These giant buildings reaching for the sky need solid foundations, a specialist expertise provided around the world by Soletanche Bachy. In 2016, it began work on the foundations for a high-rise building designed by architect Santiago Calatrava, The Tower in Dubai, which will be the world's tallest building when completed. Similarly, Soletanche Bachy's local subsidiary Cimesa handed over its first fully concrete structure in 2016, the Insurgentes 601 tower on one of Mexico City's main thoroughfares. It also worked with its sister company Freyssinet de México on the 20 storey post-tensioned concrete superstructure.

This project represents a further step towards combining complementary expertise to offer comprehensive, integrated solutions and services for this type of project in Mexico.

FUNCTIONAL FACILITIES

BECAUSE THE CITY OF THE FUTURE IS BEING BORN TODAY

VINCI Construction designs and builds highly complex facilities around the world. They meet a growing range of uses and are fully blended into their environment.

Krakow, Poland

Krakow-Prokocim Hospital

The new 108,000 m² hospital built by Warbud as part of a design-build joint venture will include eight buildings and offer nearly 1,000 beds. The hospital complex, set to open in 2019, is the largest ever undertaken in Poland.

SHOPPING CENTRES

FRANCE

METZ HAS FOUND ITS MUSE

Muse will soon flower. Muse is the name of a large multipurpose project that is going up in the centre of Metz in eastern France, the largest uninterrupted property development ever built in the northeastern part of the country. Located next to the famous Centre Pompidou-Metz museum and the high-speed railway station, the ambitious 160,000 m² complex will house a shopping centre, office space, 400 housing units and 1,235 parking spaces.

GTM Hallé, a VINCI Construction France subsidiary, is the single builder of the project, which will accommodate the car parks and 113 shops over 120,000 m² of floor area on four levels. Designed by architect Jean-Paul Viguier, it is scheduled to open to the public in October 2017. As part of the same project, Adim Est, another VINCI Construction France subsidiary, is developing 49 apartments and six single-family houses for social housing authority Metz Habitat Territoire.

CULTURE AND HERITAGE

POLAND

A NEW MUSEUM IN GDAŃSK

In Gdańsk, Poland the Second World War Museum project has been completed. Built by VINCI Construction International Network subsidiary Warbud as part of a joint venture with Hochtief Polska and Hochtief Solutions AG, the building, in which 80% of the floor area is underground, has a distinctive 40 metre high tilted tower symbolising the ruins left by the conflict.

Prior to construction, Soletanche Bachy subsidiary Soletanche Polska carried out excavations to a depth of 18 metres and built the raft foundations using the immersed concrete method, which set a world record in this category.

The seven-storey museum with six underground levels is located immediately adjacent to the historic centre of the city and the Vistula estuary. Its 58,000 m² floor area contains exhibition rooms as well as conference rooms, a cinema, a library and archives.

CULTURE AND HERITAGE

BORDEAUX, FRANCE

A PLACE TO CELEBRATE WINE

With the Cité du Vin de Bordeaux, the Bordeaux region, world-famous for its wine, now has a high-profile place devoted to the exploration of the culture going back thousands of years. Built to HQE® (high environmental quality) standards by VINCI Construction France subsidiaries GTM Bâtiment Aquitaine and Arbonis, the Cité du Vin has an unusual geometry that symbolises the circular movement of wine in a glass during a traditional tasting. A torus – a round, circular cross-section moulding – carries the visitor around a 55 metre high tower. These concrete, wood (frame), glass and aluminium (cladding) curves required the use of 3D BIM from the competitive dialogue phase onwards.

SCHOOL AND UNIVERSITY FACILITIES

INDIAN OCEAN

NEW MIDDLE SCHOOLS AND HIGH SCHOOLS FOR MAYOTTE

FACT

In Mayotte, SMTPC, a subsidiary of VINCI Construction Dom-Tom, is working on three school construction and extension projects. In the southern part of the island, the company is carrying out the structural work on the future Bouéni middle school, which will accommodate 900 students. In Ouangani, SMTPC won the structural works contract for the Kahani vocational high school, which includes a multi-purpose room, sports facilities and faculty parking. In the same city, after completing the first phase of work on the new middle school, SMTPC was awarded the second phase, which covers earthworks, structural works and outside painting.

COMMENT

The various contracts constitute a triple success for SMTPC. The projects meet the need for teaching facilities located near population centres at a time when travel to school has become more difficult as a result of increased traffic and saturation of the road network.

TOULOUSE, FRANCE

TOULOUSE-JEAN-JAURES UNIVERSITY COMPLETES ITS METAMORPHOSIS

BEFORE

Initially designed for 10,000 students, the university campus accommodated nearly 29,000 in 2016. The three-phase construction and refurbishment project was completed in December 2016. It was carried out under a public private partnership by three partners brought together in the construction joint venture – VINCI Construction France, VINCI Facilities and an investor, DIF.

AFTER

The project provided for the construction of 58,000 m² of floor area over more than 50% of the total area of the site (sports facilities, lecture halls, a 7,000 m² canopy, 200 student housing units, 120 housing units for young workers, 1,100 parking spaces) and the refurbishment of a number of existing buildings. The project substantially improved living and working conditions for students on the campus, offering them new services and boosting the university's international reputation.

STADIUMS AND SPORTS FACILITIES

NANTERRE-LA DEFENSE ARENA, FRANCE

XXL INDOOR FORMAT

ARENAS OUTSIDE FRANCE

Located in the historic center of Istanbul, the Vodafone Arena (formerly BJK Stadium) doubled its capacity. The 41,000 spectators will now be seated under a cable-stayed roof designed, supplied and installed by Freyssinet. The culmination of the work was the raising of the roof to a height of 21 metres. The stadium was inaugurated in April 2016. On the strength of this success, Freyssinet will take part in the work to extend the Tsentralnyi Stadion (central stadium) in Volgograd, Russia, set for handover in 2018.

A MULTI-PURPOSE ARENA

At the western tip of the La Défense business district near Paris, work on the Nanterre-La Défense Arena is nearing completion. The structure, with a surface area of about 115,000 m², can be configured as a rugby stadium (30,681 seats) or a concert hall (up to 40,000) as required. The complex €282 million project is being built under a design-build contract by a joint venture led by GTM Bâtiment with architect Christian de Portzamparc. Several other VINCI Construction France subsidiaries are also involved: Petit, Chantiers Modernes Construction and TPI.

SPORTS AND CONCERTS

The modern, user-friendly arena was designed as a very large concert hall – the largest indoor facility of its kind in Europe – that can also host about 20 rugby matches per year, as stipulated by the project's initiator, Jacky Lorenzetti, Chairman of Ovalto and President of Racing 92, who is an enthusiastic rugby fan. The multi-purpose design will ensure a steady independent, long-term income stream, further consolidated by the inclusion of an office building to enhance the overall return on investment for the customer. The Nanterre-La Défense Arena is one of the sites selected for Paris's bid to host the 2024 Olympics, in which it would be used for the gymnastics and weightlifting events.

TECHNICAL CHALLENGES

Several technical challenges had to be overcome in the course of the project. Its location in the heart of an office and residential neighbourhood and the inclusion in the same programme of an office building adjacent to the arena made it necessary to provide very effective acoustic insulation. To cope with the underground below the buildings, criss-crossed with utility lines, Soletanche Bachy, in charge of deep foundations, achieved feats of technical ingenuity. The lack of space also entailed the installation of six construction cranes within the footprint of the structure, which had major impact on the project's phasing.

HOSPITALS

MARTINIQUE

AN EARTHQUAKE-RESISTANT TECHNICAL FACILITY IN LA MEYNARD

CHALLENGE

In Martinique in the French West Indies, VINCI Construction handed over a new 40,000 m² section of the La Meynard teaching hospital in Fort de France, which notably brings together 13 operating theatres, an emergency room, a radiology department, a critical care unit and a lab. One of the major challenges was to ensure that the hospital, which is located in a seismically very active area, can continue to function following an earthquake.

SOLUTION

To earthquake-proof the building, the superstructure was placed on on a network of 288 elastomer dampers that separate it from its foundations. In addition, 36 horizontal dampers were installed perpendicular to the facades. Freyssinet developed these advanced techniques. In the event of an earthquake, the vibrations transmitted by the ground will be filtered so as to have little or no effect on the building, which can continue to operate. Sogea Martinique succeeded in meeting another challenge as well: carrying out the work next to the existing building while ensuring access to the emergency department and without disrupting the operation of the adjacent departments.

HOSPITAL INFRASTRUCTURE

INTERNATIONALLY RECOGNISED EXPERTISE

IN CAEN, WORK STARTS ON THE ARCHADE PROJECT

This project will enable Caen to welcome a European hadrontherapy research and development centre, set to open in 2018. It will provide a new type of radiation therapy to treat certain types of cancer. The joint venture including Sogea Nord-Ouest, GTM Normandie Centre (VINCI Construction France) and VINCI Facilities (VINCI Energies France), which is responsible for design, construction and maintenance of the nuclear medicine facility, began work in 2016. BIM (Building Information Modeling) was used from the design stage onwards to plan methods and monitor execution. Nuvia is providing support for the project by optimising the facilities and structurally designing the walls and floors.

A BUOYANT MARKET

The market for hospital infrastructure continues to grow at a steady pace of about 10% per year worldwide. Over the past 15 years, VINCI Construction acquired strong expertise in building more than 200 hospitals across France. This broad capability, together with the Group's adaptability, have now won the trust of a large number of customers in France and abroad.

A LARGE NUMBER OF PROJECTS IN METROPOLITAN FRANCE AND ELSEWHERE

Two major projects were carried out in 2016. In metropolitan France, work continued on the cardiac and pulmonary institute at the regional teaching hospital in Lille. It includes 34,000 m² of renovation and 40,000 m² of new construction. VINCI Construction also handed over the Koutio Médipôle hospital complex in New Caledonia, the archipelago's largest-ever public facility. In the United Kingdom, where VINCI Construction UK maintained its qualification in the ProCure22 health care framework, the VINCI Construction subsidiary began work to upgrade the Chase Farm Hospital in north London; the same company also won a £35 million contract to build a state-of-the-art hospital in Disbury near Manchester.

Meanwhile, in Poland, Warbud won a number of contracts to build various sections of the hospital in Sosnowiec and the independent Professor Bierkowski health centre in Poznan and to modernise the maternity and neonatal units of the Brodno hospital in Warsaw. Similarly, the Duchess Anna Mazowiecka Hospital extension and modernisation project in Warsaw was completed in 2016.

TRANSPORT INFRASTRUCTURE

BECAUSE PEOPLE AND GOODS ARE INCREASINGLY MOBILE

As a result of population growth and urbanisation, mobility requirements are expanding at a rapid pace. VINCI Construction designs and develops transport infrastructure ensuring the smooth and safe flow goods and people.

Douala, Cameroon

Dual bridge over the Wouri River

The dual rail and road bridge was keyed in January 2017. It was designed and built by a joint venture comprising Sogea-Satom (lead company), a subsidiary of VINCI Construction International Network, Sogea TPI, Dodin Campenon Bernard and Soletanche Bachy. Freyssinet provided prestressing and Sixense monitored the existing bridge and the foundations. The bridge will smooth traffic flows and facilitate rail transport when it opens in 2018.

ROADS

REUNION ISLAND

THE NEW COASTAL HIGHWAY IS MAKING PROGRESS

On Reunion Island, the New Coastal Highway is taking shape. The road, which includes France's longest offshore viaduct, will connect Reunion's two main cities, Saint Denis and La Possession, in 2020. The first of the 48 precast piers for the exceptional, 5,400 metre long viaduct was installed in the late summer of 2016 by the Zourite, a self-propelled megabarge specially designed for the project. When the new highway is completed, the thousands of people using it every day will no longer have to worry about the existing road being blocked by storms and landslides.
Meanwhile, the La Possession junction was handed over in 2016. Work on the embankments, designed to withstand a 100-year storm surge, continues.

DENMARK – GERMANY

THE WORLD'S LONGEST IMMERSED ROAD AND RAIL TUNNEL

Following the Great Belt (1988 – 1996) and the Øresund (1995 – 2000), VINCI Construction will be helping to build a third immersed tunnel between Denmark and the continent, the Femern Link, over the next several years. VINCI Construction Grands Projets, lead company in the first two tunnel works packages, is a member of the Femern Link Contractors joint venture entrusted by the Danish government with the design-build contract for the new structure, which will be the world's longest immersed road and rail tunnel. The joint venture will be in charge of the immersed tunnel works packages, the plant that will produce the precast tunnel segments, and the access ramps and bridges. The total value of the three contracts is €3.4 billion. The 18 km Femern Tunnel will connect the Danish Lolland-Falster and German Schleswig-Holstein regions, enabling cars to travel between the two countries in 10 minutes and trains in 7 minutes, instead of one hour by ferry or via a 160 km detour through the Danish Jutland region. When completed, the tunnel will support increased trade and tourism in Northern Europe. The undersea link between the two countries will eliminate the weather issues affecting ferry transport and the need to reserve ferry passage. The Femern Link is currently one of Europe's largest infrastructure projects.

ROAD INFRASTRUCTURE

ROADS CONNECTING PEOPLE

VINCI Construction is involved in a large number of road infrastructure projects. In France, it is helping to build the A9 motorway expansion, which opened on 10 March 2017; the A63 motorway widening project between Biarritz and Biriatou; and the extension of the A304 motorway at the French-Belgian border, which will be handed over in June 2017.

Outside France, the Group is helping to build the 27 km Transmission Gully motorway link north of Wellington, New Zealand. In Canada, VINCI Construction Terrassement has started work on the Regina Bypass in Saskatchewan. The project is being carried out under a PPP signed with VINCI Concessions. In the United States, RECo USA is providing 290,000 m² of Reinforced Earth® walls for the 33 km Interstate 4 project in Florida. In Benin, Sogea-Satom is carrying out road improvement and asphalting works on the Bétérou-Tchaourou highway.

Meanwhile, VINCI Construction Grands Projets, VINCI Construction Terrassement and Constructora Conconcreto are working to widen the Bogotá-Girardot motorway under a 30-year public private partnership in Colombia. Lastly, Menard continued work on motorways in Poland (S7) and the United States (I-295).

BRIDGES AND VIADUCTS

AMERICAS

LEWIS AND CLARK BRIDGE

The Lewis and Clark Bridge north of Louisville now connects Kentucky and Indiana. The 762-metre cable-stayed structure was built under a public-private partnership for a consortium led by VINCI Highways (VINCI Concessions). The project, carried out by VINCI Construction Grands Projets and VINCI Construction Terrassement, also includes a 512-metre twin-bore tunnel, 19 standard engineering structures and road network structures. Sixense will monitor the bridge in real time. The $780 million project won Envision™ Platinum certification for its involvement of local stakeholders. In Panama, meanwhile, VINCI Construction Grands Projets continues work on the Atlantic Bridge, a 1,050 metre, 2x2 lane concrete cable-stayed structure for which Freyssinet is handling design, supply and installation of prestressing and the stay cable system. Lastly, in the earthquake-prone Chiapas region of southeastern Mexico, Tierra Armada de Mexico is taking part in the construction of the abutment for a cable-stayed bridge.

TURKEY

THE RECORD-SETTING BRIDGE

North of Istanbul, the hybrid (cable-stayed and suspension) Yavuz Sultan Selim bridge has set a new world record, with a total length of 2,164 metres, 322 metre high towers and a 1,408-metre span. It carries eight motorway lanes (four on each side) and two railway lines between Europe and Asia. Freyssinet engineered, designed, supplied and installed the cables and dampers for the bridge and Sixense is responsible for real-time monitoring.

MARINE AND RIVER INFRASTRUCTURE

MOROCCO

CASABLANCA HAS A NEW FISHING PORT

CHALLENGE

To build a new fishing port in Casablanca and foster economic development in Morocco's largest city.

SOLUTION

The project, awarded by the Moroccan national port authority, was carried out by Dumez Maroc, a subsidiary of Sogea-Satom (VINCI Construction International Network). The new fishing port, commissioned in March 2017, is modern and functional. The work included construction of a 655-metre main breakwater, a 535-metre secondary breakwater, two quays, a 12-hectare platform, and an inclined plane, dredging of the channel and basins and installation of 240 metres of floating loading docks. The new fishing port will improve safety and working conditions for the city's fishermen. On the northeast coast of Morocco, Dumez Maroc also handed over the new Al Hoceima marina.

RAIL

GRAND PARIS

FACILITATING TRAVEL IN THE REGION

VINCI Construction is involved in several Grand Paris projects, which are geared to upgrading and extending the region's public transport system. As part of the northern extension of Line 12 of the Paris metro, Chantiers Modernes Construction (lead company) is working within a joint venture that also includes Dodin Campenon Bernard, Botte Fondations and Sogea TPI to build the Aimé Césaire and Mairie d'Aubervilliers metro stations. VINCI Construction is also working on the Line 4 extension towards Bagneux. Meanwhile, Soletanche Bachy is taking part in the extension of metro Line 14 towards northern Paris. A further project is being carried out on the western extension of the RER E regional express line (Eole): VINCI Construction France (lead company), VINCI Construction Grands Projets, Dodin Campenon Bernard and Soletanche Bachy France are building the new La Défense station under the CNIT. In addition, SNCF Réseau has selected a joint venture made up of lead company Chantiers Modernes Construction (VINCI Construction France), VINCI Construction Terrassement, Demathieu Bard and Matière to handle the earthworks, structures and communication restoration contract on the RER E extension project. Lastly, Soletanche Bachy won, as part of a joint venture, the first mega works package on the Grand Paris Express project, covering Line 15 South between Villejuif-Louis Aragon and Créteil-L'Échat.

METRO EXPANSIONS AROUND THE WORLD

CAIRO

The joint venture led by VINCI Construction Grands Projets carried out the civil engineering work for a new 17 km section of east-west Line 3 of the metro in the Egyptian capital between Imbaba and the airport. The extension will require a new tunnel under the Nile.

DOHA

One of the goals of the red line project running along the Gulf coast is to control water ingress during construction. In addition to the design-build construction of the twin-bore tunnel, the work includes design and construction of five underground stations, 35 emergency connections between the tubes and four emergency evacuation shafts.

HONG KONG

VINCI Construction Grands Projets is one of the linchpins of the new Shatin to Central Link metro, for which a 2,475-metre tunnel was built by blasting and a 1,400 twin bore tunnel was built by an earth pressure balanced shield tunnel boring machine with a diameter of 7.4 metres.

SINGAPORE

As part of the construction of the Thomson-East Coast Line, Bachy Soletanche Singapore is completing work on the diaphragm wall of the Upper Thomson station, a particularly complex project. In October 2016, it worked with the major projects department of Soletanche Bachy to complete work on the Gardens by the Bay station and associated tunnels. Identical work is proceeding with Bessac and Tanjong Rhu to build the Orchard stations.

AIRPORT INFRASTRUCTURE

CHILE

THE AIRPORT IN SANTIAGO DE CHILE EXPANDS

In Chile, VINCI Construction is applying the VINCI Group's integrated concession-construction model to the Arturo Merino Benítez International Airport extension project in Santiago de Chile.

The extension of Arturo Merino Benítez International Airport in Santiago de Chile is proceeding apace. The goal is to double the airport's capacity to 30 million passengers per year. In addition to construction of a new international terminal, the programme calls for renovation of the existing facility, which will become a domestic terminal. To successfully conduct this large multi-faceted €790 million project, the VINCI Group is applying its integrated concession-construction model. Relations with the various participants are made easier by use of BIM (Building Information Modeling), which gives all parties access to the same degree of information, and daily updates and pools models that will also be used in building maintenance and operation. In 2016, a large number of airport projects were developed throughout the world, including handover of passenger terminal extensions at the Phnom Penh and Siem Reap airports in Cambodia, the start of work on the third runway at the Hong Kong international airport and runway refurbishment at the Pointe Noire airport in the Republic of Congo.

+ AND IN ADDITION…

Port infrastructure around the world

VINCI Construction builds on its strength as both a specialist and a general contractor to make a name for itself in port construction and extension, reinforcing its positions around the world. In Kingston, Jamaica, shipping operator CMA CGM awarded a contract to VINCI Construction Grands Projets and VINCI Construction France (EMCC) to refurbish and reinforce 1,200 metres of quays in the port, which lies near the end of the Panama Canal, and to and upgrade them to seismic standards. In Colombia, as part of the SBCC joint venture, Soletanche Bachy Cimas, the Group's major projects division and Conconcreto are helping to modernise the western port of Buenaventura (SPIA container quay and Boscoal bulk carrier terminal). In Africa, work to consolidate the port of Cotonou, Benin and an unloading quay for Dangote in Douala, Cameroon was handed over. Lastly, on the island of Oléron, in France, VINCI Construction subsidiaries are joining forces to carry out a PPP project as part of the La Cotinière fishing port extension under a contract won at the end of 2016.

WATER INFRASTRUCTURE

BECAUSE ACCESS TO WATER IS ALL-IMPORTANT

Building on its expertise dating back more than 120 years, VINCI Construction has developed comprehensive capabilities covering the entire water cycle, including standout expertise in areas such as drinking water pumping and supply, wastewater treatment and discharge, rainwater management and dam design, construction and maintenance.

Assiut, Egypt

Filling the dam

Located on the Nile some 250 km north of Luxor, the new Assiut Barrage was filled in November 2016 following five years of work. It is designed to regulate the course of the Nile and provide irrigation and electricity generation. VINCI Construction Grands Projets is gradually restoring the course of the Nile after creating a temporary bypass during the works so as to build the new dam on dry land.

WATER SUPPLY AND NETWORKS

CÔTE D'IVOIRE, AFRICA

IMPROVING THE DISTRIBUTION NETWORK

CHALLENGE

To develop access to drinking water for people who are regularly confronted with water shortages due to lack of investments and infrastructure maintenance, and to improve the continuity and quality of the urban drinking water service.

SOLUTION

In April 2016, Sogea-Satom began work on a project designed to upgrade the drinking water network in Abobo, a municipality in the northern Abidjan area. The 54 km of pipelines are to be handed over in October 2017. Meanwhile, work to extend the drinking water network in southern Abidjan started in November 2016. It involves construction of 116 km of PVC pipelines. Financed by the French Development Agency as part of the "Debt Relief and Development Contract" programme, the work is scheduled to take 19 months to complete.

BURUNDI, AFRICA

SOLVING DRINKING WATER ACCESS ISSUES

Sogea-Satom has begun work on drinking water systems that will provide high-quality supply in three cities in northern Burundi, Ngozi, Kayanza and Muyinga. The project covers construction of water intake structures, a pumping station, distribution tanks, pipelines and drilling. The project has created 500 jobs.

PARIS NOTRE DAME, FRANCE

PIPELINE REPLACEMENT IN NARROW SPACES

Sogea Île-de-France Hydraulique refurbished 750 linear metres of difficult-to-access pipelines for the Eau de Paris water authority. The project called for close cooperation between the teams at the Fontainerie works centre (which specialises in drinking water supply systems) and those of Sogea Île-de-France Hydraulique's asbestos removal unit. The teams worked in three different environments and had to devise particularly resourceful technical and logistics solutions to remove the old pipelines and transport the new ones.

MARSEILLE, FRANCE

A LARGE RETENTION TANK

FACT

With the occurrence of particularly strong storms in the region, thousands of cubic metres of wastewater and rainwater runoff flow into the sea every year, which regularly leads to the closure of the Cortiou inlet. To avoid discharging these effluents to the environment and to back up the Géolide wastewater treatment plant, the decision was taken to build the Ganay retention basin.

COMMENT

The huge backup tank, budgeted at €43.7 million, is an impressively dimensioned cylinder with a diameter of 56 metres, built underground at a depth of 30 metres under the Ganay stadium, that can receive 50,000 m³ in one hour. Chantiers Modernes Sud and Campenon Bernard Sud-Est worked in a joint venture with Soletanche Bachy to design and build the tank. The synergies they developed enabled them to work under optimum safety conditions and to use the novel top-down construction method. The work will be completed at the end of 2017.

GLASGOW, SCOTLAND

SUCCESSFUL START OF THE DAISY TUNNEL BORING MACHINE

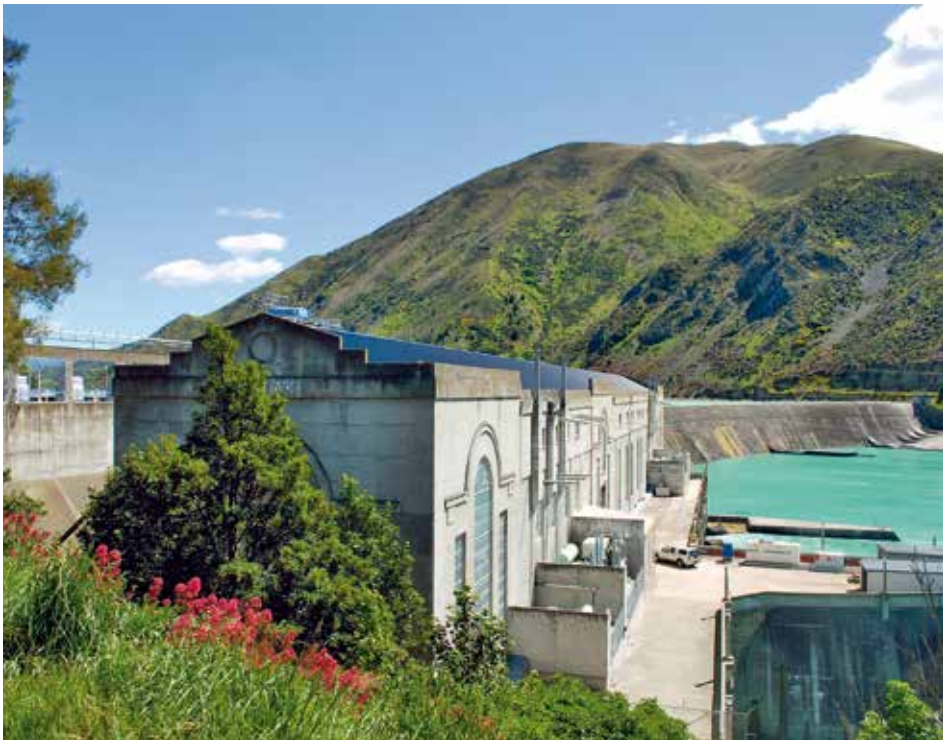
As part of the construction of the Shieldhall Tunnel in Glasgow, Scotland's largest wastewater storage tunnel, VINCI Construction Grands Projets began work under the city in July 2016. Daisy, the most recent member of its family of earth pressure balanced shield tunnel boring machines, began work by safely boring through former coal mines. The tunnel is being built for Scottish Water, which operates public water systems, and is designed to improve water quality and increase wastewater storage capacity in the city of Glasgow. It is also designed to forestall the risk of flooding and improve water quality in the Clyde River.

Farther south, operator Thames Water awarded the East works package of the Tideway sewer tunnel to a joint venture made up of VINCI Construction Grands Projets, Costain and Bachy Soletanche, a subsidiary of Soletanche Bachy in the United Kingdom.

DAMS

NEW ZEALAND

COMPLETION OF THE WAITAKI DAM REPAIR WORKS

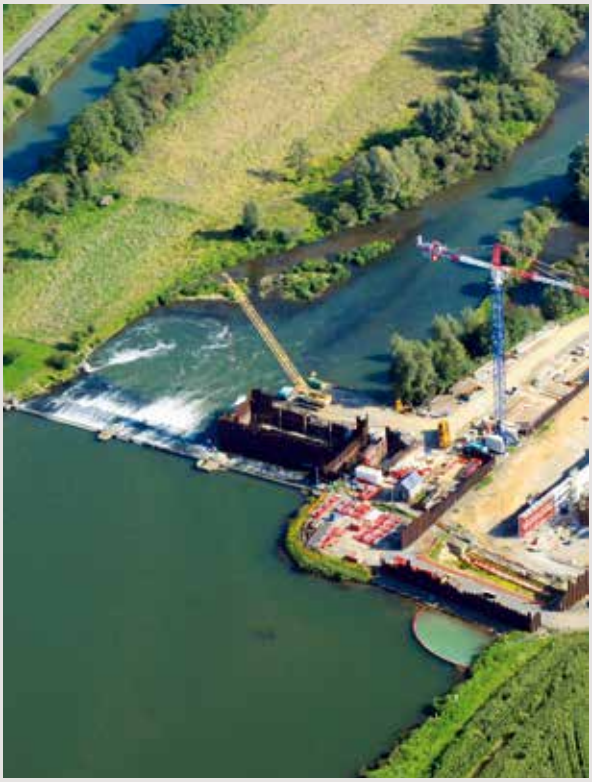


In May 2016, March Construction a subsidiary of Soletanche Bachy in New Zealand completed work to improve the drainage network at the Waitaki hydroelectric plant for the country's leading electricity producer, which operates the dam. The project consisted in refurbishing the 75 drains that remove underground water and in drilling 54 new drains with a maximum depth of 34 metres. The work was carried out under particularly difficult working conditions from two inside tunnels and an upstream outside tunnel, all of which are narrow.

AISNE AND MEUSE RIVERS, FRANCE

MODERNISATION AND AUTOMATION OF 31 DAMS

Built more than a century and a half ago, the needle dams on the Aisne and Meuse Rivers are difficult and dangerous for Voie Navigable de France (VNF) employees to operate. The decision was therefore taken to rebuild and upgrade them under a large-scale automation plan. To achieve this, the first public private partnership covering river works was signed in 2013. The PPP has a value of €312 million and covers a period of 30 years, including five years of works. It was signed with special purpose vehicle Bameo, jointly held by VINCI Concessions (50%), investment fund Meridiam and Shema (EDF Group). In 2016, Bameo signed a first operation contract with the Corebam joint venture made up of four VINCI Construction France subsidiaries. It covers replacement of 29 manually operated dams with modern, automated dams and the modification of two further dams by 2020. Located on the Aisne and Meuse Rivers, they will be part of a comprehensive automated operating system to be implemented by VINCI Energies. The technique, used for the first time in France, will consist in fitting the dams with water-filled inflatable barriers that can be filled and emptied automatically according to water level measurements and thus regulate the water line for navigation.



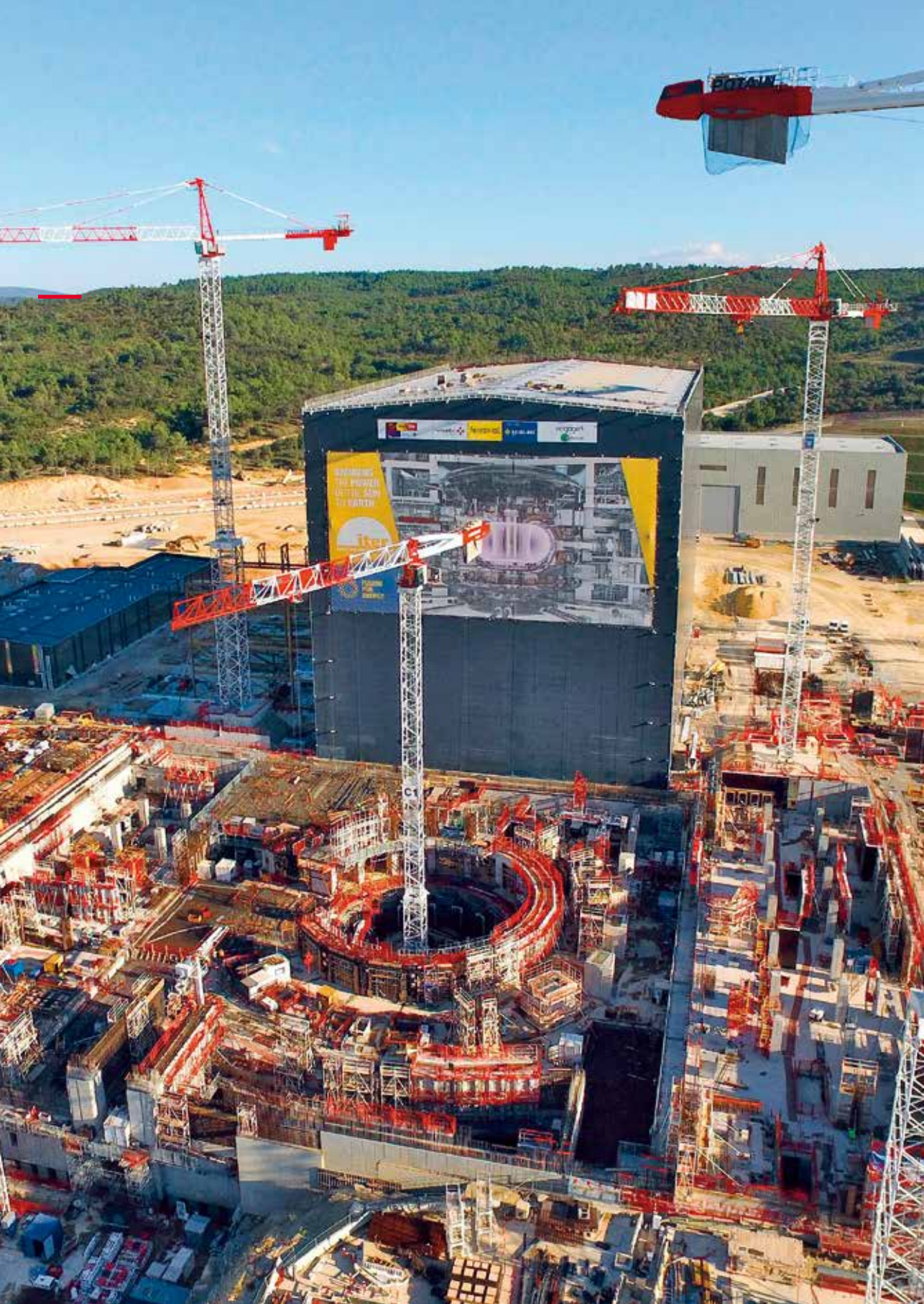
ADVANTAGES

- ▸ A series of sustainable development projects
- ▸ A win-win approach under a 30-year PPP
- ▸ Signature of a contract between Bameo and the Semao company, held by Shema (60%) and VINCI Concessions (40%), covering operation and maintenance of the dam network under a contract running until 2043.

TESTIMONIAL

MARC PAPINUTTI,
Managing Director, Voies Navigables de France

“ **Voies Navigables de France (VNF) opted for a public private partnership contract** because it will speed up the replacement of the 29 manually operated dams and optimise costs. This is a win-win proposition! The success of the project was ensured when the contract was structured with a rigorous methodology. We formed a straightforward, positive relationship with the programme manager (Bameo) and the VINCI Construction France subsidiaries.”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RENEWABLE AND NUCLEAR ENERGY

BECAUSE ENERGY MUST BE SUSTAINABLE

To meet strong demand for energy around the world and to support the energy transition with an energy mix that emits less CO_2, VINCI Construction offers compelling nuclear and renewable energy solutions.

Cadarache, France

ITER project

The construction of the experimental ITER nuclear fusion reactor is one of the world's largest nuclear research projects. The joint venture led by VINCI (58.3% with VINCI Construction Grands Projets, VINCI Construction France and Dodin Campenon Bernard) raised the metal roof frame for the Assembly Hall, in witch the future Tokamak reactor will be assembled. The steel roof frame, which was pre-assembled on the ground, weighs 800 tonnes.

NUCLEAR

Hinkley Point, United Kingdom: construction of two EPR nuclear reactors.

HINKLEY POINT, UNITED KINGDOM

GREEN LIGHT FOR TWO EPR REACTORS

KEY FIGURES

- Project cost: **€22 billion**
- Commissioning of the first reactor: **2025**
- Duration of construction: **6 years** (2019-2025)
- Life of the EPRs: **60 years**
- Share of electricity generation supplied by Hinkley Point: **7%**

DEMAND

To ensure energy independence, the British government decided to build two 1650 MW EPR (pressurised water) type nuclear reactors at Hinkley Point near Bristol in southwest England. It awarded the contract to EDF, which will work with China General Nuclear Power Corporation and other partners.

RESPONSE

Hinkley Point is the first nuclear power plant to be built in the United Kingdom in two decades. It will use safe, reliable and carbon-free technologies. Nuvia UK will notably work with Rolls Royce to supply turnkey subassemblies. The contract was awarded based on Nuvia's ability to comprehensively handle EPC (engineering, procurement, construction) and New Build (civil engineering, design and construction of nuclear facilities) projects and to deliver two waste treatment systems – primary water treatment (PWT) and wastewater treatment (WWT).

CHERNOBYL, UKRAINE

A NEW SAFE CONFINEMENT FOR THE DAMAGED REACTOR

CHALLENGE

To ensure safety at the Chernobyl site for the coming 100 years and to enable work to start on dismantling reactor 4, which exploded in April 1986.

SOLUTION

On 29 November 2016, Ukrainian President Petro Poroshenko and VINCI Chairman and CEO Xavier Huillard were present as the new confinement was slid over the original sarcophagus built in haste after the nuclear reactor exploded on 4 April 1986. The confinement literally encloses the damaged reactor and the original sarcophagus, which was subject to steady cracking. Designed and built by Bouygues and VINCI, the NSC is the largest mobile metal arch ever constructed.

The dimensions are mind-boggling: the dome is 108 metres high and 162 metres long and its metal frame weighs 36,000 tonnes, of which 25,000 tonnes of steel. Financed by 27 states, the European Union and the EBRD (European Bank for Reconstruction and Development), the project ultimately cost more than €1.5 billion and employed more than 2,000 people within the Novarka joint venture led by VINCI Construction Grands Projets. The outsized, technically extremely complex project is one-of-a-kind. Initiated in 2010, the project involved more than 17 million hours of construction work. The confinement is designed to last 100 years and to withstand temperatures of between -43°C and +45°C, a Class 3 tornado and an earthquake with a maximum intensity of 6 on the 12-degree Mercalli scale.

ELECTRICITY

PARIS CHARLES DE GAULLE AIRPORT, FRANCE

DRILLING TWO PARALLEL PASSAGES UNDER THE RUNWAYS

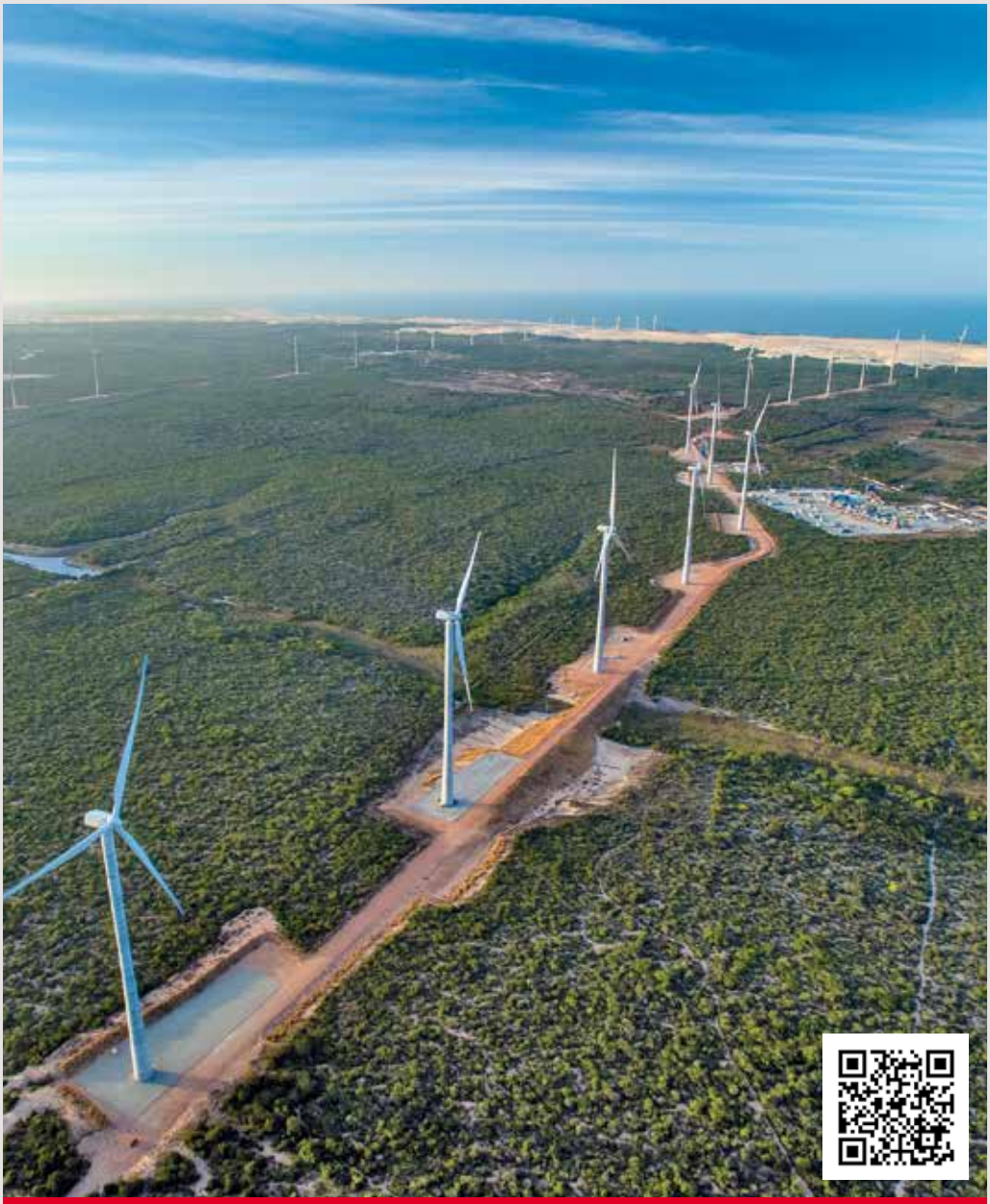
In June 2016, HDI (Entrepose Group) completed drilling operations for transmission system operator RTE to bring underground electricity lines across the airport runways. The seven-month project involved installation of underground power lines at a depth of about 35 metres. The horizontal directional drilling technique was used to create the two passages with a unit length of 1,480 metres. The method made it possible to cross the airport complex underground without disrupting operations. These are the two longest passages ever drilled in France.

RENEWABLE ENERGY

ROMANCHE GAVET, FRANCE

A POWER PLANT ENCASED IN THE MOUNTAIN

France's largest hydroelectric project is the replacement of six power plants with an underground hydroelectric facility and an upstream dam at Romanche Gavet in the northern Alps of the southeastern Isère region. The project, carried out for EDF, is designed to optimise the hydroelectric potential of the Romanche River and supply 250,000 homes. As part of this work, Dodin Campenon Bernard teams completed the excavation of two caverns (for the plant and the transformers) in 2016, making way for civil engineering work, and continued construction of the tunnel using two TBMs. Meanwhile, the VINCI Construction France teams began filling the Gavet dam in September 2015.



BRAZIL

WIND ENERGY INNOVATION

Freyssinet carried out the last innovative lifting operations at the Trairi II wind energy complex in the State of Ceará in northeastern Brazil. The company designed and built the foundations and the 36 towers made of prestressed precast concrete with a height of 120 metres. The towers were erected with a tool specially designed for the operation called Eolift®. The method, which does not require a crane, is unique and is based on a hydraulic lifting technique long employed in civil engineering. The wind turbines will capture the highest, most powerful winds to significantly increase the amount of energy generated.

RENEWABLE ENERGY

TREMBLAY EN FRANCE, FRANCE

START OF WORK TO CLOSE OUTDATED SHAFTS

FACT

Drilled in 1983, the initial shafts, designed to supply the heating network for 30 years, have reached the end of their service life.

COMMENT

Fed by a geothermal doublet using the Dogger limestone aquifer at a depth of about 2,000 metres and a water temperature ranging from 55°C to 80°C, the heating network needed a new heat doublet (production and injection shafts) to replace the existing outdated system. Entrepose Drilling drilled the new doublet to a depth of 2,000 metres to tap the hot water layer in 2015. In parallel with the commissioning of the new shaft, work was started in 2016 to permanently close the shafts sunk in 1983. The project was awarded to Entrepose Drilling. Its teams began work at the site in October 2016. The work, scheduled to take between three and four months to complete, will close off the facility in accordance with best practices applying to wells and shafts.

BACKGROUND

Tremblay en France opted to continue geothermal operations for a period of 30 years. The natural energy source, which is both cost-effective and sustainable, will generate space and hot water heating for some 4,300 housing units in the city centre and several public facilities. A number of new buildings are to be connected to the geothermal system.

OIL AND GAS
BECAUSE FACILITIES MUST BE DURABLE AND SAFE

VINCI Construction offers a wide range of capabilities to help its its oil and gas customers design and build production, transport and storage infrastructure. The Group's expertise, backed by its outstanding experience, is widely respected in the market.

Albania-Greece

TransAdriatic gas pipeline

Entrepose subsidiary Spiecapag has undertaken initial works in Greece and Albania to lay gas pipeline sections as part of the construction of the TransAdriatic Pipeline (TAP). The infrastructure will ultimately bring gas from the Shah Deniz II gas field in Azerbaijan to Europe.

OIL INFRASTRUCTURE

PORT OF DOS BOCAS, MEXICO

OIL TANKS

FACT

Menard's Mexican teams took part in an oil tank project in the port of Dos Bocas, Tabasco State, in May 2016.

COMMENT

The project follows the energy reform law enacted in Mexico in 2013, which allows foreign investment in the oil sector. Against that backdrop, the Anglo-Swiss Glencore company awarded a contract to Menard to design and build the foundations for its four 45-metre diameter tanks.

GAS INFRASTRUCTURE

YAMAL, SIBERIA

CONSTRUCTION OF LNG TANKS IN AN EXTREME ENVIRONMENT CONTINUES

Entrepose Contracting and VINCI Construction Grands Projets teams completed civil engineering works for the construction of four double-walled cryogenic tanks designed to store liquefied natural gas on the Yamal Peninsula in the far north of Russia, one of the world's coldest regions, 600 km from the Arctic Circle. The electromechanical work continues. The hard surfaces for tanks 1 and 2, each of which weighs more than 700 tonnes, and the pipe racks were successfully installed just before Christmas in temperatures below -40°C. The project is set for completion in 2017, ahead of the contractual delivery date.

WHEATSTONE, AUSTRALIA

THE TANKS ARE READY FOR COMMISSIONING

Located in the county of Ashburton in western Australia, the two double-walled LNG (liquid natural gas) storage tanks and the two condensate storage tanks built by the joint venture made up of Entrepose Contracting, VINCI Construction Grands Projets and Australia's Thiess company were completed and accepted by the client with no snag list items in October 2016. Chevron now aims to commission the facility in 2017. The project, carried out in extreme conditions 1,500 km from the nearest urban centre, thus ended in November 2016 after more than four million hours of works.

UNDERWATER AND ONSHORE PIPELINES

REPUBLIC OF CONGO, AFRICA

SUCCESSFUL PIPELINE LAYING

Initiated in 2013, the offshore Moho Nord oil field exploration-production project operated by Total is set to be commissioned in 2017.

Located 75 km off the coast of the Republic of Congo at Pointe Noire, it is the country's largest-ever oil project. Once in operation, it will produce 140,000 barrels of oil per day and raise national production by 40%. As part of the project, Entrepose, working for Technip UK Congo Branch, worked within the Djéno oil terminal at Pointe Noire to lay a 16-inch pipeline over a distance of 3,000 metres.

UNDERGROUND STORAGE

GERMANY

DEEP STORAGE OF HELIUM

CHALLENGE

To build the world's first underground helium storage facility and facilitate supply to customers of Air Liquide, which initiated the innovation.

SOLUTION

With the inauguration of the first commercial underground pure helium storage site in September 2016, Air Liquide provided a solution to the main issue facing the market for the noble gas: how to rapidly respond to customer demand. The challenge was to guarantee delivery times to customer sites, avoid losses due to heating of helium during transport and secure the supply of helium via an efficient logistics system. The challenge has now been met with the new storage site in Gronau-Epe, North Rhine-Westphalia, some 120 km from Düsseldorf. Helium is stored in large quantities at a depth of 1,300 metres in a salt cavern and the natural brine is used to adjust the storage volume. For UGS GmbH, a subsidiary of Geostock Holding (Entrepose Group), the adventure took place between November 2015 and July 2016. The challenge was to design a new specific helium storage shaft. The result is commensurate with the goal. Air Liquide, world leader in helium since its acquisition of Airgas, has now acquired a more reliable and more predictable supply system.

Underground helium storage facility, Germany.

AN UNDERGROUND STORAGE PROJECT IN MEXICO

▶ In the State of Veracruz, in Shalapa, Mexico, Entrepose Contracting is involved in building the turnkey surface facilities for an underground liquefied petroleum gas (LPG) storage facility in a salt cavern. Its specialist subsidiary Geostock will operate the facility. The project gives Entrepose an opportunity to expand its operations in Mexico, where it recently opened an office in Mexico City.

ENVIRONMENT
BECAUSE THE PLANET MUST REMAIN CLEAN

VINCI Construction offers turnkey solutions for protecting the environment: design-build construction of water, waste and flue gas treatment facilities that combine civil and process engineering, soil remediation expertise, asbestos removal and polluted site deconstruction.

Verdun, France

Pyrotechnic cleanup

To prepare the centennial commemoration of the battle of Verdun, VINCI Construction Terrassement's subsidiary Navarra TS carried out a large pyrotechnic cleanup of a number of areas in the forts at Douaumont and Vaux. The project, which called for particular care, made it possible to find and secure large amounts of ordnance left by the battle.

WASTE AND FLUE GAS TREATMENT

CHARLEROI, BELGIUM

MODERNISATION OF AN ENERGY FROM WASTE PLANT

CHALLENGE

To upgrade the facility and enable it to treat large volumes of waste and use the energy produced.

SOLUTION

After 30 years in operation, one of the incineration lines at the Charleroi energy from waste plant had reached the end of its life. A new line needed to be designed and built to replace it, with a capacity of 46,500 tonnes/year of household waste and 8,500 tonnes/year of industrial waste. The process will generate electricity and heating. The notification to proceed was issued on 20 December 2016. The work, which will take 37 months to complete, will modernise the site with a new-generation stepped grid for optimum combustion, a three-pass vertical boiler to save energy in producing reliable steam (23.65 tonnes/hour at 41.5 bar) and an innovative BICAR dry flue gas treatment unit.

ADVANTAGES

- 46,500 tonnes/year household waste treated
- 8,500 tonnes/year industrial waste treated
- Electricity and heat generated from waste
- Comprehensive design-build construction of the new line: incinerator/boiler and flue gas treatment
- €61 million, of which €27 million for VINCI Environnement

UNITED KINGDOM

CERC ENERGY RECOVERY CENTRE COMMISSIONED

FACT

VINCI Environnement, working with VINCI Construction UK, completed construction of the Cornwall Energy Recovery Centre (CERC), where household waste generated in Cornwall is treated.

COMMENT

The commissioning of this waste from energy centre completed the project, which involved 1.5 million hours worked without accident. The centre is designed to produce energy from household waste generated in the county of Cornwall and thereby reduce the amount of waste sent to landfill. It will treat 240,000 tonnes of residual non-recyclable waste per year using environmentally innovative processes. The facility will generate 184,000 MWh of electricity per year to supply 21,000 households as well as heating for nearby industrial facilities.

WATER TREATMENT

EUROPE – AFRICA – GUADELOUPE

CONSTRUCTION AND RENOVATION OF WASTE WATER TREATMENT PLANTS

CHALLENGE

To expand access to drinking water and help ensure the health of local populations.

SOLUTION

Sogea-Satom, which has steadily developed widely respected expertise in treatment plants, has just won two new hydraulic engineering contracts. The first covers construction of the Kigoro drinking water plant in Kenya. The plant, with a capacity of 142,500 m³ per day, will supply the capital, Nairobi, with high-quality drinking water.

The second covers construction of West Africa's largest drinking water plant in Kabala, Mali. The plant is designed to supply the Greater Bamako area with drinking water and will have a capacity of 144,000 m³ per day. In 2016, Sogea-Satom also handed over the Songon plant in Côte d'Ivoire. Elsewhere, teams at SMP CZ, a subsidiary of VINCI Construction International Network, are continuing renovation and extension work at the Prague wastewater treatment plant in the Czech Republic. In Guadeloupe, VINCI Construction Dom-Tom handed over the Goyave drinking water plant, which was commissioned in February 2016.

SOIL REMEDIATION

REMEDIATION MOMENTUM

In 2016, Menard carried out Poland's first brownfield site remediation project in Warsaw. The work covered remediation of 9,428 m² of soils to a depth of 4.2 metres below the water table and removal and decontamination of 50,647 tonnes of materials. The ground was contaminated with chemicals and toxic VOCs including chlorobenzenes, chloronaphthalenes, chlorophenols, trichloroethanes, polycyclic aromatic hydrocarbons (PAHs), phenols, cresols, oil, petrol and heavy metals. Similarly, VINCI Construction Terrassement distinguished itself by completing a useful and complex soil remediation project in Saint Denis near Paris as part of the Grand Paris Universeine development project, in which a new neighbourhood is being built on an industrial brownfield site.

DECONSTRUCTION

CONDÉ-SUR-NOIREAU, FRANCE

DECONSTRUCTION OF A FORMER FACTORY

Working for Honeywell, Neom, a subsidiary of VINCI Construction France specialising in deconstruction and asbestos removal, completed the deconstruction of the former automotive brake pad manufacturing site in the Calvados region in the summer of 2016. The works covered asbestos dust removal, asbestos removal, cleaning and demolition of the former factory. The project called for tight coordination between the asbestos removal and deconstruction works, innovative methods (3D modelling of the areas to be treated) and precise phasing. When the project was completed, no buildings were left at the site. Since then another provider has begun work to demolish the slab and remediate the soil.

MINING

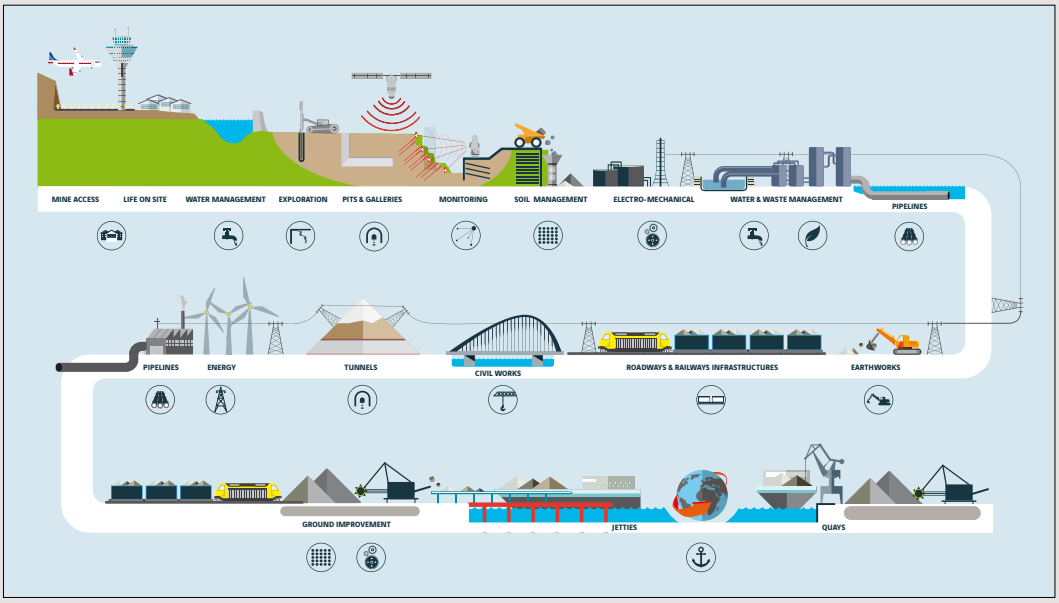
BECAUSE ACCESS TO NEW RESOURCES IS VITALLY IMPORTANT

VINCI Construction designs and builds key infrastructure to support site operation in the mining sector, including tunnels, roads, operating facilities and special equipment.

Escondida, Chile

Completion of the mine project

Escondida, located in the Atacama desert on the northern coast of Chile, is the world's largest open-pit copper mine. A desalination plant built to serve it required the construction of water intake and discharge systems as well as three shafts connected to tunnels. The work was carried out by joint ventures bringing together Soletanche Bachy Chile, Bessac, Geocean (Entrepose) and Chilean partners.



VINCI Construction operates throughout the entire mining cycle. It builds the infrastructure needed to operate both underground and open-pit mines. Its services range from tunnel drilling to development of operational sites, construction of special facilities and road construction.

REPUBLIC OF GUINEA, AFRICA

HANDOVER OF A ROAD FOR THE SIMANDOU MINING PROJECT

FACT

Built in conjunction with the iron ore mining operation at Simandou in the forests of Guinea 800 km from Conakry, the road between two large prefectures in the region, Beyla and N'Zérékoré, was handed over in 2016.

COMMENT

The refurbishment of the 128 km road, which was previously virtually impassable, was financed by Anglo-Australian mining group Rio Tinto. Built by Sogea-Satom teams, the project involved a large amount of excavation (850,000 m³) and backfill (350,000 m³) and was subject to very high environmental and labour standards required by the IFC (World Bank), the Rio Tinto partner. The Simandou project is the largest combined mining operation and rail, port and auxiliaries project carried out in Africa to date.

LESOTHO, AFRICA

LIQHOBONG MINING COMPLEX

Terre Armée subsidiary Reinforced Earth South Africa helped develop the Liqhobong mining complex at an altitude of 2,330 metres in the Maluti mountain range. The company won the contract to design the site's primary crushing plant, supply construction drawings and equipment and provide technical assistance during construction. In addition, it won the contract to build 800 m² of Reinforced Earth® walls and 500 m² of retaining walls for the main treatment plant.

NEW CALEDONIA

TAILINGS PILE

In new Caledonia, VINCI Construction Dom-Tom is continuing work for Vale NC to build a tailings pile that will receive mining waste from the open-pit Goro cobalt and nickel mine.

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