BUILDING THE FUTURE TODAY

2017 ACTIVITY REPORT

VINCI CONSTRUCTION

CONTENTS

IN FUTURE THE WORLD WILL BE…

MORE POPULOUS + URBAN

In 2050, the world population is expected to reach 10 billion, with two-thirds of that number living in urban areas*. ▼

* Source: UN

Malaysia In Kuala Lumpur, a city with a fast-growing population and a booming economy, VINCI Construction Grands Projets is building the TA 3&4 towers under an ECI* Phase 1 (Design) contract. The respectively 63 and 67 storey buildings will offer 200,000 sq. metres of hotel, residential and apartment space. This further success for the Group in the Malaysian capital follows the 2017 handover of the two Berjaya Central Park towers, which accommodate office space and the Ritz-Carlton Hotel, and the 2013 handover of the Berjaya Times Square shopping mall.

* *Early Contractor Involvement*

MORE MOBILE + OPEN

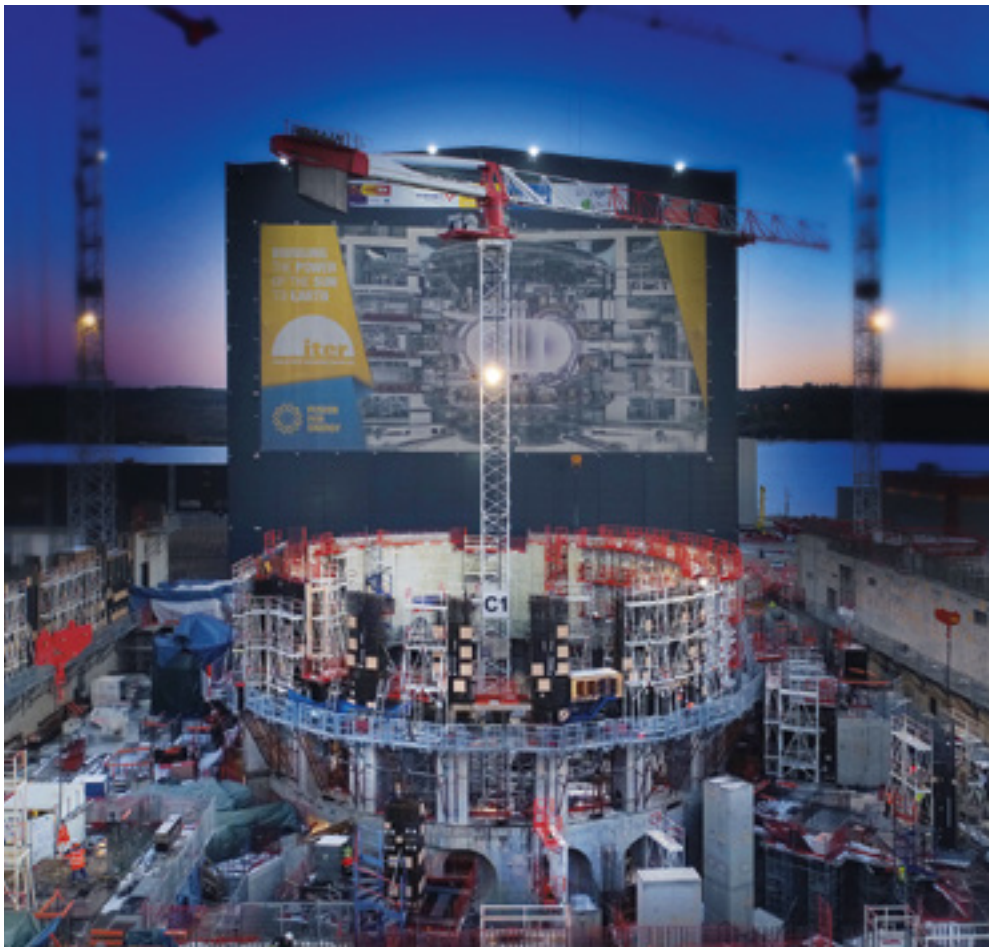
Motorised mobility in cities is set to double by 2050*. ▼

* Source: ITF Transport Outlook 2017

Cameroon In Douala, the second double rail and road bridge over the Wouri River was opened in September 2017. The 760-metre structure will improve automobile traffic flow and facilitate rail transport within the economic capital of Cameroon. It was designed and built by a joint venture made up of Sogea-Satom, Soletanche Bachy, Sogea TPI and Dodin Campenon Bernard, with Freyssinet installing the prestressing and Sixense monitoring the existing bridge.

WARMER + MORE ENERGY INTENSIVE

By the end of the century, the average global temperature increase from pre-industrial levels will be at least 3°C*. ▼



* Source: United Nations Environment Programme (UNEP)

France The experimental ITER reactor is being built near Cadarache to demonstrate, by 2050, the scientific and technical feasibility of nuclear fusion as a safe, inexhaustible and environmentally friendly energy source. A consortium led by VINCI Construction (VINCI Construction Grands Projets, VINCI Construction France, Dodin Campenon Bernard), together with Freyssinet and Nuvia, is in charge of the construction of the reactor building, as well as the design and construction of nine ancillary facilities.

GREENER + CLEANER

Between 1990 and 2014, global CO_2 emissions increased by more than 58%*. ▼

* Total excl. LULUCF. Source: World Bank, 2015

France In Carquefou, the new BEPOS* certified high school opened in September 2017. It is the region's first school to be entirely heated with renewable energies. Built on a general contracting basis by Sogea Atlantique BTP, a subsidiary of VINCI Construction France, the futuristic, high environmental quality building produces more heat than it consumes, thanks to its photovoltaic panels. This is an exemplary energy transition project.

* *Net positive energy building*

MORE WATER-EFFICIENT + HEALTHIER

WHO and Unicef have set a target of achieving universal and equitable access to safe and affordable drinking water and sanitation for all* by 2030. ▼

* Source: WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP)

Cambodia In Phnom Penh, VINCI Construction Grands Projets began renovating the Chamkarmon water treatment plant in the city centre. Similarly, in Siem Reap, where the Angkor temples are located, VINCI Construction Grands Projets began work on a design-build wastewater treatment plant. The two projects are designed to increase water production capacity and provide the local population with a secure water supply.

VINCI CONSTRUCTION IS BUILDING THE FUTURE TODAY

VINCI Construction, a global player and European leader, operates on five continents and has more than 70,000 employees and 700 companies. Firmly rooted in its host geographies, it designs and builds structures and infrastructure that address the major issues facing society – global warming, population growth, burgeoning urbanisation and increasing mobility.

Our integrated design-build business model enables us to operate across the entire project life cycle (financing, design, construction and maintenance) in eight business areas: buildings, functional facilities, transport infrastructure, water infrastructure, renewable and nuclear energies, environment, oil and gas and mining.

The success of our projects rests on attentiveness, respect, social and environmental engagement and strong stakeholder partnership and trust. At VINCI Construction we strive to be a benchmark in construction and the partner of choice of our customers in a changing world – because the future is being built today.

€14,388m
REVENUE*

€351m
OPERATING INCOME FROM ORDINARY ACTIVITIES*

OVER 27,000
PROJECTS

** Management figures*

"GREATER AGILITY, TO BUILD THE FUTURE"

INTERVIEW WITH **JÉRÔME STUBLER**, Chairman of VINCI Construction

_How would you describe VINCI Construction's performance in 2017?

J.S.: With the market recovering both inside and outside France, VINCI Construction strengthened in 2017. Our revenue rose to €14.38 billion and over the same period our income improved by more than 20%. The order book is up nearly €1.1 billion in France, with the Grand Paris Express projects, and also outside metropolitan France, with activity growth in Oceania, Europe and South America. We won several ECI (Early Contractor Involvement) projects in France and abroad, offering our clients a "win-win contract" giving them the benefit of our design-build business model. In 2017 we also made progress on safety. We launched a new "Managing with Safety Focus" programme, with the clear goal of seeing to it that safety is an integral part of everything we do.

_What were the year's main achievements?

J.S.: In 2017 we completed several projects that are milestones in the history of the company. To mention two among many, the South Europe Atlantic high-speed line between Tours and Bordeaux was handed over ahead of schedule, and the arch – the new confinement – that will support dismantling was handed over in Chernobyl. 2017 was also a year of external growth with the acquisition of the Seymour Whyte company in Australia and stakes in companies with strong specialist civil engineering and earthworks expertise in Canada, Switzerland and France.

_Are the major challenges of climate change and urbanisation helping to drive growth in the construction market?

J.S.: The world construction market is growing at a good rate of some 4%, first because the demand for infrastructure and buildings is increasing and second because climate challenges are accelerating obsolescence. In less than a decade, our buildings have been revolutionised. They are now becoming what amounts to energy hubs producing their own energy and consuming less energy for heating, air conditioning and lighting. Transport infrastructure is also modernising. The number of metro systems is increasing worldwide and metro systems are operating at increased speed and becoming more interconnected and more digital. The Grand Paris Express, currently under construction, is a case in point. Renewable energies are also a source of growth and innovation. One example is the pumped storage hydroelectric plant project that we recently won in Morocco and another, looking farther ahead, is the planned construction of the ITER reactor, which will draw energy from hydrogen fusion. •/••


"We are constantly honing
our ability to manage
major projects, transform
complexity into simple
solutions and work on
exceptional operations."

"At a time when the recovery appears to be taking hold, we are stronger, more attractive and increasingly innovative."

./..

_Digital and new technologies are causing an upheaval in many industries. Is the same thing happening in the construction sector?

J.S.: VINCI Construction's development rests on two major activities: we design and we build. The combination of digital and new data acquisition technologies is positively disrupting our design methods. It has speeded up the design process and made it more precise, which minimises the risk of error and re-working and streamlines construction methods. BIM (Building Information Modeling) is becoming the shared design and construction language of our projects. Construction is a very concrete, very physical activity and we have steadily optimised our methods. In our business activity, change occurs step by step, project by project. In terms of research and development, every project is an opportunity for improvement and innovation. We invest in boosting productivity by designing new tools such as Soletanche Bachy's Hydrofraise® with grippers, using robots in asbestos removal projects and working on more resilient tunnel boring machines to work in complex and changing terrain, to give only a few examples.

_What is the outlook for VINCI Construction?

J.S.: With our order book up 6% in one year to €16.9 billion at the end of 2017, we are off to a good start in 2018 and moving into a further growth phase. We will further consolidate our operations in France and in Oil & Gas and continue to expand internationally. We will be launching new solutions and services, diversifying our Primméa programme, which provides high-quality affordable housing at prices 20% below market, offering new solutions designed to increase efficiency in hospitals, developing a range of ecological engineering solutions with Equo Vivo and broadening our range of wood structure buildings with Arbonis. Our growth will build on our fundamentals – excellence in production and safety, profit culture and focus on the public interest. ■

AGILITY IN BUILDING THE FUTURE

As the undisputed benchmark in construction, VINCI Construction builds on its strategic fundamentals and corporate culture to proactively and boldly address the changes taking the world into the future.

2017 AS SEEN BY THE MANAGEMENT TEAM

"We are, above all, a design-build company. We must cultivate agility to meet requirements that are changing faster as time goes on."

JÉRÔME STUBLER,
Chairman, VINCI Construction

"We bring our passion for our work to our customers' projects and marshal our experience, creativity and attentiveness to meet their needs."

HUGUES FOURMENTRAUX,
Chairman,
VINCI Construction France

"Transmission is a key part of our culture. It helps us control project risks and underpins our productivity and profitability."

ALAIN BONNOT,
Chairman,
VINCI Construction Grands Projets

"The strong international network of subsidiaries and expanded range of solutions and services that have consolidated our leadership enable us to take advantage of many opportunities for growth."

MANUEL PELTIER,
Chairman,
Soletanche Freyssinet

"Again this year, our customers' trust, our widely respected expertise and our corporate culture enabled us to tackle exciting challenges in several countries."

PATRICK KADRI,
Chief Executive Officer,
VINCI Construction Grands Projets
(from 1 March 2018)

"The exceptional personal commitment of our people to strengthen our model based on local companies operating as a network makes us confident that VINCI Construction will continue to expand internationally."

GILLES GODARD,
Chairman,
VINCI Construction International Network

"Entrepose uses its wide reaching portfolio of expertise and the complementarity of its business lines as an essential asset in a fast-changing market."

BENOÎT LECINQ,
Chairman,
Entrepose

"We set out sights high; our goal of expanding in areas that set us apart and serve the public interest unifies VINCI Construction."

JEAN-SERGE BOISSAVIT,
Business Development Director,
VINCI Construction

"We continue to support the launch of new commercial offers as part of our determined effort to help address the major issues facing the world by providing innovative solutions."

MANUEL SAEZ-PRIETO,
Communications Director,
VINCI Construction

"In 2017 we focused on making our information systems more agile and efficient. Our results are commensurate with our goals."

PHILIPPE VENAMBRE,
Information Systems Director,
VINCI Construction

"With our HR 2020 plan, we can support and promote our talent much more effectively."

HERVÉ MELLER,
Human Resources Director,
VINCI Construction

"The convergence and modernisation of our financial information systems is proceeding apace."

YANN GROLIMUND,
Chief Administrative and Financial Officer, VINCI Construction

"Engineering and innovation are crucial success factors for us. We place strong emphasis on them."

CHLOÉ CLAIR,
Engineering Director,
VINCI Construction

"We have made substantial progress in establishing a safety culture to help us pursue our zero accidents goal."

JEAN-PHILIPPE BRÉOT,
Health and Safety Director,
VINCI Construction

OUR ORGANISATIONAL STRUCTURE BASED ON THREE COMPLEMENTARY PILLARS

A NETWORK OF LOCAL SUBSIDIARIES

Operating close to 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 and operating in an area 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.

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 and Seymour Whyte (Oceania)

€8,407m
revenue*

38,308
employees

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.

MAIN COMPANIES:

VINCI Construction Grands Projets

VINCI Construction Terrassement

Dodin Campenon Bernard

€1,969m
revenue*

6,883
employees

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.

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

€4,012m
revenue*

24,834
employees

** Management figures*

OUR EIGHT BUSINESS AREAS

BUILDINGS
Improving the living environment
Residential and office space, hotels.

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

MINING
Providing access to new resources
Roads, tunnels, drilling, soil investigation, cavities.

ENVIRONMENT
Contributing to a cleaner planet
Water treatment, waste recycling, soil remediation.

TRANSPORT INFRASTRUCTURE
Making the world more mobile
Roads, bridges, viaducts, marine and river infrastructure, railway and airport infrastructure.

RENEWABLE AND NUCLEAR ENERGY
Fostering access to safer, more sustainable energy
Nuclear, wind, hydroelectric, geothermal.

WATER INFRASTRUCTURE
Making the most of water resources
Dams, canals, locks, pipelines, wells.

OIL AND GAS
Providing safe and durable infrastructure
Oil drilling, oil pipelines, gas pipelines, jetties, storage, processes.

"As a design-build company, we offer a comprehensive, integrated range of solutions and services to help our customers optimise their projects."

OUR ECONOMIC PERFORMANCE

UNIQUE COMPANY

€13,960m
REVENUE*

GLOBAL PLAYER
AND EUROPEAN LEADER

€344m
OPERATING INCOME FROM
ORDINARY ACTIVITIES*

€16.9bn
ORDER BOOK*
(UP 6%), ACCOUNTING
FOR 14.5 MONTHS OF ACTIVITY

** IFRS 2017 data*

WIDE-RANGING ACTIVITIES

OVER **27,000**
PROJECTS EVERY YEAR

700
CONSOLIDATED COMPANIES

EMPLOYEE TRAINING FOR OPERATIONAL EXCELLENCE

70,118
EMPLOYEES

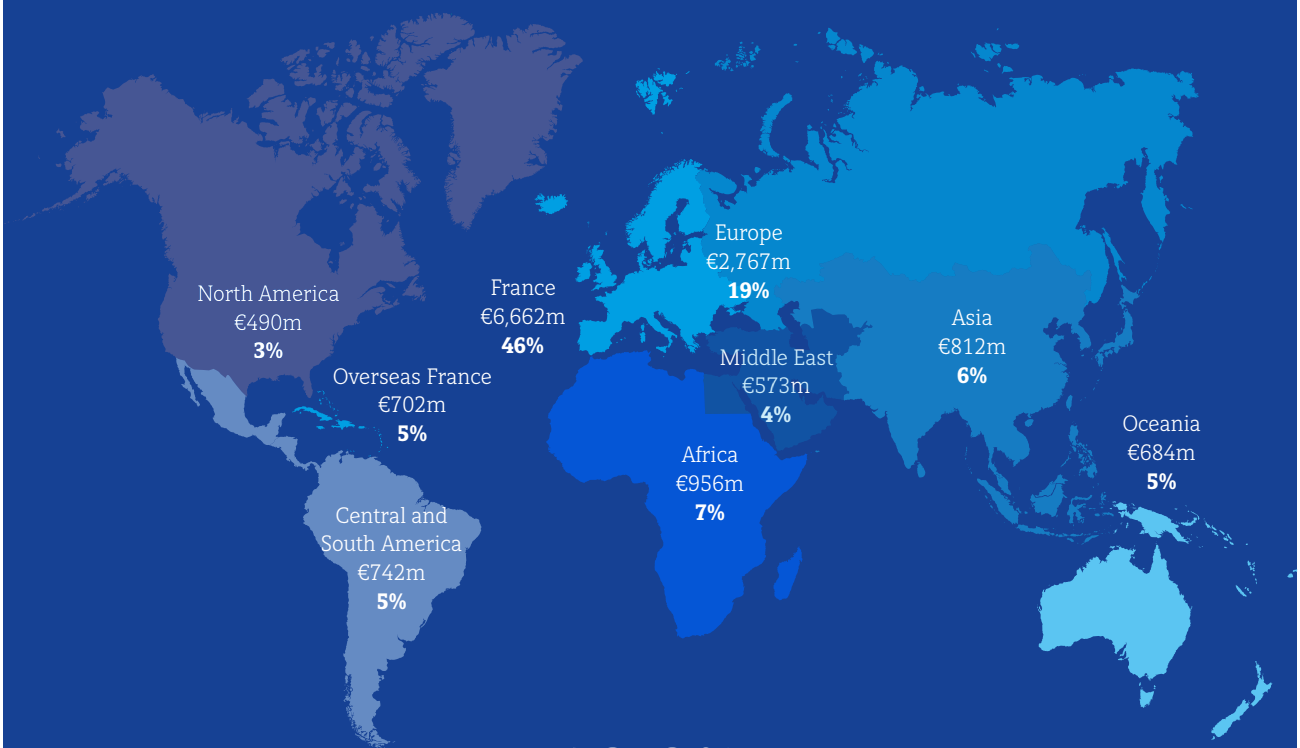
OVER **1m** HOURS
OF TRAINING PROVIDED IN 2017

"Operating in over 100 countries, VINCI Construction increased its revenue generated outside France for the third year in a row."

TEAMS SUPPORTING OUR GOALS

A STRONG INTERNATIONAL PRESENCE

REVENUE* BY REGION



48.8%

OF REVENUE* GENERATED OUTSIDE FRANCE

** Management figures (including QDVC)*

2017, A YEAR OF INITIATIVES AIMED AT BUILDING THE FUTURE

SOLUTIONS, SERVICES AND BRANDS

Building the future of polluted sites with REMEA
To meet environmental soil remediation goals, the new REMEA (formerly Sol Environment) brand offers industrial companies and regional developers dedicated expertise in remediating polluted sites, managing polluted effluents from construction sites and treating industrial ponds and tanks at operating sites. It relies on Menard's network of local subsidiaries.

January

Launch of NUVIATech Healthcare
With this new product line, NUVIA continues its diversification in the nuclear medicine market. The NUVIATech Healthcare range primarily covers instrumentation, design, engineering, surveys and modelling, together with a range of ancillary services.

July

Creation of VINCI Construction Maritime and Fluvial
To support the growing marine and inland waterway works sector and develop the specialist marine energy sector, VINCI Construction France brought its relevant subsidiaries– EMCC, Dodin Île-de-France, SNV Maritime, CTS, Tournaud and Aerolac – together in a new entity.

September

equo vivo

Equo Vivo, ecological expertise
With this new range of environmental engineering solutions and services focused exclusively on restoring ecosystems, maintaining and improving ecological continuity and designing and building structures to foster biodiversity, VINCI Construction strives to work efficiently alongside its customers to protect the environment (also see page 29).

ACQUISITIONS

Benedetti-Guelpa joins VINCI Construction
The acquisition of the Benedetti-Guelpa company in southeastern France, which specialises in civil engineering with a special focus on mountainous areas and the environment, enables VINCI Construction Terrassement to expand its business activity in the Auvergne-Rhône-Alpes region and capitalise on the company's complementary expertise.

Acquisition of Canada's ConeTec
Menard boosts its geotechnical site investigation expertise with the acquisition of ConeTec, which provides high quality services to industry sectors such as geophysics, CPTu, in-situ testing, drilling, instrumentation and final data reporting and analysis.

CONETEC

January

New synergies with Carpi
Soletanche Freyssinet acquired Carpi, world leader in waterproofing geomembranes for dams and canals. Carpi brings additional expertise to support synergies and open up a new market for Soletanche Freyssinet.

April

June and October

Nuvia boosts its nuclear expertise
and broadens its range of damper products and solutions by acquiring Compart and NucAdvisor, a consultancy with in-depth nuclear expertise and a specialist in project feasibility studies and market surveys.

October

SEYMOUR WHYTE

Seymour Whyte, a key acquisition in Oceania
VINCI Construction extends its operations in the Pacific area with the acquisition of the Australian Seymour Whyte company specialised in civil engineering, earthworks, roads and utility networks.

PARTNERSHIPS

October

Urbalia, an urban biodiversity start-up

With the creation of Urbalia, a start-up dedicated to the integration of biodiversity and urban agriculture within urban development projects, VINCI Construction and AgroParisTech join forces to design natural spaces in cities that improve the living environment for city dwellers and urban resilience. The solution is available to local authorities, urban planners and the construction industry.

urbalia
biodiversité urbaine

December

IBA and VINCI Construction team up to work on proton therapy

IBA, the world's leading provider of proton therapy solutions for cancer treatment, and VINCI Construction are teaming up to promote the technique in other countries following the construction of the Cyclhad centre as part of the ARCHADE project in Caen (also see page 51).

AWARDS

September

An environmental award for HEB Construction

HEB Construction (VINCI Construction International Network) received an award for the Huntly section of the Waikato Expressway, a four-lane motorway north of Auckland, New Zealand built under a joint venture with Fulton Hogan. The award recognised the company's proactive approach to innovation and use of best practices in the construction of the 15-km section of the motorway.

BIM D'OR

Three BIM d'Or 2017 prizes

VINCI Construction received three BIM* d'Or 2017 prizes. The winners were Sogea Bretagne for the Laboratoire d'analyses de surveillance and d'expertise de la Marine (Lasem) Navy laboratory in Brest; Bateg for the Saint-Gobain tower in La Défense; and VINCI Construction Grands Projets for the extension and renovation of the Santiago de Chile airport.

** Building Information Modeling*

November

The Hong Kong metro named Tunnelling Project of the Year

The International Tunnelling and Underground Space Association (ITA) recognised VINCI Construction Grands Projets with the award for the year's best project in the "€50-500 million" category for the SCL 1103 contract on the Shatin to Central Link project in Hong Kong. The prize recognises the company's approach to risks and tunnelling methods in complex geology.

Geste d'Or awards

In the 7th annual competition organised by the Geste d'Or, an association working to showcase the built environment, six prizes went to VINCI Construction France in recognition of its expertise in historic monument renovation. Girard, Petit, Dumez île-de-France and GTM Bâtiment were recognised for their exemplary projects focused on the heritage of the past, the present and the future.

Strong VINCI Construction participation in the intrapreneur competition with My VINCI Start-up
Leonard, the VINCI innovation and foresight platform, launched season 1 of its incubation programme with My VINCI Startup. The programme's purpose is to support VINCI employees wishing to develop an innovative idea into a product or service and become entrepreneurs within the company.

"The Trail by VINCI Construction" or a taste for challenge
At the end of 2017, VINCI Construction launched a novel international competition for students. The contestants were first asked, via digital, to imagine the future construction sector, focusing on three topics: "The worksite of the future", "Sustainable construction and resilience" and "The city above and below the city". A sports challenge will be held in Annecy in May 2018 to bring together the candidates selected in each country.

REGIONS

Active participation in the Grand Paris Express endowment fund
VINCI Construction joined the group of Grand Paris Express endowment fund sponsors. The fund supports arts and cultural activities along the entire 200km length of the new metro lines that will connect the region's municipalities. The purpose is to bring the arts to the public at large.

INNOVATION

July — August — November — December — July

thecamp, the new generation campus
Located near Aix en Provence, the architecturally futuristic campus founded by Frédéric Chevalier in 2013, is the first European campus dedicated to emerging technologies and the new uses to which they can be put. The transdisciplinary, transcultural and transgenerational venue, in which VINCI Construction is one of the partners and which it built, brings together post-graduate students, researchers, entrepreneurs, senior managers and creative talent to delve into issues such as health, mobility, the environment and education and to explore the various possible developments in these fields.

FOUNDATION

ISSA, a decade already
Over the past decade, the Sogea-Satom Initiatives for Africa programme has supported local development in the areas where the company operates. A combination of funding and employee sponsorship has supported nearly 200 micro-economic, health and education projects in 19 countries, with funding averaging €15,000 per project.

20

STEPS INTO THE FUTURE

VINCI Construction has built a managerial model in which safety, human resource management, corporate social responsibility, the environment and innovation are a primary focus. VINCI Construction has taken 20 steps enabling it to "build the future".

REINFORCING THE SAFETY CULTURE

In making the Zero Accidents policy its absolute priority, VINCI Construction aims to become the world safety benchmark in the construction sector.

1 Fifth International Safety Week

FOR VINCI CONSTRUCTION, safety is the priority. To this end it has for several years been working to develop a common health and safety culture based on innovative approaches and best practices across all entities. Safety is now an integral part of all project stages – during the design phase, with Safety in Design; in construction methods, with the Orchestra worksite preparation and organisation method; and in day-to-day operations on the worksite, with the PreStart Meeting, a particularly important event at which the supervisors and teams review the full range of key worksite issues.
One of the goals of the Fifth International Safety Week held in October 2017 was to review the fundamentals and raise management and team awareness, with a special focus this year on preparing induction. The event offered an opportunity to mobilise, share and discuss safety in a variety of ways around the world.

At the VINCI 2017 Innovation Awards, 17 prizes went to safety innovations in recognition of the engagement of VINCI Construction employees.

2 "Managing with Safety Focus" training

BECAUSE SAFETY IS CENTRAL TO THE COMPANY'S BUSINESS MODEL,
VINCI Construction has designed and rolled out a high-level safety management training course for its managers. The first edition of the module, "Managing Safety", held for some 8,000 mid-level and top managers over a three-year period, focused on their roles and responsibilities with regard to safety. In 2017, the training was taken a step further with the introduction of the "Managing with Safety Focus" module, which emphasises the need to focus on organisational and human factors in accident prevention and to analyse root causes of accidents and "near misses". The training, which explores new ways to build a common safety culture for VINCI Construction managers, is part of the CAP for Management course.

Digital accident prevention stand organised by VINCI Construction Dom-Tom.

3 Across-the-board rollout of the Safety In Design programme

INITIATED IN 2014 WITHIN VINCI CONSTRUCTION GRANDS PROJETS and rolled out in 2017 throughout VINCI Construction, the Safety In Design programme is intended for design offices. It focuses on optimising structures and their safety in the design stage. The goal is to ensure maximum safety throughout all construction, operation and maintenance phases and thus minimise the risk of accident. The programme was progressively rolled out to ensure that the safety dimension is included in all phases of VINCI Construction design studies. The Safety in Design programme is also used when methods are drawn up. Here, too, the goal is to encourage choices that enhance safety for worksite teams. ■

ATTRACTING TALENT TO BETTER PREPARE THE FUTURE

In a fast-changing market, the VINCI Construction human resources action plan is geared to attracting talent and taking action to retain and promote the existing teams.

4 CAP* for Talents or how to develop potential

CAP FOR TALENTS IS A SET OF INITIATIVES that VINCI Construction has developed to train and promote its employees and foster their mobility. The CAP for Management training programme for 300 top managers was introduced in 2017. It was designed to share with them the company's values and the tools they can use to coordinate activity. The project segment, meanwhile, uses the CAP for Projects programme to support project directors, who play a key role in the field, and to support and network them. Their renewal is a key goal for the company.
Lastly, the engineering segment has designed the CAP for Engineering programme to capitalise on the unique expertise of our 3,000 employees specialising in structure, methods and cost engineering.

** Construction's Advanced Program*

5 Promoting diversity with the Open programme

RECOGNISING THAT COLLECTIVE INTELLIGENCE AND DIVERSITY BOOST PERFORMANCE IN A CONSTANTLY CHANGING WORLD, VINCI Construction began more than a decade ago to address the issue of equality in the workplace and seek ways to transcend the preconceptions that are still rampant in our business sector. This effort culminated in the Open by VINCI Construction programme in 2017. It includes a series of innovative experiments aimed at gaining new perspective on diversity in the workplace through meetings of entrepreneurs, testimonials and brainstorming workshops designed to generate ideas and broaden horizons. At VINCI Construction, we believe that diversity and more broadly open-mindedness are major drivers of success, progress and job satisfaction within the company.

6 A different approach to attracting talent

BECAUSE IT OFFERS A WIDE VARIETY OF JOBS AND CAREERS involving wide-ranging experience and expertise, VINCI Construction seeks to attract talent and appeal to young graduates. As part of this endeavour, it has forged relationships and academic partnerships with more than 35 engineering schools, business schools and universities around the world. In 2017, VINCI Construction decided, in line with its design-build positioning, to organise an international competition for students enrolled in higher education, with the title "The Trail by VINCI Construction". The novel competition takes place in two phases.

- First, the contestants, grouped in four-person teams, were asked to think about what the construction sector will look like in future and to suggest ways for construction companies to take the new technologies on board, adjust to the changing expectations of our societies and improve the living environment. The answers were to propose an ambitious project within one of three themes: "The worksite of the future", "Sustainable construction and resilience" and "The city above and below the city".
- The second phase of the challenge will bring the finalist teams together in May 2018 to compete with each other in a sports event. The winners will receive a visit to an exceptional VINCI Construction project in Asia, Europe or Latin America.

A campaign designed to promote the VINCI employer brand was launched to develop the Group's appeal to young talent and to retain the young people recently hired. Its message is focused on human qualities, reflecting the Group's values and managerial vision.

① Partnership with the Instituto Politécnico Nacional in Mexico City, Mexico.
② Promoting the Trail in a lecture hall at Universiti Malaya (UM) in Kuala Lumpur, Malaysia.

7

Customised "City below the City" training course for teams working on underground projects

THE GRAND PARIS PROGRAMME is a major regional development scheme and a social and human resource challenge for VINCI Construction, to which the Société du Grand Paris has already entrusted several projects. This major European programme, which will take several years to complete, will require recruitment of large numbers of people. Underground and specialist works make up a large part of the activity.
The purpose of training course is to create, strengthen and expand our employees' underground works and foundations culture.
The "City below the City" course is based on a risk management approach in which execution is adapted and optimised according to the observed behaviour of the structure during construction. ■

BASING OUR WORK ON CORPORATE SOCIAL RESPONSIBILITY

VINCI Construction's commitment to corporate responsibility and civic engagement emphasises steps to benefit the group's various stakeholders and serve the community at large.

8

Our worksites as a CSR policy laboratory

THE GRAND PARIS AND SOUTH EUROPE ATLANTIC TOURS-BORDEAUX HIGH-SPEED PROJECTS ARE INTEGRATION LABORATORIES, AS ARE OUR APPROXIMATELY 1,000 CURRENT PROJECTS AROUND THE WORLD.
We make a point of hiring employees in the regions where we operate and of working with local SMEs. In France, VINCI's VIE programme coordinates implementation of contractual work integration clauses and helps expand long-term employment in the regions. The "Chantiers & Territoires Solidaires" endowment fund, which was set up by VINCI Construction, VINCI Energies and Eurovia with the help of the Fondation VINCI pour la Cité, supports projects in the public interest near the Grand Paris worksites in which the Group is involved.

9 First agreement on worker rights in Qatar

THE BUILDING AND WOOD WORKERS' INTERNATIONAL (BWI) union federation signed an agreement on worker rights with QDVC – a Qatari company held by Qatari Diar Real Estate Investments Company and VINCI Construction Grands Projets – and VINCI in November 2017. The agreement, the first of its kind in Qatar, covers human rights in the workplace, housing and fair hiring practices and is more broadly aimed at improving working and living conditions. It covers all QDVC workers in Qatar and also provides for an extensive monitoring, reporting, oversight, inspection and auditing system.

10 Community engagement with SolidariTerr'

THE SOLIDARITERR' SYSTEM set up by VINCI Construction Terrassement in 2016 combines social innovation and community engagement. It encourages employees to engage with the community in the area where the company is working. In practice, each initiative involves 5 to 15 employees who volunteer to support a local civic organisation working on education, access to employment, the environment or mobility for people living in social exclusion. The activity is based on an endowment fund provided by employee contributions and company subsidies. In 2017, five action days were held for the benefit of local civic organisations with the help of 46 employees, who were proud to have the opportunity to engage in the sharing and outreach activity.

The SolidariTerr' joint solidarity system encourages employees to engage in community projects in the areas where the company is operating.

Passer'elles workshops were set up by the APPUIS association with support from ISSA to keep girls from dropping out of school in Niamey, Niger.

11 Dynamic civic engagement

THE FONDATION VINCI POUR LA CITÉ (VINCI foundation for the community), which supports projects designed to provide lasting social and employment integration solutions for the disadvantaged, acts as a long-term regional partner. In 2017, the foundation supported 202 civic organisation projects in France, 55 of which involved 69 VINCI Construction sponsors. The Cité Solidaire programme, set up by the foundation to support small civic organisations working in underprivileged neighbourhoods, funded 16 projects in 2017. Similarly, outside France the Sogea-Satom Initiatives for Africa (ISSA) programme, which celebrated its 10th anniversary in 2017 and provides funding and employee sponsorship for micro-economic, health and education projects, supported 25 economic and social development projects, 80% of which were carried out by women entrepreneurs, in 2017. ■

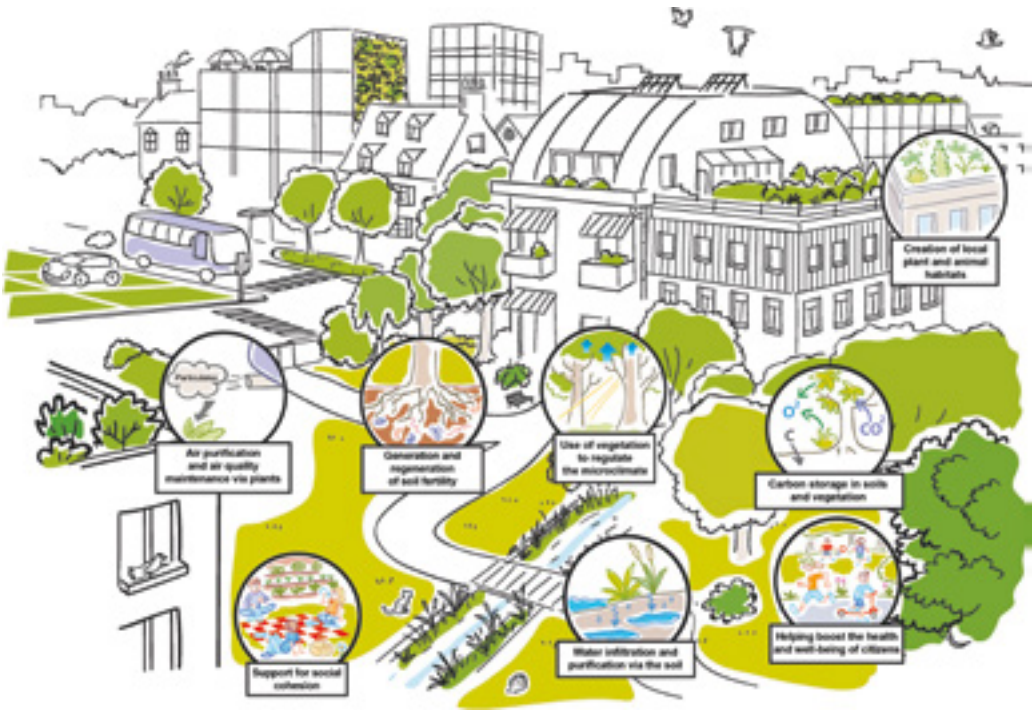
MINIMISING OUR ENVIRONMENTAL FOOTPRINT

VINCI Construction works to support sustainable development with a special focus on combating climate change and efforts to reintroduce nature into the built environment.

12 Biodiversity conservation in full swing

VINCI CONSTRUCTION PROVIDES PROVEN ENVIRONMENTAL EXPERTISE. It therefore strives to support and advise those of its clients wishing to include nature in their projects. Equo Vivo* and Urbalia** were launched in 2017 to meet this goal. Equo Vivo delivers ecological engineering solutions and services, with an exclusive focus on protecting and restoring biodiversity, designing and building ecological facilities and maintaining ecological continuity. Urbalia, which was jointly created with AgroParisTech, is a start-up dedicated to integrating biodiversity and urban agriculture in urban development projects. It notably uses Biodi(V)strict, the first tool for measuring the biodiversity potential of an urban project.

** Also see page 18*
*** Also see page 20*



13 Eco-design becomes the norm

The 108 in Rouen, France: built in accordance with an HQE® Bâtiments Tertiaires high environmental quality programme, the new Métropole Rouen Normandie headquarters aims for exemplary thermal and energy efficiency.

THE FIGHT AGAINST GLOBAL WARMING calls for adapting cities and saving substantial amounts of energy. Buildings, a major source of greenhouse gas emissions, must become responsible. As a design-build company, VINCI Construction strives to be strongly involved in addressing eco-design and energy efficiency issues. Several innovations with promising potential have been developed to serve the building's end users and visitors. For example, new generations of eco-designed positive-energy buildings are set to become energy hubs within the urban landscape. Similarly, new Building Integrated PhotoVoltaic solutions are emerging. Another promising solution is Greenfloor, the ventilated concrete slab that acts as a radiant ceiling, which was co-developed with VINCI Energies to provide thermal inertia.

14 The circular economy makes headway

THE GOAL OF THE CIRCULAR ECONOMY IS TO DO MORE WITH LESS. It achieves this by optimising the use of natural resources and limiting waste. In a move to take on this approach, VINCI Construction has begun to re-think its construction, supply and consumption methods. Several steps were taken in this direction in 2017, including alternative transport options that replaced road haulage to remove worksite rubble from worksites such as the Samaritaine project and the Line 12 metro extension in Paris, for which river barge transport was introduced; use of recycled plant waste to generate electricity in Africa with VINCI Environnement; and reduced waste production and optimised water and energy consumption across all VINCI Construction companies.

15 Renewable energy with the wind at its back

AS PART OF ITS SUSTAINABLE DEVELOPMENT STRATEGY, VINCI CONSTRUCTION DEVELOPED A WIDE RANGE OF RENEWABLE ENERGY INITIATIVES IN 2017. Freyssinet, for example, designed the Eolift® process, which involves assembly on the ground to increase the height of wind turbines without the use of a crane. The technique was used at the Trairi II wind farm in Brazil. In another example, VINCI Construction Maritime et Fluvial was set up to provide an integrated range of solutions and services for renewable marine energy. Entrepose also expanded its geothermal and anaerobic digestion expertise. Lastly, in early 2018 VINCI Construction won the contract to build a pumped storage hydroelectric plant near Agadir as part of Morocco's renewable energy development and integration plan. ■

Conveyor belt installed to remove rubble from the metro Line 12 project in Paris by barge via the Saint Denis canal.

INNOVATING TO MEET THE CHALLENGES OF THE FUTURE

VINCI Construction focuses its strategy and its range of solutions and services on innovation and R&D. This approach enables us to address demographic and environmental challenges, devise tomorrow's products and the ways in which they will be used and increase project performance.

16 Digital technologies on worksites

DIGITAL TECHNOLOGIES HAVE BECOME PART OF THE CONSTRUCTION SECTOR AT VARIOUS LEVELS AND ARE NOW AN INTEGRAL PART OF MOST ASPECTS OF THE COMPANY.
BIM (Building Information Modeling) is an emblematic example. Regularly employed during the design, construction and maintenance phases, it is also used as a worksite management tool that supports real-time access to the same level of information for multiple users, availability of up-to-date documents, early detection of error risks and pooled project challenges. The technically complex Saint Gobain tower project in La Défense used BIM from the design stage to support mixed reality at the heart of the operation. Digital technology brings all project participants together in a collaborative approach. In another notable example, 3D scanning is used to model a structure in a particularly effective way, as in the Mandarin Oriental Hyde Park in London. Lastly, digital technology is gradually being included in the company's safety programme with the development of digital accident prevention support tools.

17 3D concrete printing, a promising technology

The first 3D printed column in a school courtyard in Aix en Provence, France.

VINCI CONSTRUCTION SIGNED A LONG-TERM PARTNERSHIP WITH START-UP XTREEE, A LEADER IN 3D CONCRETE PRINTING, IN FEBRUARY 2017. VINCI Construction plans to develop the promising new 3D printing technologies in the construction sector. The move epitomises the construction sector's strong focus on innovation. Point P and SADE have already used it to print a concrete part weighing more than five tonnes for a customised storm drain being installed in the town of La Madeleine within the Metropole européenne de Lille urban community. The 3D printing technique, which lends itself to addressing architectural challenges, has also been used to produce a four-metre column for a middle school courtyard in Aix en Provence. Because it facilitates the design and construction of complex shapes at reasonable cost, 3D printing is also being considered as a way to produce structural and building elements.

18 Sixense: a different approach to construction

SIXENSE PROVIDES VINCI CONSTRUCTION WITH DIGITAL SERVICES AND SOLUTIONS dedicated to infrastructure, soils and the environment. Because it can be used to gain understanding of structure's behaviour during design, construction and operation phases, the service provides invaluable support for decision making in managing construction projects, assets and risk. In 2017, Sixense worked on a wide variety of projects in France and around the world, including metro lines, railway lines, bridges and tunnels. Sixense launched the EOLESENSE® technology (also see page 73) to measure the acoustic impact of wind farms, rolled out the Digital Site worksite management tool on the Cyclhad building for the ARCHADE project in Caen (also see page 51), and developed the ScanPrint tool on all bridges in Ontario, Canada.

19 VINCI Construction recognised at the VINCI 2017 Innovation Awards

VINCI CONSTRUCTION WON FIVE PRIZES IN THE FINALS OF THE VINCI 2017 INNOVATION AWARDS COMPETITION. The Partners prize went to Soletanche Bachy and Eurovia for their circular economy project implemented on the Nice tram worksite. Soletanche Bachy's Hydrofraise® with grippers won the Breakthrough Innovation prize. Together with its partner Bill Harvey Associates, Freyssinet received the Processes and Techniques prize for its ElevArch® innovation, which is used to raise masonry bridge arches to make room for catenaries. Lastly, GTM Ouest won the Special "Our Favourite" Prize for Compilot, which enables hearing-impaired people to safely communicate on the worksite. VINCI Construction France also won the second Special "Our Favourite" Prize for its Digital Worksite Totem. The 2017 Students Prize went to students at the École des Ponts ParisTech engineering school for their innovative Wind my Roof solution for harvesting facade wind.

20 Innovation at the heart of the Grand Paris programme

THE GRAND PARIS EXPRESS PROGRAMME, EUROPE'S LARGEST WORKSITE, gives VINCI Construction an opportunity to use three major innovations that set it apart in the construction market. With the Hydrofraise® with grippers inspired by the gripper tunnel boring machine technology, the company is revolutionising the deep foundations sector. It can now use the state-of-the-art equipment to drill through very hard rock horizons while limiting wear and breakage. With Dodin Campenon Bernard subsidiary CAP, tunnel boring machines now have a particularly efficient navigation, guidance, control and data processing tool. Starting in 2017, CAP added the new CAP 3D tool, a three-dimensional BIM designed to pool key project information (geology, built structures, tunnel, station, tunnelling machine, detailed surface analysis data). Lastly, with the Wise system, which is accessible without connection, the tunnel boring machines and personnel can be identified, located, and easily contacted. ■

THINKING THE FUTURE TODAY

"WORKING WITH THE CITY EPIDERMIS IS EXCITING"

DOMINIQUE PERRAULT, architect and urban planner
Dominique Perrault Architecture

_What major urban issues do you address in your work?

D.P. The relationship between the city and transport infrastructure has been a major focus in recent years. There is a very close link, in the physical sense of the term, between home, travel and work. The end of the daily grind ("commute, work, sleep") in contemporary cities has brought substantial change in urban programmes. The specifications submitted to us increasingly include parameters such as the senses of touch, smell and hearing, natural light and the concept of urban comfort.

We now take all these considerations fully on board in our construction and our urban development projects. Sustainability – in the sense of quality of life – is another key parameter. The idea is to make use of the city's various qualities by capitalising on proximity – proximity to the workplace, to services, to cultural venues. This is a key criterion for city-dwellers.

It is up to us to imagine the city of the future to accommodate new lifestyles, consumption patterns and ways of working. I find the change very exciting.

_What is your vision of the city? How can the city be re-thought at a time of increasing urbanisation and population growth?

D.P. There is no single theory governing the development of cities. But there is a growing body of information – contained in databases – that defines how new living conditions are introduced, particularly in large urban areas. The city's epidermis, on which I do a lot of work, is a good illustration. The idea is to breathe life into the ground below the city, bring in natural light, introduce functions requiring inertia and update and upgrade the transport network.

Creating this root system will intensify the existing city and prevent urban sprawl. It will preserve natural landscapes and the countryside, shorten distances and make the city sustainable. The open-air metro station we are building with VINCI Construction at a depth of 50 metres in Villejuif – part of the Grand Paris programme – is a case in point. The Lightwalk in Seoul, Korea, an intermodal hub, is a similar project.

_In this context, how has BIM (Building Information Modeling) changed the way you work?

D.P. Digital technologies have completely overhauled the architecture and engineering professions over the past two decades. BIM, which provides a three-dimensional database shared by all participants in a construction project, is a further step in this transformation. This type of information exchange will probably spread to the production of materials and components sometime soon. ■

DPA: http://www.perraultarchitecture.com

HUGUES DESCLAUX, BIM MANAGER, VINCI CONSTRUCTION GRANDS PROJETS

"BIM has completely changed our approach to projects"

I have been working on the extension of the international airport in Santiago de Chile since 2015. The project is designed to double the airport's capacity in future years. The design-build development of the new emblematic 350,000 sq. metre terminal was carried out using a BIM process that my team set up. All functionalities were thus designed according to a 3D model. As BIM manager, I train all the teams working on the project in the use of the display tools to enable them to access the information they need to do their jobs. The novelty here is that we have an integrated BIM process. All disciplines (architecture, structures, engineering studies, and so on) are modelled and integrated in a single database. This has a variety of benefits: we gain an early overview of the project as a whole and a better understanding of the interfaces and coordination between the various disciplines; we achieve better involvement of the participants, whom we provide with easier communication; we centralise information in a single database; and we are able to perform construction simulations. With BIM, it will in future be possible to create databases for an entire city or even an entire region. The digital asset will be centralised in a single database from the design stage forward and cover the characteristics of the buildings, energy consumption, asset typology, etc. This is a fantastic step forward that we can use to tackle the urban challenges we will face in future." ■

"CLIMATE CHANGE IS FORCING US TO REVISIT OUR ENERGY MIX"

BERNARD BIGOT,
Managing Director, ITER Organization

_Why will the planet need to overcome its dependence on fossil energy in the medium term?

B.B.: Since the discovery and massive mining of the large coal deposits in the 18th and 19th centuries, and then of oil and gas, the world has had an abundant and relatively low-cost source of energy. In 2016, all these fossil energies taken together accounted for nearly 85% of world energy production, the equivalent of 11.5 billion tonnes of oil consumed every year. The planet is going to have to sharply reduce its dependence on fossil energy in this century. First because its use and the emissions it generates are having an increasingly harmful impact on the climate, the environment and public health, secondly because these resources are gradually being depleted, and lastly because it is becoming more complicated and costly to extract them as time goes on. World energy consumption has increased 20% since 2006 and it can only increase further in future, driven by population growth and the rising average standard of living.

_What are the options that could enable us to reduce dependence while still meeting increasing demand for energy?

B.B.: The first involves behaviour, promoting energy efficiency and reducing individual energy consumption in the most energy-intensive countries. Then there are improvements in renewable energy capture and storage wherever possible and economically competitive. But in a highly urbanised and industrialised world, these measures will not be

sufficient, given the diffuse and intermittent nature of sunlight. We must therefore find sources of massive, continuous energy production that take up little space, can be easily modulated to supplement renewable energies, have small to negligible impact on the climate, the environment and public health and are available in the medium to long term. Only nuclear energy meets these criteria. Nuclear fission technology is available in the short to medium term and apart from that the most promising option is hydrogen fusion with magnetic confinement.

_How does the ITER project address the climate and energy issues?

B.B.: The ITER project, currently being carried out under exceptionally broad international cooperation, is designed to demonstrate the scientific and technical feasibility of massive energy production from hydrogen fusion. The corresponding research facility is being built in southern France with the goal of achieving a first plasma by the end of 2025 and full fusion power output of 500 MW with 50 MW thermal input power by 2035. The advantages of the technique are those I listed above. It also uses natural raw materials (water and lithium) that can cover world requirements for several hundred thousand years and operate in an intrinsically safe manner. This dream, which is on the way to becoming a reality, is what drives everyone involved in the project. ■

NEW CHALLENGES, NEW JOBS

ARMELLE LANGLOIS,
SUSTAINABLE PERFORMANCE DIRECTOR,
VINCI CONSTRUCTION FRANCE

"Green growth forces us to innovate"

My job consists in providing our customers with solutions enabling them to address the energy transition, carbon transition, comfort, health and regional integration issues they face.
My job is to understand trends such as the circular economy and biodiversity, to enhance the skills of our operational teams, to create tools and training modules for our employees and to incubate solutions that will give us, or enable us to maintain, a head start and an edge in the market. The Urbalia start-up initiated by VINCI Construction France and AgroParisTech is one example. It focuses on urban biodiversity and uses the Biodi(V)strict diagnostic tool to measure the biodiversity potential of an urban project. The French regulatory framework is set to change against a backdrop of growing environmental concerns, and in future we will have to focus on positive energy buildings that emit low levels of greenhouse gases. We are therefore developing tools enabling us to select materials for our building projects that address the energy and environmental issues. Similarly, we are already working on the building and the city of the future. One example is Vaucresson, where we are going to harness the heat generated in the A86 motorway tunnel to heat housing units. ■

THE BUSINESS LINES OF THE FUTURE ARE ALREADY HERE

To adapt to a rapidly changing world and cope with a changing construction market, VINCI Construction is introducing new business lines and refocusing existing activities.

ALEXANDRA GUTTON,
HEAD OF PRODUCTS,
SIXENSE DIGITAL

Software serving our worksites

"Sixense Digital is a software factory tasked with supporting VINCI Construction's digital transition. As head of a team of Product Owners, I am responsible for giving the product its strategic orientation – new functionalities, technological choices and technical constraints. I thus provide the link between the worksite and the developers to meet the needs of the teams on the ground in terms of safety, quality and productivity. To support worksite digitalisation, we need to be familiar with the activities, close to users and able to get two very different worlds to communicate easily with each other." ■

CÉCILE LAMON,
STRATEGY AND PROCESS
DIRECTOR, ADIM

Urban planning to serve the sustainable city

"As a partner of city authorities, we address urban planning issues and help invent the city of the future. At Adim, the VINCI Construction France property development structure, we design, develop and build a variety of structures - the offices, hotels, shops and mixed-use programmes that make up the city - on a general contracting basis, against a backdrop of urban intensification and social innovation. Because we are, as programme managers, involved in the operation very early on, we need to anticipate trends in the city. This is a great advantage!" ■

GWENAEL SCOTET,
SPECIAL ADVISER, EQUO VIVO

Ecological benefit is the goal

"The environment is increasingly the key factor in all our projects. The growing call for us to reduce and offset the impact of our projects has driven considerable progress. Waterway and ecological continuity restoration is now a fully-fledged business activity. Equo Vivo concentrates and expands the skills we have acquired in these fields, which have become our specialist activity. The relationship between works and the environment is changing. Biodiversity is increasingly the ultimate goal. Ecology has been and remains a matter of conscience, but it is now also our job." ■

BUILDING THE FUTURE TODAY

VINCI Construction's clear-cut, wide-ranging, integrated solutions and services are structured in eight business areas to meet diversified, complex requirements around the world.

BUILDINGS

BECAUSE QUALITY OF LIFE STARTS WITH THE LIVING ENVIRONMENT

Faced with urbanisation, population growth and the need to adapt to the new climate reality, cities and countries have a pressing need for residential, office and hotel infrastructure. VINCI Construction provides it to help them cope with these changes.

RESIDENTIAL

TOURCOING, FRANCE

PRIMMÉA, THE HOMEOWNERSHIP SOLUTION

CHALLENGE: Long-term solutions are needed to facilitate homeownership against a backdrop of severe housing shortages and high prices for new residential properties.

SOLUTION: The Primméa programme, designed by VINCI Construction France and Adim, its property development structure, offers residential units meeting high quality standards while remaining affordable at prices substantially below market. They do this by using new methods such as BIM and modular construction to reduce construction costs while maintaining quality. The new Filcosy apartment building near the centre of Tourcoing, for which the cornerstone was laid in November 2017, illustrates this programme.

Intencity programme
in Angers, France.

NoLiStra project
in Strasbourg, France.

Remire-Montjoly
eco-neighbourhood in French Guiana.

FRANCE

BUOYANT NEW PROPERTY CONSTRUCTION PROGRAMMES

Neighbourhood development, urban renewal and urban extension projects transform cities and boost their appeal. The Adim network, the VINCI Construction France structure dedicated to property development, actively participates in these endeavours with its many new property programmes such as Intencity in Angers and NoLiStra in Strasbourg and multi-purpose city centre developments such as the Cité des Aînés in Saint Etienne.
Also noteworthy are the construction of 41 off-plan units within an eco-neighbourhood in Remire-Montjoly, French Guiana, scheduled for handover in 2019. The programme is being built by Sodim Guyane, a property development subsidiary of VINCI Construction Dom-Tom that strives to generate property projects for construction by Group subsidiaries.

HULL, UNITED KINGDOM

BETTER QUALITY OF LIFE FOR STUDENTS

FACT: The University Partnerships Programme (UPP), the main supplier of student accommodation and support services in the UK, awarded a contract to VINCI Construction UK to design and build a new residential complex for University of Hull students. The order covers nine buildings with a total of 1,462 private rooms and studio apartments.

COMMENT: This is the fifth student accommodation construction contract that UPP has awarded to VINCI Construction UK. It will provide student facilities to enhance campus quality of life.

PARIS, FRANCE

GLACIÈRE-DAVIEL: AN URBAN DENSITY SOLUTION

Following one of France's largest refurbishment projects in occupied premises, the Glacière-Daviel social housing complex in Paris's 13th arrondissement has a completely new look. Teams from VINCI Construction France subsidiaries GTM Bâtiment, as lead company, and Arbonis, responsible for the wood structures, carried out the two-phase project as part of the City of Paris's Climate Plan. The first instalment covered modernisation of the 754 residential units including asbestos removal, insulation and upgrade to standards. In the second, less standard instalment, 72 new wooden units were built on top of the buildings in a move to meet the city's densification goals.

RICHMOND, BC CANADA

GROUND IMPROVEMENT FOR DURABLE CONSTRUCTION

The upscale ViewStar property complex will consist of six residential high-rises as well as commercial buildings. Prior to the start of construction, Menard (Soletanche Freyssinet) worked throughout 2017 to reinforce the ground by installing stone columns to a depth of 17 metres in a move to provide a long-term solution that will prevent liquefaction of the upper sandy layer in the event of an earthquake.

PARIS-LA DÉFENSE, FRANCE

SAINT-GOBAIN, ALTO AND TRINITY TOWERS: BUILDING "THE CITY ABOVE THE CITY"

CHALLENGE: The head office of Saint Gobain was to be built in the La Défense business district in record time for handover in 2019.

SOLUTION: To build the 165-metre glass tower made up of three overlapping prisms, the VINCI Construction France teams have used BIM (Building Information Modeling) from the design stage onwards to optimise construction and maintenance in a very dense urban environment. In addition, Sixense Digital teams rolled out the full range of modules that compose the Digital Site system, from document management to project management.

Also in La Défense, Soletanche Bachy France built the foundations for the Alto office tower in the last quarter of 2017 using a foundation solution similar to the one used on the D2 tower, which stands a few hundred metres away.

FACT: VINCI Construction France subsidiaries Bateg and Sogea TPI are building the Trinity tower for Unibail-Rodamco.
The new 140-metre, 32-storey office building will be handed over in the first half of 2019.

COMMENT: The new-generation tower, consisting of two offset blades, is being built in a particularly restricted worksite. Standing on a lid over seven lanes of traffic that remain open throughout the project, it required the construction of a temporary retaining structure for the CNIT and the installation, by Soletanche Bachy Pieux teams, of more than 1,000 piles and micro piles – a one-of-a-kind technical feat.

OFFICE / RESIDENTIAL PROPERTIES

NOUMÉA, NEW CALEDONIA

THE PACIFIC PLAZA TOWER, THE NEW LANDMARK IN NEW CALEDONIA

The 25-storey, 100-metre Pacific Plaza high-rise, for which the structural work was handed over in late 2017, is the tallest-ever building in New Caledonia, where structures are typically horizontal. Built at the foot of a cliff by SCB (VINCI Construction Dom-Tom), the 135-unit apartment building is part of a broader complex that also includes an office building and a car park. The SCB teams rose to the logistical and organisational challenges posed by the building's unusual height.

PARIS, FRANCE

THE INNOVATIVE DUO TOWERS

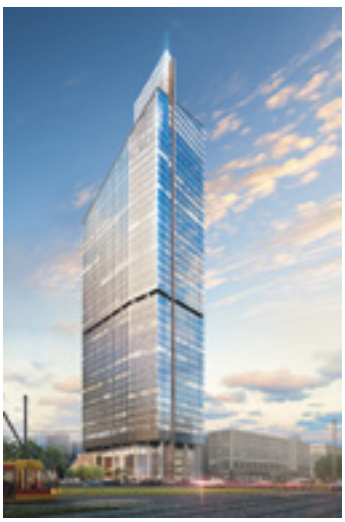
Two tilting high-rise buildings with heights of 180 and 122 metres will be completed in Paris's south-eastern Le Masséna neighbourhood in 2021. Designed by architect Jean Nouvel and built by VINCI Construction France for Ivanhoé Cambridge, they will accommodate some 6,000 Natixis employees in some of the capital's most innovative work spaces. The revolutionary project will offer creative collaborative (coworking, fablab) workspaces geared to well-being.
The DUO towers are some of France's first WELL™ Core and Shell compliant buildings and some of the first to offer a broad range of services that can be accessed via its innovative multi-device application.

OFFICE SPACE

WARSAW, POLAND

TWO NEW TOWERS ON THE WARSAW SKYLINE

At the site of the former Mint of Poland in the centre of Warsaw, Warbud, a subsidiary of VINCI Construction International Network, is currently building the Mennica Legacy Tower, an upscale office complex that will rise to a height of 140 metres. The complex will meet the highest international aesthetic, ergonomic and materials standards. It is designed to achieve international BREEAM Excellent environmental certification. The project, in which Warbud is responsible for all construction works packages, is scheduled for completion in 2019.



In the centre of Warsaw, Warbud is building the Skyliner tower, one of the capital's tallest and most modern office buildings. The 195-metre tower will have 45 levels, including 30 devoted to office space, four to shops and five to underground car parks. Like the Mennica Legacy Tower, the building aims for BREEAM Excellent certification. Work got under way in September 2017 and is scheduled for completion in mid-2020.

Also noteworthy is the start of work on the foundations of the Generation Park buildings, a mixed-use complex in the centre of Warsaw built by Soletanche Polska.

Lastly, in January 2018 Warbud won the contract to build the 310-metre (including an 80-metre mast) Varso Tower, also in the centre of Warsaw.

COGNAC, FRANCE

FORMER WINERY CONVERTED TO A LUXURY HOTEL

FACT: Listed as a national cultural landmark, the former Cognac cellars, which long belonged to the family of Jean Monnet, one of the founding fathers of Europe, are to be converted into a five-star hotel.
The refurbishment-extension project in the centre of the municipality is being developed by PLENDI and will enhance the appeal of the city, which aspires to become a global gastro-tourism destination.

COMMENT: This is a further step forward for PLENDI by VINCI Construction, the brand dedicated to exceptional projects. Two other projects will be completed in 2018 with the handover of the first Fauchon Hotel near the Place de la Madeleine in Paris and the completion of the luxury five-star Mandarin Oriental Hyde Park Hotel rehabilitation in London.

FUNCTIONAL FACILITIES

BECAUSE THE CITY OF THE FUTURE IS BEING BORN TODAY

Urban facilities are highly complex. Blending into their environments, they must meet a growing range of uses. VINCI Construction designs and builds this type of structure around the world to provide an optimum solution.

SHOPPING CENTRES

BOURNEMOUTH, UNITED KINGDOM

THE CITY NOW HAS A LEISURE COMPLEX

In 2017, VINCI Construction UK completed the construction of the Exeter Road leisure complex in the heart of Bournemouth. With a nine-screen cinema multiplex, leisure facilities, 20 restaurants and an underground car park, it is one of the United Kingdom's largest leisure projects in several years.

METZ, FRANCE

EXTENSIVE URBAN RENEWAL PROJECT

GTM Hallé, a subsidiary of VINCI Construction France, handed over the Muse shopping centre in the centre of Metz in November 2017 following 36 months of works. The 37,000 sq. metre complex contains 115 shops and a two-level underground car park. Several VINCI Construction companies, including Adim Est, Sogea Est and Botte Fondations (VINCI Construction France) as well as Weiler (VINCI Construction Terrassement), were involved in the project. Muse is part of a large eponymous multi-purpose project that also includes offices, residential units and single-family houses.

LILLE, FRANCE

LILLENIUM IS UP AND RUNNING!

The construction of a new shopping complex south of Lille got under way in December 2017. Built for Vicity by Sogea Caroni, a subsidiary of VINCI Construction France, Lillenium will have 56,000 sq. metres of floor area and 110 shops, including a supermarket.
In addition, it will offer three levels of underground car parks, a three-star hotel and a "Children's City" focused on scientific recreational activities. The first part of the project involves demolition of the foundations of the loading docks used by the previous occupants and earthworks. The shopping centre is set to open in 2019 and will help revitalise the Lille-Sud neighbourhood.

NANTERRE, FRANCE

THE U ARENA, EUROPE'S LARGEST INDOOR HALL

VINCI Construction France handed over the 115,000 sq. metre XXL U Arena, Europe's largest modular venue. Located in an office and residential neighbourhood, the facility's distinctive feature is its versatility. It can be configured as a concert hall or a rugby stadium as required and its noise insulation system is superlative. It is emblematic of the new focus on sports facilities that can be adapted to accommodate non-sports events. Several VINCI Construction France subsidiaries and teams from Soletanche Bachy and Freyssinet worked on the U Arena.

VILLENEUVE-LE-COMTE, FRANCE

THE AQUALAGON, AN OUTSIZED AQUATIC CENTRE

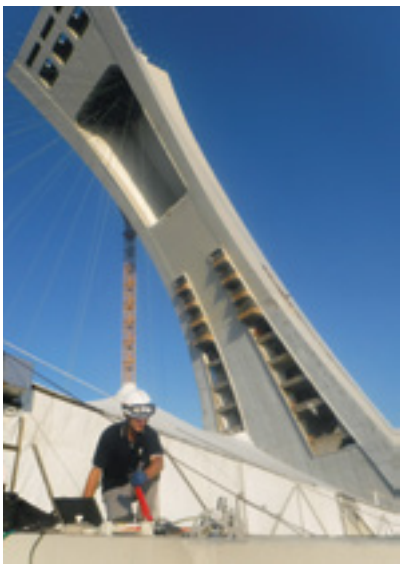
FACT: The Aqualagon near Paris, one of Europe's largest covered aquatic parks, opened in September 2017. Designed to meet strong demand for recreational facilities, it is part of the new Villages Nature® Paris eco-tourism complex.

COMMENT: Built by a joint venture formed by VINCI Construction France subsidiaries Chantiers Modernes Construction and Arbonis, the Aqualagon has distinctive complex architecture including an enormous stepped pyramid glued laminated timber frame, the main elements of which are shaped like very large boomerangs. To build them, Arbonis, the Group's wood subsidiary, developed a technique involving invisible resin-sealed rods that form very rigid assemblies.

MONTREAL, CANADA

SCANNING THE OLYMPIC STADIUM

The Régie des Installations Olympiques, which manages the Olympic Stadium in Montreal, has awarded a contract to Sixense to carry out a detailed inspection of the prestressing cables that strengthen the consoles supporting the stadium roof.
The inspection is designed to obtain a representative assessment of the condition of the cables and their residual tension. Following a first phase of investigations involving a limited number of areas in June 2017, a further measurement campaign was carried out on a larger sample. During the second phase, the condition of 58 cables spread over 18 consoles was inspected. In 2018, the vertical prestressing of the posts will be controlled.



STADIUMS AND SPORTS FACILITIES

BUDAPEST, HUNGARY

FOUNDATIONS FOR THE HIGH DIVE

The Fédération internationale de natation (FINA) held the 17th world high-diving championships in Budapest in July 2017. Soletanche Bachy's Hungarian subsidiary HBM built the foundations for the 33 metre high diving tower on the Banks of the Danube, installing 17-metre piles in a particularly restricted site (traffic on the river and on the quay, etc.). It required a temporary facility made up of three barges, with the main one, 80 metres long and only 10 metres wide, accommodating the piling rigs.

HOSPITALS

LES ABYMES, GUADELOUPE

THE CARIBBEAN'S FIRST PARTICLE ACCELERATOR

CHALLENGE: Every year, hundreds of new cases of cancer are diagnosed in Guadeloupe. Until very recently (October 2017), the island had no cyclotron. A cyclotron is a particle accelerator used to detect and track cancerous pathologies. It plays a crucial role in producing medical isotopes.

SOLUTION: To address this major public health issue, GTM Guadeloupe (VINCI Construction Dom-Tom) designed and built a molecular imaging centre. It contains not only a cyclotron that can serve between 1,800 and 2,500 patients per year, but also a nuclear medicine area and a patient consultation area.

HOSPITALS

TOTTENHAM, UNITED KINGDOM

A STATE-OF-THE-ART PSYCHIATRIC CARE UNIT

Integrated Health Projects (IHP), a joint venture between VINCI Construction UK and Sir Robert McAlpine, has been awarded a contract to design and build a 74-bed Mental Health Unit in Tottenham. The new building will replace the current structures as part of the comprehensive redevelopment of the hospital. This is the first project awarded to IHP under the new ProCure 22 Framework Agreement aimed at modernising the British healthcare system.

CAEN, FRANCE

BETTER CANCER CARE

FACT: With the handover of the Cyclhad in September 2017 as part of the ARCHADE project, the city of Caen now has a very high level medical infrastructure used to treat certain types of cancer.

COMMENT: Cancer is the leading cause of death in France. Pioneering cancer treatment and patient care facilities are therefore needed. The Cyclhad, a combined research and treatment centre, provides hadrontherapy particle beam treatment. The innovative process uses a particle accelerator – a cyclotron – to improve radiation of tumour cells while sparing adjacent healthy tissues and organs. The Cyclhad building, a highly complex feat of nuclear engineering, was designed and built by Sogea Nord-Ouest and GTM Normandie Centre. Also involved were Millennium (Nuvia), which provided radiation protection expertise, and Sixense Digital, which carried out structural inspection using its Digital Site tool.

Building on the project's success, VINCI Construction and IBA* (Ion Beam Applications SA, Euronext) signed a global cooperation agreement in October 2017 to provide innovative solutions for leading medical professionals treating cancer with proton therapy.

** IBA is the world's leading provider of proton therapy cancer treatment solutions*

GDAŃSK, POLAND

A SECOND WORLD WAR MUSEUM

The Second World War Museum opened in Gdańsk in March 2017. Built by Warbud, a VINCI Construction International Network subsidiary, in a joint venture with Hochtief, the building is made up of a 40-metre tilted tower symbolising the concept of ruins. Its 57,000 sq. metre floor area accommodates exhibition rooms, conference rooms, a screening room, a library and archives.

DUBAI, UNITED ARAB EMIRATES

THE DUBAI CREEK TOWER SETS ITS SIGHTS ON A WORLD RECORD

Soletanche Bachy completed works on the deep foundations of the Dubai Creek Tower, the emblematic observation tower designed by architect Santiago Calatrava. It is set in the heart of the Dubai Creek Harbour urban development programme that will become the new nerve centre of Dubai. More than 600 people worked at a fast pace to complete the 473 barrettes that form the tower and its stay cable anchor blocks' foundation system. The teams rose to the technical challenge of the ambitious engineering project during the barrette design and construction phases and set a new world record for load testing by applying a combined load of 36,300 tonnes to a barrette during preliminary structural design testing.

At the heart of the Dubai Creek Harbour urban development programme in Dubai, the deep foundations for the emblematic observation tower were completed following one year of works.

ARLES, FRANCE

LUMA ARLES, AN EXCEPTIONAL CULTURAL PROJECT

Arles is a city in Provence that hopes to build on its strong tourist traffic to become a key global art destination. The Fondation LUMA and LUMA Arles are developing a campus dedicated to artistic experimentation focusing on the production an promotion of new art forms, human rights and the environment.
The emblematic Parc des Ateliers resource building designed by architect Frank Gehry and currently being built by VINCI Construction France teams is scheduled to open in 2019. 3D BIM was used to build the 56-metre high-rise, surrounded at its base by a glass rotunda and covered with a stainless-steel façade designed to reflect the light of the sun and to meet the very high technical requirements of the project and its unusual architecture.

SCHOOLS AND UNIVERSITIES

MAYOTTE, FRANCE

THREE EDUCATION PROJECTS

CHALLENGE: With its high birth rate, Mayotte has the lowest median age in France. It is therefore important to build schools in sufficient numbers to accommodate students close to their homes, as travel to school becomes more time-consuming and complex.

SOLUTION: SMTPC (VINCI Construction Dom-Tom) was awarded a contract in 2017 to build three schools on the island. In the south, the company will provide the structural work for the Bouéni middle school that will accommodate 900 students. Similarly, in Ouangani, it will provide the structural work on the extension of the Kahani vocational high school and carry out the second instalment of works on the municipality's new middle school.

LANCASTER, UNITED KINGDOM

BETTER CONDITIONS FOR UNIVERSITY STUDENTS

VINCI Construction UK has won the contract to build a new three-storey complex on the University of Cumbria campus in Lancaster. The building will hold lecture halls and classrooms. This is the first project won by VINCI Construction UK as part of the North West Construction Hub (NWCH), which is managed by the Manchester City Council and is designed to improve the terms and conditions – more particularly with respect to price – applying to construction contracts.

SACLAY, FRANCE

A STATE-OF-THE-ART CAMPUS FOR AGROPARISTECH AND INRA

Campus Agro, the special vehicle set up by AgroParisTech, Inra and Caisse des Dépôts, decided in October 2017 to award a 30-year design, build, operate and maintain (DBOM) contract to a joint venture led by VINCI Construction France (via its subsidiaries CBC and Adim Paris Ile de France) and ENGIE Cofely. The contract covers the future Paris-area AgroParisTech and Inra campus. The 65,000 sq. metre project, designed by architects Marc Mimram and Jean-Baptiste Lacoudre, is part of the academic facilities of the University of Paris-Saclay, an internationally-known European scientific hub that brings together universities, engineering schools and research institutions, within which AgroParisTech and Inra are responsible for the "Agriculture, Food and Environment" sector. The campus will be up and running by 2021 and will accommodate 230 faculty/researchers, 450 research fellows, 200 PhD students and 2,000 undergraduates and continuing education auditors.

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 of goods and people.

RAIL

FRANCE

A NEW HIGH-SPEED LINE

Following the official inauguration of the South Europe Atlantic Tours-Bordeaux high-speed rail line on 28 February 2017 and its opening to traffic on 2 July, Paris is now only two hours and four minutes away from Bordeaux. The full range of the Group's business lines worked on the gigantic project, the largest in VINCI's history, for a period of six years. Within VINCI Construction, teams from VINCI Construction Terrassement, VINCI Construction France, VINCI Construction Grands Projets, Dodin Campenon Bernard and Soletanche Freyssinet were particularly active. The project involved construction of 302 km of high-speed line, 10 rail connections, 24 viaducts and 500 engineering structures.

GRAND PARIS EXPRESS

EAST-WEST CONNECTION OF THE GREATER PARIS AREA WITH LINE 15 SOUTH

CHALLENGE: The Grand Paris Express, Europe's largest infrastructure project, involves the development of 200 km of new automated metro lines around the capital and the construction of 68 new stations to connect them with the existing transport networks.

SOLUTION: The joint venture formed by VINCI Construction Grands Projets, Dodin Campenon Bernard, VINCI Construction France and Botte Fondations, together with Spie batignolles, will be responsible for works package T3C of Line 15 South connecting the Fort d'Issy-Vanves-Clamart underground station with the future Villejuif-Louis Aragon station. The same joint venture will build the new Noisy-Champs station, one of the nine "emblematic" Grand Paris stations, and will ultimately connect the RER A regional express line with Grand Paris Lines 11, 15 and 16.
Also noteworthy is the participation of Soletanche Bachy teams in the Horizon joint venture responsible for works packages T2A (Villejuif-Louis-Aragon-Créteil L'Échat), for which detailed analysis is being provided by Sixense Soldata, T3A (Pont de Sèvres-Fort-d'Issy-Vanves-Clamart), and T3B (Fort d'Issy-Vanves-Clamart).
Substantial work integration measures are included in the project and supported by the dedicated VIE (VINCI Insertion Emploi) structure, which trains and provides orientation for the long-term unemployed.

GRAND PARIS EXPRESS

LINE EXTENSIONS TO FACILITATE TRAVEL

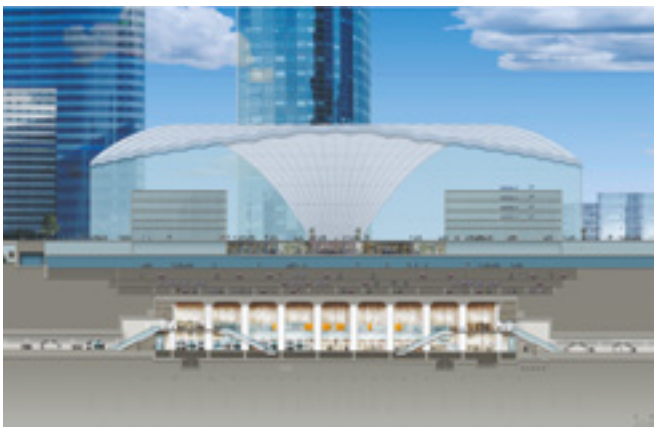
FACT: To relieve congestion on a number of lines and offer passengers speedier and more convenient travel, several metro lines are set to be extended in coming years.

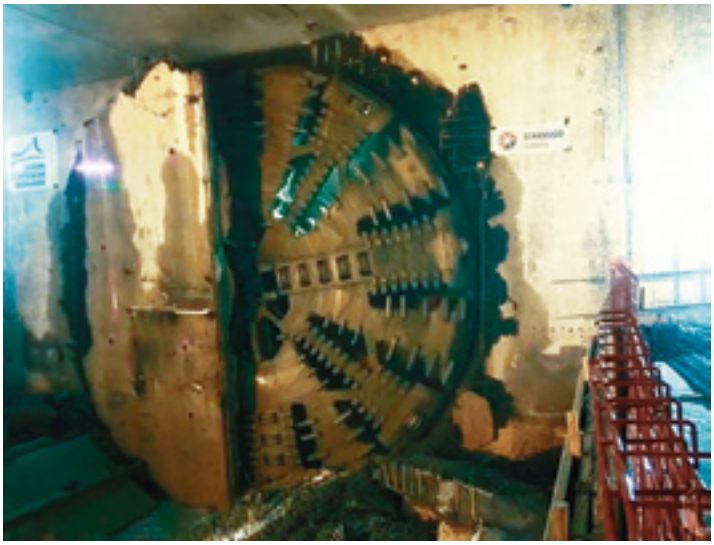
COMMENT: The joint venture made up of Dodin Campenon Bernard, Chantiers Modernes Construction, Sogea TPI, Botte Fondations – all VINCI Construction subsidiaries – together with Spie batignolles genie civil and Spie batignolles fondations is a major participant in the Grand Paris programme. On Line 12, for example, it is building two new stations, Aimé Césaire and Mairie-d'Aubervilliers together with Soletanche Bachy, which is building an access shaft. On Line 14, it is building the Clichy-Saint-Ouen station and its access passages. On Line 4, it is responsible for the work to extend the line between Mairie-de-Montrouge and Bagneux (works package T01). Lastly, on Line 11, Sogea TPI and Soletanche Bachy are developing the Mairie-des-Lilas station.

PARIS-LA DÉFENSE

THE FUTURE CNIT-LA DÉFENSE STATION, AN UNDERGROUND CATHEDRAL

As part of the Eole project, the RER Line E regional express extension to the west of Paris, SNCF Réseau awarded a contract to VINCI Construction (lead company) through its subsidiaries (VINCI Construction France, VINCI Construction Grands Projets, Dodin Campenon Bernard, Soletanche Bachy France, Freyssinet, Sixense and Botte Fondations) to build the new underground station in La Défense and its adjacent tunnels. The project, carried out in a joint venture with Spie batignolles génie civil and Spie batignolles fondations, is located in a dense, particularly complex urban environment. The goal is to both improve quality of service for users and enhance the attractiveness of the La Défense business district.





RENNES, FRANCE

A TUNNEL FOR THE RENNES METRO

To support the expansion of the Rennes urban area, the city is building Line B of the metro, which will have nine stations and is set to begin operating in 2020. The joint venture led by Dodin Campenon Bernard and made up of several VINCI Construction France subsidiaries, Spie batignolles génie civil, Spie batignolles fondations and Legendre Génie Civil, finished boring the tunnel for the 8.5 km line using the Elaine TBM in February 2018 following 38 months of work. With the new line, ridership over the network is expected to increase from 76.8 million journeys in 2014 to 120 million in 2020.

UNITED KINGDOM

HIGH SPEED II, THE NEW BRITISH RAIL PROJECT

CHALLENGE: The future high-speed line set to open in 2026 will connect London with Birmingham in 49 minutes. High Speed II, as it is called, will have 207 km of new track. It is designed to carry 18 trains per hour at a commercial operating speed of 360 km/h.

SOLUTION: In association with Britain's Balfour Beatty, VINCI Construction Grands Projets, VINCI Construction Terrassement and VINCI Construction UK won two ECI* – Phase 1 (Design) contracts to build works packages N1 and N2 of the high-speed line, which cover 85 km. The rail infrastructure will boost connections between London and the north of the country and open up isolated areas. Work will get under way in early 2019.

** Early Contractor Involvement*

SINGAPORE

COMPLETION OF THE UPPER THOMSON STATION PROJECT

CONTEXT: Work on the Upper Thomson station along the MRT (Mass Rapid Transit) metro's 43 km Thomson-East Coast Line (TEL), took place in an area featuring complex geology, a busy nearby road and narrow footprint within a dense urban environment.

PROJECT: To build the 26,000 sq. metres of diaphragm walls called for by the T212 contract, boost efficiency and reduce disruption, the teams from Soletanche Bachy subsidiary Bachy Soletanche Singapore used a compact HC05 Hydrofraise®. The project, for which several traffic detours were introduced, was completed in the first quarter of 2017.

FRANCE

ATLAS, A STRATEGIC SURVEILLANCE TOOL

INSAR (Interferometry for Synthetic Aperture Radar) technology makes it possible to use satellite radar imaging to very precisely detect ground movements. These measurements are then used to analyse surface deformation due to construction or other activities and to quantify the movement with millimetre precision as well as the extent of the subsidence or heave. The satellite surveillance system developed by Sixense Satellite was successfully used on the Crossrail construction project in London.

INTERNATIONAL

A WAVE OF METROS AROUND THE WORLD

VINCI Construction Grands Projets helped develop a number of metros in 2017.

First in Hong Kong, with the construction of the 700-metre tunnel for the new SCL (Shatin to Central Link) line. Named the year's best project by the International Tunnelling and Underground Space Association (ITA), it will be handed over in 2018 (see also page 20).

Second, in Cairo, where tunnel boring for Line 3 continued apace.

Lastly in Doha, with the completion of work on the Lusail (LRT) light rail line, the Emirate's first rail transport system, and the future red line south metro, which will run along the Gulf coast.

JAKARTA, INDONESIA

AN EARTHQUAKE-PROOFED METRO

CHALLENGE: Jakarta is developing a Light Rail Transit (LRT) system to cope with automobile traffic saturation. The LRT is made up of three elevated lines with a combined length of 43 km and 18 stations. The project has proved to be complex, due to the fact that the very large urban area lies in an earthquake-prone zone and the ground is in poor condition. The LRT must continue to operate in the event of an earthquake.

SOLUTION: A revolutionary isolation system has been introduced to reduce seismic loading and limit repairs following an earthquake. Freyssinet designed lead rubber bearings (LRB) to limit bridge movement under normal service conditions and to dissipate energy during an earthquake.

KAMSAR, GUINEA

A QUAY TO SUPPORT EXPANDING BAUXITE TRADE

CHALLENGE: Guinea holds the world's largest reserves of bauxite, the ore used to make aluminium. As bauxite requirements rise around the world, infrastructure is needed to foster the trade in the ore.

SOLUTION: As part of the Compagnie des Bauxites de Guinée project designed to expand production, Sogea-Satom (VINCI Construction International Network) and VINCI Construction Maritime et Fluvial (VINCI Construction France) extended the ore carrier quay and carried out dredging works in the port of Kamsar. The project will double the port's ore carrier loading capacity.

KPEME, TOGO

A WHARF FOR PHOSPHATE CARRIERS

The joint venture made up of Sogea-Satom, LSE (VINCI Construction International Network) and Freyssinet (Soletanche Freyssinet) won the contract to rehabilitate the wharf in Kpémé, east of Lomé, one of the major facilities belonging to the New Phosphate Company of Togo. Worksite installation began at the end of September 2017. Work got under way in January 2018 and will take 24 months to complete.

PORT OF BRIGHTON, TRINIDAD AND TOBAGO

RENAISSANCE OF THE OIL TANKER PORT

CONTEXT: Strongly degraded, Berth 2 of the port Brighton near the city from La Brea, southeast of the island, required heavy repairs. Ordered by the governmental Employer, National Energy Corporation of Trinidad and Tobago, this work were part of a logic infrastructure supply adapted to local development and oil activity.

PROJECT: With 25 months of mobilisation, Soletanche Bachy International and Soletanche Bachy Cimas, a subsidiary of Soletanche Bachy in Colombia, delivered a retaining wall 352 meters long and a heavy load pad built on piles. National Energy Corporation and British Petroleum have successfully launched its new off-shore Juniper platform from Berth 2.

BREST, FRANCE

ENLARGING AND ENHANCING THE PORT

To maintain the competitiveness of the port of Brest, an important part of the regional economy, and transform it into a benchmark site for the renewable marine energy industry, a joint venture consisting of VINCI Construction Maritime et Fluvial (lead company), VINCI Construction Terrassement, Menard and GTM Ouest is taking part in the construction of a new 40-hectare port terminal. The large programme includes construction of a quay, development of a storage area for heavy loads and a closure breakwater (outside the contract) for the future polder, part of which will be reclaimed from the sea, as well as optimisation of the city-port interface with the construction of new landscaped public spaces. The project, which got under way in early 2017, will take three years to complete.

OLÉRON ISLAND, FRANCE

EXTENSION OF FRANCE'S SEVENTH LARGEST FISHING PORT

La Cotinière, the largest fishing port of the Nouvelle Aquitaine region, undertook the upgrade and extension project in a bid to refurbish its port infrastructure and ensure the future of its fishing sector. Céteau-Céans, a project company comprising VINCI Construction France and VINCI Construction Terrassement, signed a public private partnership (PPP) with the Charente-Maritime department to finance, design and build the port extension and then provide heavy maintenance and renewal works. The project notably includes the construction of a breakwater, a basin and a fish market as well as channel deepening works.

ROADS

IQUIQUE, CHILE

A NEW ROAD TO BETTER CONNECT CITIES

FACT: In Tarapacá, in the far north of the country, Terre Armée subsidiary Tierra Armada Chile installed nearly 16,000 sq. metres of Terraclass® retaining walls on the city's second-busiest access road.

COMMENT:
The project is part of the Iquique Accessibility and Service Improvement project designed to improve the road connection between the cities of Iquique and Alto Hospicio. The project provides for the construction of 77,000 sq. metres of reinforced earth walls with a maximum height of 22 metres and a total length of 17.2 kilometres.

SASKATCHEWAN, CANADA

SMOOTH TRAFFIC FLOW, MOBILITY AND SAFETY: THE WINNING TRIPTYCH OF THE REGINA BYPASS

FACT: The first phase of the Regina Bypass motorway project was completed and opened at the end of October 2017. Led by Regina Bypass Design-Builders, a joint venture that notably includes VINCI subsidiaries VINCI Construction Terrassement, Carmacks Enterprises Ltd. (Eurovia) and Terre Armée as well as Graham Infrastructure LP and Parsons Canada Ltd, the project covers design, financing, construction, operation and maintenance of the 61 km Regina Bypass.

COMMENT: The Regina Bypass is designed to boost economic development by facilitating the flow of goods and automobile traffic around the city of Regina. It is Saskatchewan's largest-ever infrastructure project and also the first project of this type to be developed under a public private partnership. VINCI Concessions will operate the infrastructure for a period of 30 years.

NEW ZEALAND

RESTORATION OF A HIGHWAY SECTION DESTROYED BY AN EARTHQUAKE

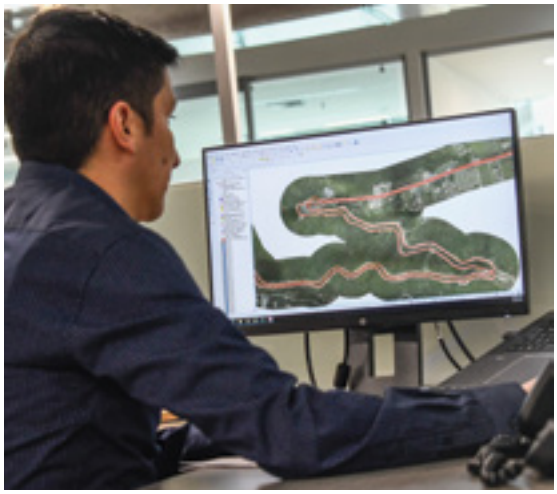
CONTEXT: Work was needed to repair heavy damage caused by the 7.8 magnitude earthquake that struck New Zealand in November 2016, about 90 kilometres from the city of Christchurch on the South Island and severely affected road and railway infrastructure and buildings.

PROJECT: 13 months after the earthquake, the new SH1 highway along the coast north and south of Kaikoura was opened. Traffic was able to resume before the end of the year. The key highway was built under difficult natural conditions by the NCTIR alliance, which brings together a variety of companies including HEB Construction (VINCI Construction International Network).

MONTPELLIER, FRANCE

FACT: The A9 motorway extension project in Montpellier, which notably included a shift in the original alignment, was completed following five years of works. It was inaugurated in May 2017, six months ahead of the original schedule.

COMMENT: The project was carried out under difficult conditions by VINCI Construction Terrassement (lead company) together with teams from GTM Sud-Ouest TP GC, Sogea Sud Hydraulique, GTM Sud, Eurovia Méditerranée, Eurovia GPI, Cognac TP and Dodin Campenon Bernard. It was France's largest motorway project in recent years. It involved building or restructuring a 25 km section of dual three-lane carriageway. VINCI Autoroutes now operates it.



LATIN AMERICA

In Lima, Peru, VINCI Construction Grands Projets, Soletanche Bachy and Sixense are helping to build the Línea Amarilla urban toll motorway. The new 25 km expressway is designed to relieve congestion in the city, where rush-hour traffic is completely saturated. Similarly, the joint venture made up of VINCI Construction Grands Projets / VINCI Construction Terrassement (50%) and Conconcreto (50%) is building a third lane along a 65 km stretch of the toll motorway connecting Bogotá, Colombia, with the city of Girardot under a 30-year public private partnership (PPP). Once they are opened to traffic, both projects will be operated by VINCI Highways (VINCI Concessions).

NIAMEY, NIGER

A ROAD JUNCTION TO IMPROVE TRAFFIC

Construction of the Diori Hamani junction, which got under way in Niamey at the end of 2015, continued apace. Carried out by Sogea-Satom (VINCI Construction International Network) with support from ISC (VINCI Construction France), Freyssinet, Terre Armée (subsidiaries of Soletanche Freyssinet) and LSE (VINCI Construction International Network), the project is located in a busy commercial area. It is scheduled for handover in the summer of 2018 and is designed to help smooth traffic flow in the city. The work includes construction of a 340-metre 2x2 lane flyover, an underpass, a frame structure and a dual-girder bridge as well as work on 10,000 metres of streets and a 1,500-metre stretch of the Gountou Yena riverbed. The project also includes the extension of schools in the vicinity of the construction site.

ROADS

NETHERLANDS

A ROAD TO BOOST ECONOMIC GROWTH

To smooth the flow of passenger and goods traffic, a new road connection is to be built between Katwijk (via the A44 motorway) and Leiden (on the A4). This Rijnland highway is to be built by an international joint venture, Comol5, made up of TBI Mobilis and Croonwolter&dros (25% each), DIMCO (DEME Infra Marine Contractors) (25%) and VINCI Construction Grands Projets (25%). The work, scheduled to take six years to complete, includes a large number of tunnels to be bored without interrupting traffic. The contract also covers maintenance of the new infrastructure over a period of 15 years.

BRIDGES AND VIADUCTS

COLÓN, PANAMA

THE ATLANTIC BRIDGE RISES IN PANAMA

VINCI Construction Grands Projets continued work on the Atlantic Bridge. The project comprises a 3,100 metre long, dual two-lane carriageway structure with 1-km access viaducts on either side of a 1,050 metre long cable stayed bridge with a 530 metre central span setting a world record for a concrete deck. The bridge foundations were built by Soletanche Bachy subsidiaries Rodio Kronsa et Rodio-Swissboring Panamá and the cable stays were supplied by Freyssinet. The access viaducts were completed in 2017 as construction of the main bridge deck proceeded at a fast pace, with 520 of the 1,060 completed. In January 2018, the 212.50 metre high towers were completed. The bridge will be keyed at the end of the summer in 2018 and the project will be completed in early 2019.

REUNION ISLAND

THE OFFSHORE VIADUCT OF THE NEW COASTAL HIGHWAY GRADUALLY TAKES SHAPE

CONTEXT: The New Coastal Highway project, designed to connect the island's two major cities, Saint Denis and La Possession, and scheduled to open in 2020, includes construction of a 5,400 metre offshore viaduct, France's longest.

PROJECT: In 2017, work proceeded at a good pace on the project, built by a joint venture that notably includes VINCI Construction Grands Projets and Dodin Campenon Bernard, with Freyssinet providing prestressing for the structure. The Zourite mega-barge began placing the 48 piers that will support the viaduct, the eco-designed pier footings were installed, 50% of the piers and 60% of the segments were produced and two-thirds of the offshore earthworks were completed. Having passed the Pointe du Gouffre, the teams are now working their way towards Saint Denis. In addition, the construction of the breakwaters by a joint venture that notably includes VINCI Construction Terrassement and SBTPC (a subsidiary of VINCI Construction Dom-Tom), continued at the Grande Chaloupe and the entrance to Saint Denis.

SANTIAGO DE CHILE, CHILE

OPERATE AND BUILD: A PROVEN MODEL

Currently operated by a joint venture that includes ADP, VINCI Airports and Astaldi, the airport in Santiago de Chile is undergoing extensive modernisation, upgrade and extension that notably include construction of a new international terminal. The goal is to raise the airport's capacity to 30 million passengers per year. The extension works, carried out by VINCI Construction Grands Projets (50% of the design-build consortium) and Astaldi (50%), got under way in September 2017.

Similarly, a new arrivals hall and domestic flight boarding area extension at the Phnom Penh international airport, also operated VINCI Airports, was inaugurated in December 2017. The project was carried out by VINCI Construction Grands Projets in partnership with Malaysia's Muhibbah Engineering company.

ORLY, FRANCE

AIRPORT MODERNISATION

FACT: Paris-Orly Airport is being modernised with the construction of a building to link the West and South terminals. Work got under way in September 2017. The project will facilitate passenger services and bring the airport into line with the highest international standards.

COMMENT: Construction of the terminal, set to open in 2019, was awarded to a joint venture bringing together VINCI Construction France subsidiaries Chantiers Modernes Construction and Bateg. To design and build the 80,000 sq. metre building with its ambitious modern architecture, the BIM (Building Information Modeling) method was used throughout the project.

MEXICO CITY, MEXICO

CONSOLIDATION OF THE RUNWAYS OF THE FUTURE INTERNATIONAL AIRPORT

CONTEXT: Located on the outskirts of the city, Mexico City's New International Airport (NAICM) construction project is Mexico's largest infrastructure project.

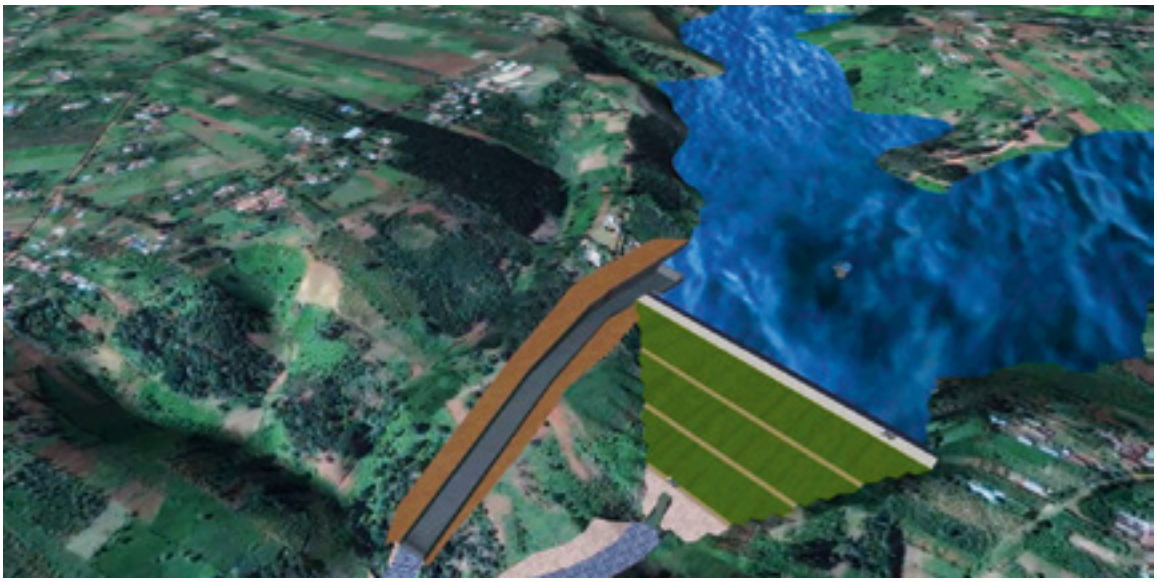
PROJECT: The airport's special feature is the fact that it is being built on the site of a former salt lake made up of soft clay with 250% to 400% water content. The teams from Soletanche Freyssinet subsidiary Menard therefore supplied and installed prefabricated vertical drains for the airport's Runway 2. The project, in which a record 44 million metres of drains were installed, was handed over in the summer of 2017. A total of 150 employees were trained and 15 sets of equipment were used.

WATER INFRASTRUCTURE

BECAUSE ACCESS TO WATER IS ALL-IMPORTANT

VINCI Construction, which operates across the entire water cycle, from pumping to wastewater treatment and discharge and drinking water supply, including dam design, construction and maintenance, offers unrivalled experience in making the most of the resource.

DAMS



NAIROBI, KENYA

DRINKING WATER FOR THE POPULATION

CHALLENGE: Greater Nairobi, one of Africa's largest urban areas, faces water shortages against a backdrop of population growth and climate change.
The Ruiru II project is designed to provide long-term improvement in the population's access to water and the associated quality of service.

SOLUTION: The joint venture made up of VINCI Construction Terrassement, Sogea-Satom (VINCI Construction International Network) and Egis Eau is actively preparing the design-build construction of the Ruiru II dam on the Ruiru and Bathi rivers. The project also includes a drinking water treatment plant with a capacity of 40,000 cu. metres per day with a drinking water storage tank in Kiambu and construction of a second drinking water tank with a capacity of 10,000 cu. metres in Karuri.

RICHLAND CREEK, UNITED STATES

A RESERVOIR TO FACILITATE WATER SUPPLY

CONTEXT: Paulding County, with a population expected to double over the coming 25-year period, is one of the few counties in Greater Atlanta that lacks an independent source of water. The State of Georgia therefore decided to invest in a new water supply system involving the construction of infrastructure including an earthen dam, an impoundment reservoir, a water treatment plant and two pumping stations.

PROJECT: In 2017, teams from Nicholson Construction Company, a Soletanche Bachy subsidiary in the United States, began work on the Richland Creek reservoir by building a 381 metre long, 29 metre deep cutoff wall underneath the dam to control seepage through the porous soil and partly decomposed rocks.

WATER PRODUCTION, SUPPLY AND DISTRIBUTION

BORDEAUX, FRANCE

RE-ROUTING SEWER SYSTEMS

FACT: Line D of the Greater Bordeaux tramway, an extension of nearly 10 km, is to be opened in 2019 and will link the city centre with Eysines to the northwest.

COMMENT:
The construction of the line required prior re-routing of all electrical, drinking water, sewer and telephone utility lines to clear the land take for the future tramway. As part of this project, VINCI Construction France subsidiaries Sogea Sud-Ouest Hydraulique and Chantiers Modernes Sud-Ouest worked throughout 2017 to re-route sewer lines in a densely populated urban area with many underground structures. Once this preparatory work was completed, work on the line itself could get under way.

OUAGADOUGOU, BURKINA FASO

IMPROVED DRINKING WATER CAPACITY

CHALLENGE: The City of Ouagadougou experiences drinking water shortages, especially in the dry season between March and May, resulting in regular supply cuts. The shortfall amounts to 45,000 cu. metres/day.

SOLUTION: With the start of operation of the Ziga II drinking water plant in 2017, the capital city's drinking water capacity was significantly increased. The work carried out by Sogea-Satom (VINCI Construction International Network) doubled the capacity of the existing plant. In addition to building a 5,000 cu. metre/hour pumping station and a 7,500 cu. metre/hour treatment station, the project included a 11,000 cu. metre storage tank.

REUNION ISLAND

EXCEPTIONAL WATER WORKS

CHALLENGE: The drinking water supply for the inhabitants of the municipality of Le Tampon and the south of the island needed to be secured to overcome frequent supply cuts.

SOLUTION: Sogea Réunion (VINCI Construction Dom-Tom) is carrying out water capture and channelling work on the Edgar Avril spring, located in a sensitive natural area, for the Communauté d'Agglomération du Sud urban community. The work includes a water capture structure, a pumping station, rehabilitation of the existing backflow station and pipelines to be laid on the riverbed. The worksite is located between two 900-metre vertical cliffs.

HO CHI MINH CITY, VIETNAM

DRINKING WATER FOR ALL

Ho Chi Minh City decided to award a contract to VINCI Construction Grands Projets and Bessac (Soletanche Bachy) to design and build a 10 km water transmission pipe to supply the centre of the country's economic capital with drinking water. The tunnel will be excavated with two microtunneling machines along Line 1 of the metro, currently under construction, and pass under the Saigon River. Signed in August 2017, the project is financed by the Asian Development Bank (ADB) and the programme manager, Saigon Water Corporation (Sawaco). It will take three and a half years to complete.

GLASGOW, SCOTLAND

A SEWER TUNNEL TO STORE WASTEWATER

VINCI Construction Grands Projets completed boring operations on the Shieldhall wastewater tunnel in October 2017 when the mud pressure balanced tunnel boring machine Daisy broke through after working through marly soil with seams of coal (treated prior to the start of works), Glacial Till and alluvial soil deposited by the River Clyde. Handed over in the second half of 2018, the Shieldhall wastewater storage tunnel will be Scotland's longest.

LONDON, UNITED KINGDOM

A DIFFERENT APPROACH TO UNDERGROUND WORKS IN LONDON

CONTEXT: London launched the Tideway project in 2015 to solve the problem of untreated wastewater discharge to the Thames and to build a high-quality sewer system. The East works package, awarded to the CVB joint venture – made up of Costain, VINCI Construction Grands Projets and Bachy Soletanche – covers construction of two tunnel sections with lengths of 5.5 and 4.6 km respectively and five large shafts with diameters ranging from 17 to 25 metres.

NEW APPROACH: In 2017, the teams from Bachy, a subsidiary of Soletanche Bachy in the United Kingdom, began using an electrically-powered Hydrofraise® to dig the shaft walls at several sites. The advantages of the technique are that it reduces the project's carbon footprint and also the noise generated by the works, which benefits local residents. By upgrading the machine that it built in the 1970s, Soletanche Bachy continues to adapt to its clients' needs.

RENEWABLE AND NUCLEAR ENERGY

BECAUSE ENERGY MUST BE SUSTAINABLE

To address climate change, the world must shift to an energy mix that generates less CO_2, at a time when energy demand continues to grow. VINCI Construction offers expertise in both nuclear and renewable energy that can help bring about the energy transition.

NUCLEAR

FRANCE

EMERGENCY BUILDINGS FOR NUCLEAR POWER PLANTS

CONTEXT: Following the March 2011 nuclear disaster in Fukushima, when an unusually strong tsunami swamped the reactor cooling circuit and caused a meltdown, French nuclear safety authority ASN decided, in light of this experience, to rule out the risk of loss of electric power.

PROJECT: EDF is building a special facility for each of its 58 reactors to house a generator that can, in an emergency, take over if all the existing systems fail one after the other.
A joint venture composed of teams from VINCI Construction France and Nuvia is building 20 emergency diesel generators with unit capacity of 3 MW to supply nuclear plants autonomously for a period of 72 hours in case of extreme events.

CREYS-MALVILLE, FRANCE

ONGOING DISMANTLING OF THE SUPERPHÉNIX REACTOR

Since 2006, the Superphénix fast neutron reactor has been undergoing decommissioning. For the companies working on it, the project is a substantial challenge, given the special technology used and the size of the components, starting with the reactor vessel, which is nearly 24 metres in diameter. The project entered a new phase in 2017 when Nuvia, a subsidiary of Soletanche Freyssinet, dismantled the Core Cover Plug (BCC) and the Small Rotating Plug (PBT).
The operation called for the design of a remotely operated assembly and a customised cutting system. Nuvia employed its full range of expertise, including complex project management, civil and mechanical engineering and robotics, to carry out the works.

UNITED KINGDOM

HELPING TO BOOST RENEWED CONSTRUCTION OF NUCLEAR POWER PLANTS

FACT: The two PWR (pressurised water) type reactors with 1,650 MW unit capacity that will be built at Hinkley Point near Bristol in the southwestern part of the country will be the first to be built in 20 years. They will help provide the United Kingdom with energy independence.

COMMENT: EDF Energy, in charge of building the plant, once again called on Nuvia to design, engineer and build the primary effluent and wastewater treatment systems. It also awarded an additional contract covering construction of a sample analysis facility to check water quality in the primary circuit and the steam generators.

RENEWABLE ENERGY

ROMANCHE-GAVET, FRANCE

FRANCE'S LARGEST HYDROELECTRIC PROJECT

The Romanche-Gavet underground hydroelectric plant currently under construction in southeast France is EDF's largest hydroelectric project in Europe. It will replace the six existing power plants on the Romanche River with a single underground plant, increase electricity production by 30% and supply a population of more than 230,000 people. In 2017, the Dodin Campenon Bernand teams achieved two major milestones: completion of the civil engineering works in the generating plant and transformer caverns and completion of the 3.8 km downstream tunnel in February and the 6.2 km upstream tunnel in December.
The teams will now begin work on the 157.5-metre drop shaft and the 177-metre surge chamber, using the exceptional raise boring method.

LA COURNEUVE, FRANCE

THE SUSTAINABLE GEOTHERMAL OPTION

The Smirec (*Syndicat mixte des réseaux d'énergie calorifique*) geothermal authority decided to replace its geothermal doublet at its La Courneuve site, which were reaching the end of their service lives, and to renew its facilities in order to increase local energy production. Entrepose Drilling completed the new geothermal well, which reaches a depth of more than 2,000 metres, in December 2017 and connected it with a first shaft built in 2011. These works, once completed, will provide the Smirec with a new, more efficient and sustainable system.

INNOVATION

A DIFFERENT APPROACH TO WIND ENERGY

EOLESENSE® is the name of the new technology patented by Sixense Environment.
The agile, flexible and efficient system revolutionises wind farm acoustic impact studies. It is designed to facilitate risk forecasting and control and enable a project's sensitivity to be reliably assessed in the initial phase.
The advantages are better management in the operational phase, an accessible decision tool in the initial phase, shorter impact study times and acoustic engineers able to focus on high-value-added issues such as project consultancy and optimisation. EOLESENSE® will be tested *in situ* with a number of wind farm developers in 2018.

OIL AND GAS

BECAUSE FACILITIES MUST BE DURABLE AND SAFE

Against a backdrop of steadily increasing world energy demand, the oil and gas industry regularly calls on VINCI Construction's expertise in the design-build construction of production, transport and storage facilities.

GAS INFRASTRUCTURE

YAMAL, RUSSIA

LNG IN THE ARCTIC

The Yamal LNG project located 400 kilometres inside the Arctic Circle, subject to temperatures as low as - 40°C, carried out in permafrost and involving construction of a liquefied natural gas production station at the Tembey-South gas field, is an outsized undertaking. The Entrepose Contracting – VINCI Construction Grands Projets joint venture was in charge of designing four double-walled cryogenic LNG storage tanks with a unit capacity of 160,000 cu. metres and then providing equipment and supplies and building and commissioning the tanks. It delivered the first two tanks in October 2017 after Freyssinet teams installed the prestressing. Following the inauguration of the site by President Vladimir Putin on 8 December 2017, the teams completed the last two tanks and moved into the project close-out stage.

NIGER DELTA, NIGERIA

EXPANSION OF THE GAS INDUSTRY

FACT: Entrepose DBN, a Nigerian subsidiary of Entrepose, completed the greenfield gas treatment unit development and construction project in Oben for the Seplat company and handed it over in the summer of 2017.

COMMENT: At a time when the oil reserves of Africa's most populous country are beginning to be depleted, Nigeria is working to develop its gas industry based on its substantial natural gas reserves. The need for gas infrastructure in a country where there is a lack of such facilities is an opportunity for VINCI Construction to employ its expertise in complex project construction.

ONSLOW, AUSTRALIA

LNG IN AN EXTREME ENVIRONMENT

The Wheatstone project, carried out by Entrepose Contracting in a joint venture with VINCI Construction Grands Projets and Thiess, began producing LNG in early October and was handed over during the following weeks. The facility, which was built in an extreme environment, involves two LNG tanks with unit capacity of 150,000 cu. metres as well as two condensate storage tanks with 120,000 cu. metre unit capacity. The site is expected to produce nearly nine million tonnes of LNG and will enable Australia to overtake Qatar as the world's top LNG exporting country.

ALBANIA-GREECE

GAS PIPELINES TO ENSURE EUROPEAN ENERGY INDEPENDENCE

CHALLENGE: The 878 km TransAdriatic Pipeline (TAP) will connect Azerbaijan with Italy, passing east to west through northern Greece and Albania. The highly strategic project is designed to ensure natural gas supply to Europe starting in 2020.

SOLUTION: Spiecapag, a subsidiary of Entrepose, has been responsible since 2016 for the EPC (engineering, procurement, construction) contract covering three works packages: three lots, one with a length of 185 km in Greece, and the other two, with a combined length of 215 km, in Albania. Supported in particular by the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD), the TAP will help reduce the energy dependence of the European Union, which imports more than half its energy.

BANGLADESH

LNG, A RESOURCE FOR THE FUTURE

With two new independent contracts covering the construction of fixed infrastructure for two LNG floating storage and regasification terminals, Geocean made a noteworthy entry into Bangladesh. The two projects, which are to begin operating in early 2019, are located off the coast of Moheshkhali Island in the southeastern part of the country and are being developed for Excelerate Energy Bangladesh and Summit LNG Terminal. The projects will enable Petrobangla, the national oil and gas company of Bangladesh, to diversify energy resources and help boost the country's economic development by importing natural gas from international markets.

HAUTE-MARNE AND CÔTE-D'OR, FRANCE

A GAS PIPELINE PROJECT TO FOSTER SUSTAINABILITY

FACT: Works Lot 5 of the Val-de-Saône project, which covers construction of 43 km of gas pipelines between the municipalities of Voisines (Haute-Marne) and Véronne (Côte-d'Or), was carried out by a joint venture made up of Spiecapag (Entrepose) and A. Hak. Meanwhile, Bessac (Soletanche Bachy) built two micro-tunnels across the A31 motorway and a railway line.

COMMENT: Contending with a very tight construction schedule of nine months total and with a shortage of qualified personnel for this type of structure, with most employees hired locally, Spiecapag decided to train the teams and adapt the construction methods. The project was also unusual due to the environmental measures that were taken to maintain agricultural land and avoid disrupting plant and animal life.

OIL INFRASTRUCTURE

BRITISH COLOMBIA, CANADA

BETTER ACCESS TO OIL RESOURCES

Spiecapag Canada Corp. (Entrepose), operating in a joint venture with Macro Entreprise Inc., is to build an 85-km oil pipeline in the Hope region of British Colombia. The operation is part of the Trans Mountain Expansion Project (TMEP), linking western Canada with the Pacific coast and running from Edmonton, Alberta to the outskirts of Vancouver. The strategically important project is designed to help Canada boost its exports by sea.

OFFSHORE AND ONSHORE PIPELINES

LIMBÉ, CAMEROON

OFFSHORE PIPELINES TO CONNECT SEA AND LAND

Entrepose subsidiary Geocean successfully replaced an offshore pipeline designed to connect a conventional buoy mooring (CBM) with the onshore Sonara refinery. The turnkey contract covered engineering, supplying and manufacturing equipment as well as pipeline laying from the coast. Given the site's strong exposure to swells, the installation of the 2,200-metre concrete-coated pipe was carried out by the Protis barge.
The project was completed in September 2017.

COATZACOALCOS, MEXICO

CONSTRUCTION OF STORAGE FACILITIES

FACT: The opening of the Mexican Oil & Gas market to private operators entails modernisation of the facilities. The Shalapa project at Coatzacoalcos in the State of Veracruz, which is designed to provide surface facilities for an underground LPG storage site in a salt cavern, is part of the move.

PROJECT: Entrepose Group's subsidiaries Entrepose Contracting and Geostock submitted a multi-activity bid to take part in the project and will complete the development of the underground liquid petroleum gas storage facilities and the construction of related surface facilities by the autumn of 2018. Entrepose Group will also operate the site in conjunction with Geostock for a period of 20 years.

CORNEGLIANO LAUDENSE, ITALY

A 3D SEISMIC CAMPAIGN

The underground storage project near Lodi, Lombardy, is designed to convert the depleted Cornegliano gas well, which lies at a depth of 1,400 metres under a thick layer of clay, into a natural gas storage site. Geostock (Entrepose) has been working since 2016 to provide technical assistance to the owner Ital Gas Storage S.p.A for the underground works, which involves the construction of two vertical and 12 horizontal wells.
In addition, Geostock completed the 3D seismic campaign's acquisition and interpretation engineering contract in the area around the storage site in June 2017.

ENVIRONMENT

BECAUSE THE PLANET MUST REMAIN CLEAN

VINCI Construction works alongside its clients to efficiently protect the environment by providing solutions including design-build construction of water, waste and flue gas treatment units, soil remediation, asbestos removal, deconstruction of polluted sites and development of ecological areas.

WATER TREATMENT

AUCKLAND, NEW ZEALAND

BACTERIA TO IMPROVE WATER QUALITY

The McConnell Dowell - HEB Construction (VINCI Construction International Network) joint venture handed over the Mangere BNR (Biological Nutrient Removal) Facility in 2017. The contract covered an upgrade of the Mangere wastewater treatment plant south of Auckland, New Zealand's largest city. It involved construction of a biological nutrient elimination facility with an ecologically sustainable process using bacteria to remove nutrients from wastewater and thereby improve water quality. The new facility will increase the plant's capacity at a time when the population of Auckland is expected to grow substantially in coming years.

WATER TREATMENT

ACHÈRES, FRANCE

MODERNISATION OF EUROPE'S LARGEST WASTEWATER TREATMENT PLANT

CONTEXT: The Seine-Aval wastewater treatment plant in Achères, Europe's largest, treats wastewater generated by a Paris-area population of six million people. The modernisation of the unit is designed to meet the requirements of the water framework directive and achieve compliance with the European targets set by the urban wastewater directive.

PROJECT: The second phase of the long-term project involves the restructuring of the plant and the replacement of existing facilities with more efficient treatment units. As part of the project, VINCI Construction France, Dodin Campenon Bernard and VINCI Environnement (Entrepose) completed the civil engineering works and the bio-filtration system, i.e. the biological and membrane circuit, in 2017.

WASTE TREATMENT

Allerton Waste Recovery Park, North Yorkshire

UNITED KINGDOM

LESS WASTE, MORE ENERGY RECOVERY

The new North Yorkshire multi-sector waste recovery centre in the city of York, built by VINCI Environnement UK (a joint company set up by VINCI Construction UK and VINCI Environnement UK), has been delivered at the end of 2017. Its goal is to reduce landfilling of waste in the geographical area by 90% between now and 2020, increase the recycling rate for household waste, more than half of which is currently landfilled, and process 320,000 tonnes of waste annually. The facility will also be able to export 25 MW of renewable electricity, corresponding to the consumption of some 40,000 households.
Also in 2017, teams from VINCI Environnement and VINCI Construction UK handed over the Cornwall Energy Recovery Centre (CERC), which treats household waste generated in Cornwall.

SOIL REMEDIATION

HUNINGUE, FRANCE

SITE REMEDIATION AT A FORMER CHEMICAL PLANT

REMEA set up the worksite designed to remediate the site of a former textile dye production plant operated by the Clariant company until 2011. The goal was to clean up 130,000 tonnes of polluted soil. The remediation process will be carried out in a confined area and consist in washing the soil with water. When this work, which will take 60,000 hours, is completed, 90% of the soil will be recycled and backfilled after treatment. The project is scheduled to last 18 months. Earthworks and materials treatment work got under way in 2018.

DECONSTRUCTION/ REMEDIATION

DUGNY, FRANCE

DECONSTRUCTION OF A NAVAL AIRBASE

CONTEXT: Built in 1955, the Dugny-Le Bourget naval airbase was officially closed in 2011. The French Navy site, which included housing, infrastructure and command buildings, was shut down as part of the armed forces restructuring programme under the 2009/2014 Military Planning Act.

PROJECT: Navarra TS, a subsidiary of VINCI Construction Terrassement, carried out the site deconstruction and remediation works on the western part of the Le Bourget airport land take over a period of 15 months and handed over the project in 2017. It remediated a total of 10 hectares of land and carried out asbestos removal and deconstruction of hangars and slabs. It also destroyed a 250-pound bomb.

DECONSTRUCTION

FRANCE

END OF LIFE FOR 10 ANEMOMETRIC TOWERS

FACT: Neom (VINCI Construction France) was awarded a pilot contract by EDF Énergies Nouvelles to dismantle 10 anemometric towers spread over 10 wind farms in Brittany and the Hauts-de-France and East regions.

COMMENT: Each tower is 80 metres high and weighs 25 tonnes. The dismantling project was a major first for Neom. The first tower was cut with a blowtorch in August 2017 in the Somme region under perfectly safe conditions using an autonomous robot developed by Neom's R&D teams.

SAVOIE, FRANCE

ECOLOGICAL RESTORATION OF THE ISÈRE RIVERBED

CONTEXT: An ecological restoration operation was to be carried out on the Isère riverbed for the Syndicat Mixte de l'Isère et de l'Arc en Combe de Savoie (SISARC).
La Combe de Savoie is the glacial valley of the Isère and its main tributary the Arc. The purpose of the project was to restore the hydraulic efficiency of the Arc and to facilitate flow in the event of a flood.

PROJECT: Benedetti-Guelpa* and the Centre Terrassement Mancuso (VINCI Construction Terrassement) carried out the operation, which fosters biodiversity, in two stages.
In the first stage they excavated and removed 300,000 cu. metres of overgrown silted islands that had accumulated in the riverbed, replanted protected plant species and removed invasive species.
In the second stage they remodelled the riverbed and created secondary arms.

** See "2017, a year of initiatives for future building" on page 19*

REIMS, FRANCE

A BRIGHT FUTURE FOR ARTIFICIAL WETLANDS

As part of the AZHUREV (development of a wetland area in Reims for evaporation and wildlife) project, VINCI Construction Terrassement worked with Edivert to create a 10-hectare artificial wetland area. The project, which lies downstream from former Reims Métropole wastewater treatment plant, was financed by Hydreos, the water competitiveness centre, and the Agence de l'Eau. This innovative additional sanitation and ecological cleanup system is a first for the region.

MINING

BECAUSE ACCESS TO NEW RESOURCES IS VITALLY IMPORTANT

Operating across the entire mining sector, VINCI Construction designs and builds the infrastructure – tunnels, roads, operating facilities and special equipment – required to operate both underground and open pit mines.

ANTAMINA, PERU

PREFABRICATED ARCH SEGMENTS OVER A PUMPING STATION

At the site of the Antamina mine in the Ancash region of northern Peru, teams from Freyssinet Tierra Armada Peru (Soletanche Freyssinet) are taking part in a project involving placement of prefabricated TechSpan® arches. The structure, made up of four telescoping sections and 27 different arch geometries, will cover a mine pumping station. Once completed, it will be covered with 70 metres of backfill. Ultra High Performance Concrete was produced on an industrial scale and used on the project for the first time in Peru. The TAI Opérations prize was awarded to Freyssinet Tierra Armada for the project.

CANDELARIA, CHILE

A NEW IMPOUNDMENT

CONTEXT: The Candelaria copper mine, owned by Canadian Lundin Mining, is located in the mining belt of Copiapo in the northern Chile desert, 750 kilometres north of Santiago.

PROJECT: As part of the construction of a new tailing deposit, Soletanche Bachy Chile built a plastic concrete waterproofing wall, a drainage wall with an outstanding depth of 25 metres requiring innovative techniques, and a grouting curtain involving more than 40 kilometres of drilling. A micro-tunnel was also driven under the future impoundment in association with Bessac (Soletanche Bachy), to drain the water seepage from the tailing deposit to be re-used in the copper concentration and tailing transport processes.

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