

The datacentre market

France
November 2024





Introduction

Technological (R)evolution and the data boom

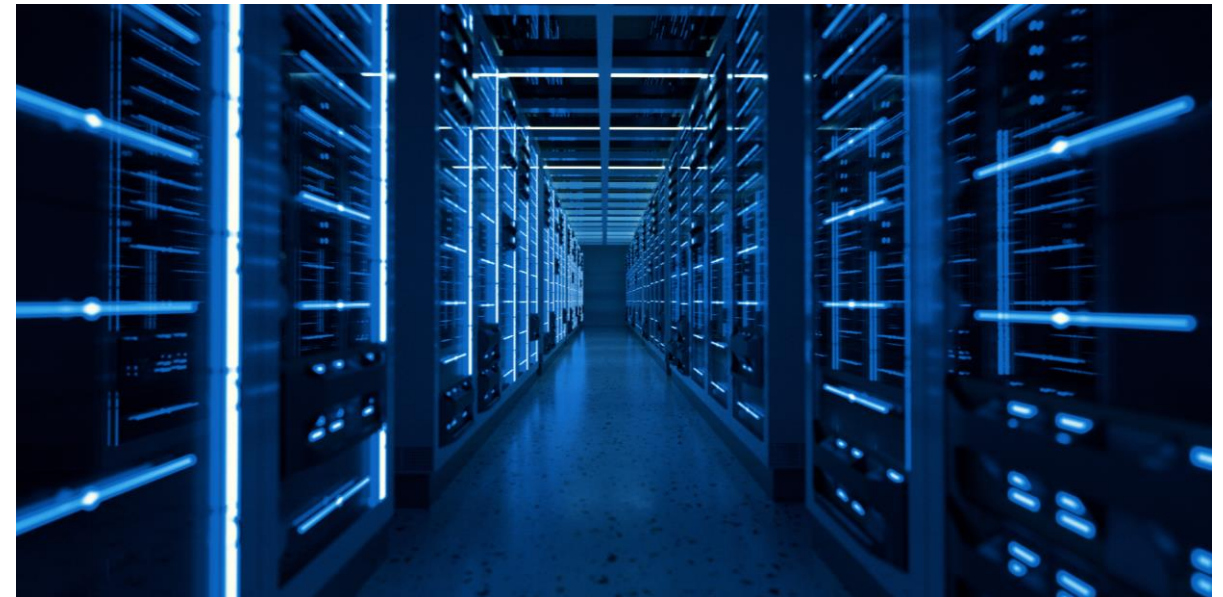
The introduction of the Internet in the 1960s, followed by its subsequent roll-out to government bodies, academics and large corporations, was a major technological and social development that profoundly transformed the world we know today. The age of the Web, starting in the early 1990s, and its democratisation among the general public with the creation of Google and social networks in the 2000s marked the advent of new information and communication technologies (ICTs). The data boom will increase needs tenfold, particularly in terms of connectivity, hosting and information sharing.

Since then, the number of data centres has continued to multiply across the globe. This infrastructure provides secure storage, processing and data management services. Whilst optimising costs remains a major challenge

for businesses, particularly in the wake of the COVID-19 pandemic, investment in new technologies (Cloud, AI, etc.) has continued to accelerate. This is a pivotal time for businesses, with the adoption of remote working, the acceleration of digitisation and the search for innovative solutions in an extremely competitive environment.

Datacentres therefore play a strategic role, given the ever-growing need for storage and computing capacity.

Knight Frank is pleased to bring you a [detailed analysis of the major trends and outlook](#) for this highly specialised sector.



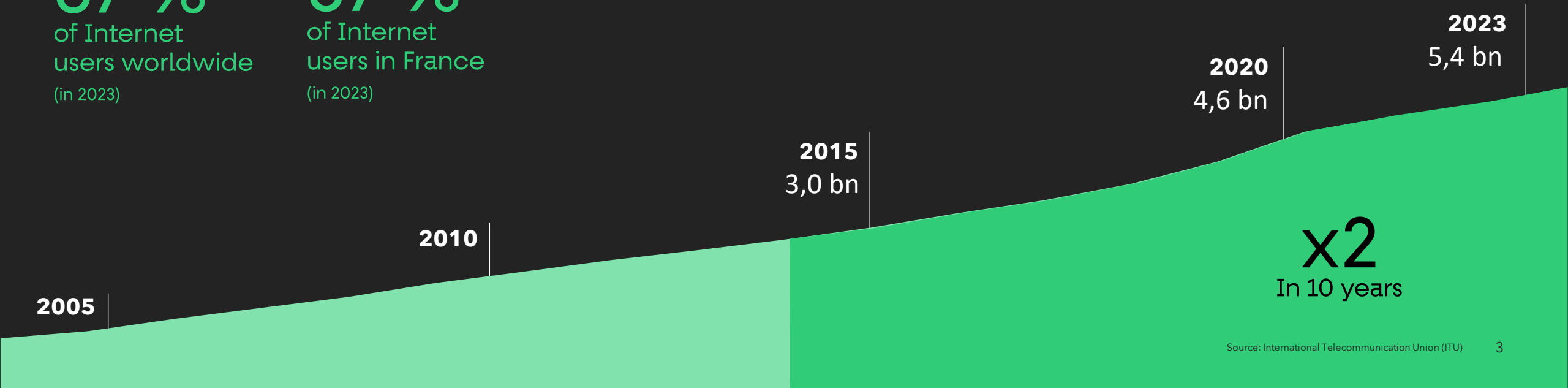


Growth in the number of Internet users worldwide

(In billions)

67 %
of Internet users worldwide
(in 2023)

87 %
of Internet users in France
(in 2023)





60 years of innovation

Foundations and the emergence of the internet

1950

1956
Arthur Samuel programmes an IBM 704 to play draughts and learn from its games: the **1st example of artificial intelligence**.

An IBM Deep Blue defeats the reigning world chess champion in 1997.

1960

1960
The American Defence launched ARPA (Advanced Research Projects Agency) to secure communications.

1969, UCLA, Stanford, UC Santa Barbara and the University of Utah were all using the network.

1970

1970
The term 'Internet' and emails appear.

1975
Microsoft is founded

1976
Apple is founded

1980

1983
Creation of the DNS (Domain Name System) to simplify IP addresses into domain names.

1986
Launch of the National Science Foundation Network (NSFNET), linking 5 supercomputing centres for faster Internet access.

Creation of the 1st 'Radiocom 2000' mobile phone network in France (1G).

1990

1991
The World Wide Web is launched.

1994
Amazon is founded

1995
eBay is founded

Start of Internet marketing and ADSL trials.

1996
Start of Internet telephone services (VoIP).

1998
Google is founded

The start of data exchanges

Marketing the Internet and datacentres



60 years of innovation

A world driven by data and hyperconnectivity

2000

2010

2020

2023

Emergence of 3G, search engines and social networks:

- 2001** : Wikipédia
- 2003** : MySpace
- 2004** : Facebook
- 2005** : Youtube
- 2006** : Twitter

2008
The financial crisis prompts companies to cut IT costs by outsourcing, escalating the strategic role of data centres.

2009
The 1st cryptocurrency, Bitcoin, is created.

2010
Launch of fixed 4G* and fibre optics.

** use of the 4G mobile network for fixed Internet access.*

2020
COVID-19 pandemic.

Gradual roll-out of 5G to relieve congestion on the 4G network (used extensively for remote working) and to access HD content: cloud gaming, 4K streaming, VR, etc.

2021
4.9 billion users, or half the world's population, have access to the Internet.

2022
Metaverse losing momentum.

2023
Explosion of AI and human/machine interaction models (ChatGPT, Gemini, Copilot, etc.).

Global debate on the monitoring of generated content, ethics and regulation of AI.

Boom in data and datacentres

Development of AI and machine learning



And in the future ?

2030, the dawn of a new era?

- Roll-out of **6G** and **Internet via satellite** (projects such as Starlink by SpaceX, Kuiper by Amazon, OneWeb and Telesat Lightspeed).
- **Universal connectivity** goal by 2030 (United Nations).
- Development of **immersive applications, high-performance generative AI** in a variety of fields (medicine, etc.), **augmented reality** (training, maintenance, design, etc.) and **8K** content.
- Extensive integration of **IoT** (Internet of Things) in urban infrastructure and construction, and home automation in residential design.

Exponential growth in Internet traffic expected in France:

x 5 by 2030,

i.e + 21 % per year
to reach 1 035 Go/month
compared to 200 Go/month today



Summary

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Exponential needs
and major challenges

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01. Exponential needs and major challenges



From safes to data fortresses

Main types of data centre

A data centre is a strategic infrastructure used to host computer servers and associated equipment to store, manage and process data or applications on behalf of one or more companies. A centre comprises a range of equipment: IT (servers, storage bays, routers, etc.), technical (cooling and air-conditioning systems, air treatment, power supply, etc.) and security (prevention of fire, theft or intrusion, cyber-attacks, etc.).

PRIVATE OR CORPORATE

built, managed and operated by a single entity for their own use (off or on site).



MANAGED SERVICES

managed by a supplier who rents its services and manages the data of one or more companies.



EDGE (PERIPHERAL)

an emerging model that involves having a small data centre located close to a company's customers.



CLOUD

managed by a cloud provider (Amazon AWS, Microsoft Azure or Salesforce CRM, for example) and leased to companies as a service.



SHARED RENTAL

managed by a data centre provider who rents to several companies to outsource the management of data and IT equipment. There are two types: *Retail* and *Wholesale*.



HYPERSCALE

a recent development, with very large capacities (> 4 MW) designed to meet the growing needs of players such as Amazon and Google.





From safes to data fortresses

Infrastructure classification

The Uptime Institute created the Tier classification system in 1993 to provide a precise, standardised assessment of the performance of data centres around the world. This certification, now recognised as the benchmark for the industry, focuses on several major criteria, such as the durability of infrastructure, their operational efficiency and their ability to withstand interruptions.

TIER 1
Basic with no redundancy

(99.67% availability and annual shutdown of almost 29 hours)

TIER 2
Partial redundancy

(99.74% availability and annual shutdown of around 22 hours)

TIER 3
Redundancy and simultaneous maintenance to limit shutdowns

(99.98% availability and annual shutdown of around one and a half hours)

TIER 4
Full redundancy, fault-tolerant

(99.995% availability and 25 mins/year shutdown)



From safes to data fortresses

Main tenants

Initially intended for the specific needs of governments, the potential for securing financial data and the growing capacity to process large volumes of information quickly won over large financial institutions and telecommunications groups. Datacentres were quickly adopted by technology and industry giants. Today, they are more accessible, are available to a greater number than previously and are home to a growing range of companies.

*GAFAM : Google, Apple, Facebook, Apple et Microsoft

*BATX : Baidu, Alibaba, Tencent et Xiaomi



Banking, financial services and insurance institutions



Cloud service providers and tech giants

(GAFAM*, BATX*)



Public sector
(government agencies, public authorities)



Telecoms, telephone or internet companies
(Iliad, Orange, Bouygues, OVH, etc.)



Other private companies



Exponential demand in France...

DEMAND FOR DATACENTRES CONTINUES TO GROW

In a world obsessed with data in all its forms, the demand for data centres has continued to grow in recent years.

Businesses have gradually embarked on their digital transition to become more flexible, efficient and productive. This quest for speed and access to information will rapidly spill over into the private domain, which will largely adopt new consumer habits (Cloud-based email storage, online shopping and marketplaces, streaming subscriptions, etc.).

The immediate effect of the outbreak of the Covid-19 pandemic was a tenfold increase in global demand (a period of remote working, video conference calls, etc.), but it also demonstrated the vulnerability of businesses that had not yet embraced the digital revolution, if at all. As a result, the data centre industry is set to significantly bolster its offering and capacity.

Exponential demand in France...

The popularity of digital subscriptions

BearingPoint estimates that in 2024 the French will spend €45/month on streaming services (+7% year-on-year).

Democratisation of digital uses (Cloud, AI, etc.) requiring more powerful IT equipment

According to Roland Berger, worldwide sales of GPUs should reach \$10 billion in 2026 (compared with \$6 billion in 2022).*

**Graphics Processing Unit*

New consumption modes post-COVID

In 2023, \$160 billion was spent online, according to FEVAD (+10.5% year-on-year and +54% in five years).

Exponential growth in Internet traffic driven by expansion of fixed-line networks

According to Arcep, traffic increased by 7.6% at the end of 2023 (after 21% at the end of 2021 and 2022).

Widespread adoption of remote working since the COVID-19 pandemic

+3,400% more Zoom users between 2019 and 2023 and +2,400% for Teams.

Increase in data consumption

particularly mobile data, driven by improvements in smartphone capacity and network performance

According to Roland Berger, mobile data traffic will increase by 16% between 2023 and 2029 in Europe (+26% for the Middle East and Africa).



Major challenges in a hyper-competitive world

Constraints that
hinder developments

One of the biggest challenges is the availability of suitable land for this type of project, even more so in a context of land scarcity and increasingly restrictive regulations.

The main constraints fall into four categories.





Major challenges in a hyper-competitive world



Financial & HR

- Growing scarcity of land and rising acquisition costs
- High cost of construction, which must incorporate specific requirements (EN 50600 standards)
- High cost of operating the site and maintaining IT infrastructure
- High cost of state-of-the-art equipment (cooling, cabling, fire safety, etc.)
- Difficulties in recruiting qualified personnel and retaining talent



Technical & Technological

- Fluctuating costs of materials and energy
- Availability and supply of electrical power (high voltage) and water supply
- Higher standards of reliability and redundancy for infrastructure and equipment
- Increasing standards and certifications
- High exposure to risks of cyber-attack, intrusion/theft, fire, overheating or electrical failure



Ecology & the environment

- Sustainable management of electricity and water consumption (24 hours a day, 7 days a week) and efforts to recover the waste heat produced (REEN law, 2021)
- Treatment of waste electrical and electronic equipment
- Growing demand from tenants for the highest levels of certification (ISO 50001) or accreditation (Energy Star, etc.)
- Exposure to natural hazards
- Increasing commitment to the environment, such as Net Zero Emissions by 2050



Policy & Regulations

A tougher legislative and regulatory framework, with, for example:

Town planning: compulsory application for planning permission (for projects >5,000 sq m), compliance with regulations governing facilities classified for environmental protection ("ICPE") and France's Climate and Resilience Act (2021), which requires land to be used sparingly (Zero Net Artificialisation)

Ecology: compliance with European directives on waste electrical and electronic equipment (WEEE) and energy efficiency

Technology: integrating European measures to protect and secure personal data (GDPR) and networks (NIS2), banking data (PCI DSS) and acquiring various certifications (ISO 14001, 27001, 22301, etc.)



02. Market overview



Global expansion

In 2023, the data centre industry accounted for :

1%
Of carbon
emissions

1 to 1,3%
Of electricity
consumption

222 B\$
IT capacity
spending

9 290 sq m
Average
asset size

Source: International Energy Agency, Techjury



“Our clients' systems are the backbone of modern society. In making them faster, more productive, and more secure, we don't just make business work better, we make the world better.”



Global expansion

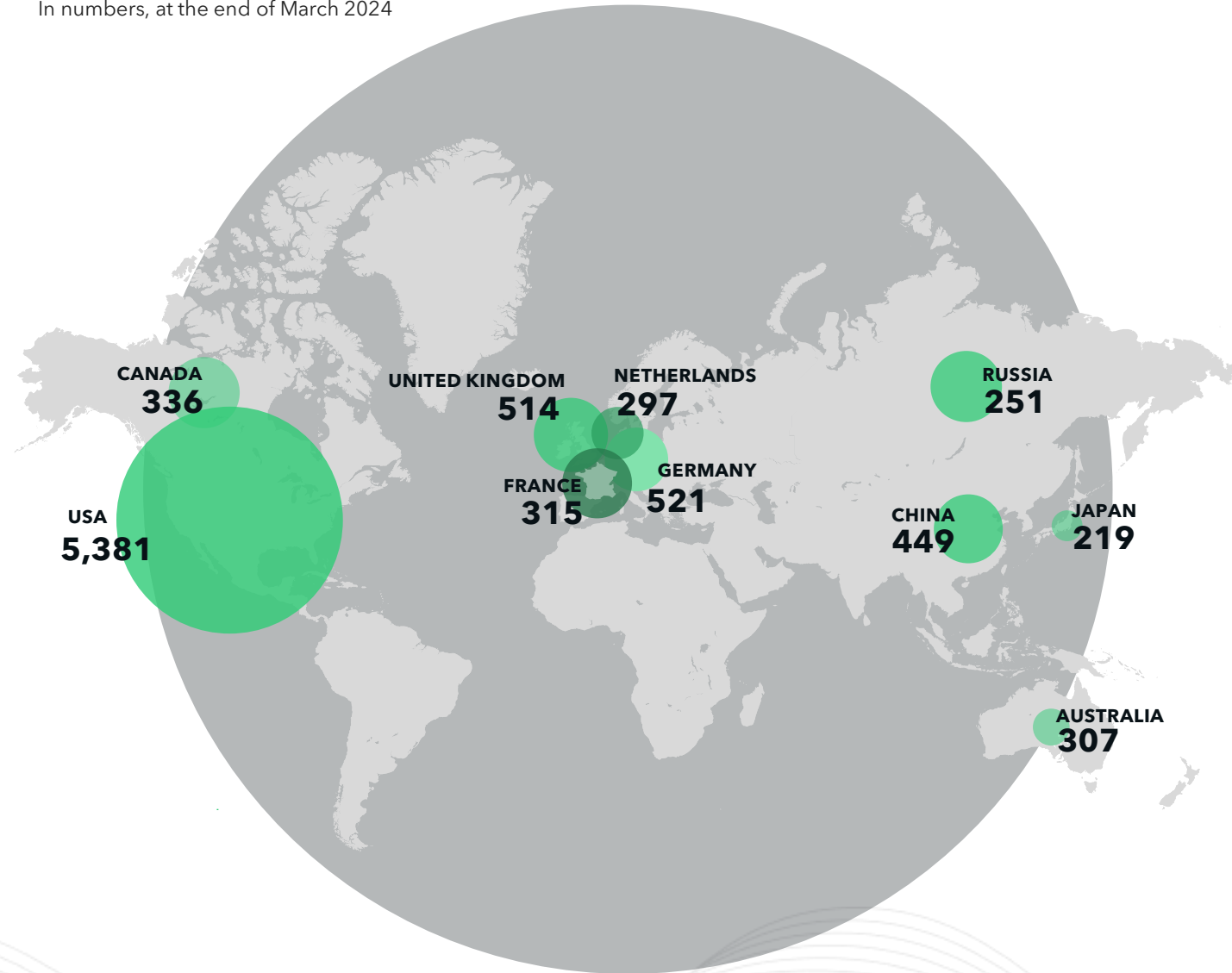
The emergence of new hubs

The development of datacentres around the world is expanding rapidly. The United States, pioneer and world leader in this field, stands out with more than 5,000 sites in operation.

Europe, meanwhile, is growing quickly and gradually catching up. Germany and the UK are positioning themselves as the two main European hubs, with massive investment in the construction and upgrading of their infrastructure. There are more than 500 datacentres in each of these countries.

France has more than 300 datacentres, while projects are multiplying to rapidly increase IT capacity.

Breakdown of the world's main data centre hubs
In numbers, at the end of March 2024





But European hubs are in demand

Growing importance of European hubs (FLAP-D)

Several European markets clearly stand out, both in terms of the investment they attract and the types of data centres they have developed.

Known as 'FLAP-D*', these five hubs alone account for 80% of total MW demand in Europe.

Since 2018, capacity has been increasing steadily, by an average of 17% a year for the FLAP-D markets and 23% a year for the secondary European hubs. In total, **IT capacity will reach 3,205 MW in 2023 within FLAP-D**, compared with 786 MW for the rest of the hubs. The land available for new sites and the IT capacity within the established European hubs are not sufficient to satisfy the tenfold increase in user requirements. As a result, secondary markets such as Madrid, Berlin and Milan are doing well, and now account for almost 20% of total capacity in

Europe (16% in 2018).

Whilst the most established markets remain the most popular, the increase in MW outside FLAP-D indicates that **there are many opportunities for development, while at the same time supply is diversifying.**

** Frankfurt, London, Amsterdam and Paris, and more recently Dublin*

Supply in the European market

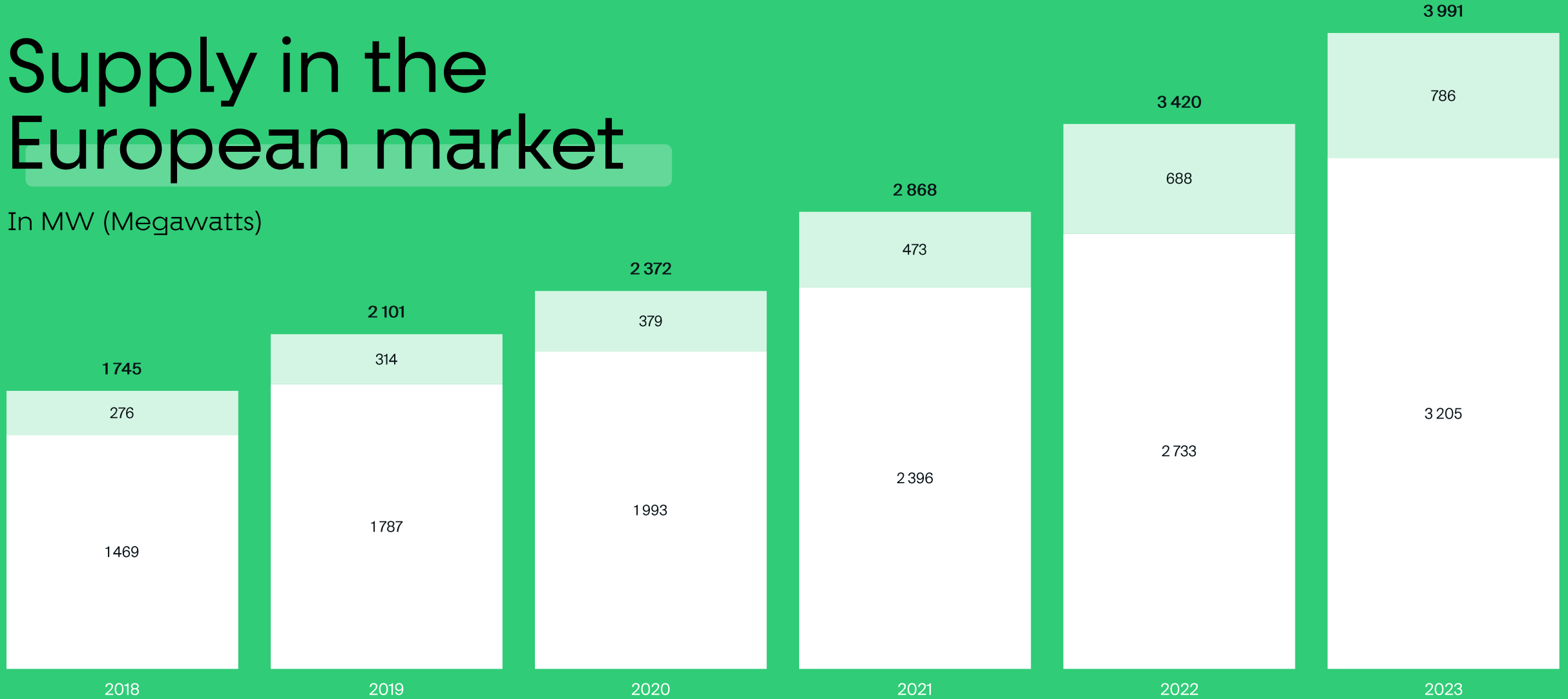
Annual growth (2018-2023)





Supply in the European market

In MW (Megawatts)



Source: IRENA, IEA, EIA, NREL, DNV, Roland Berger



“ The need for AI computing has increased **a millionfold in six years and is growing tenfold every year. ”**

Sundar Pichai
CEO of Google and Alphabet
14 May 2024



03.

A strategic French sector





The rise of the French market

Key figures for the datacentre market
In France, in 2023

€5 Bn

Direct, indirect
and induced added value
(+55% in 5 years)



865 500

Jobs in the digital sector
(+6% year-on-year)



x7

Growth in the sector compared
with the French economy



1 GW

Demand linked to the use
of generative AI over the next 10 years
(+13 to 14% annual growth)





Projects throughout France

An increasing number of projects in France

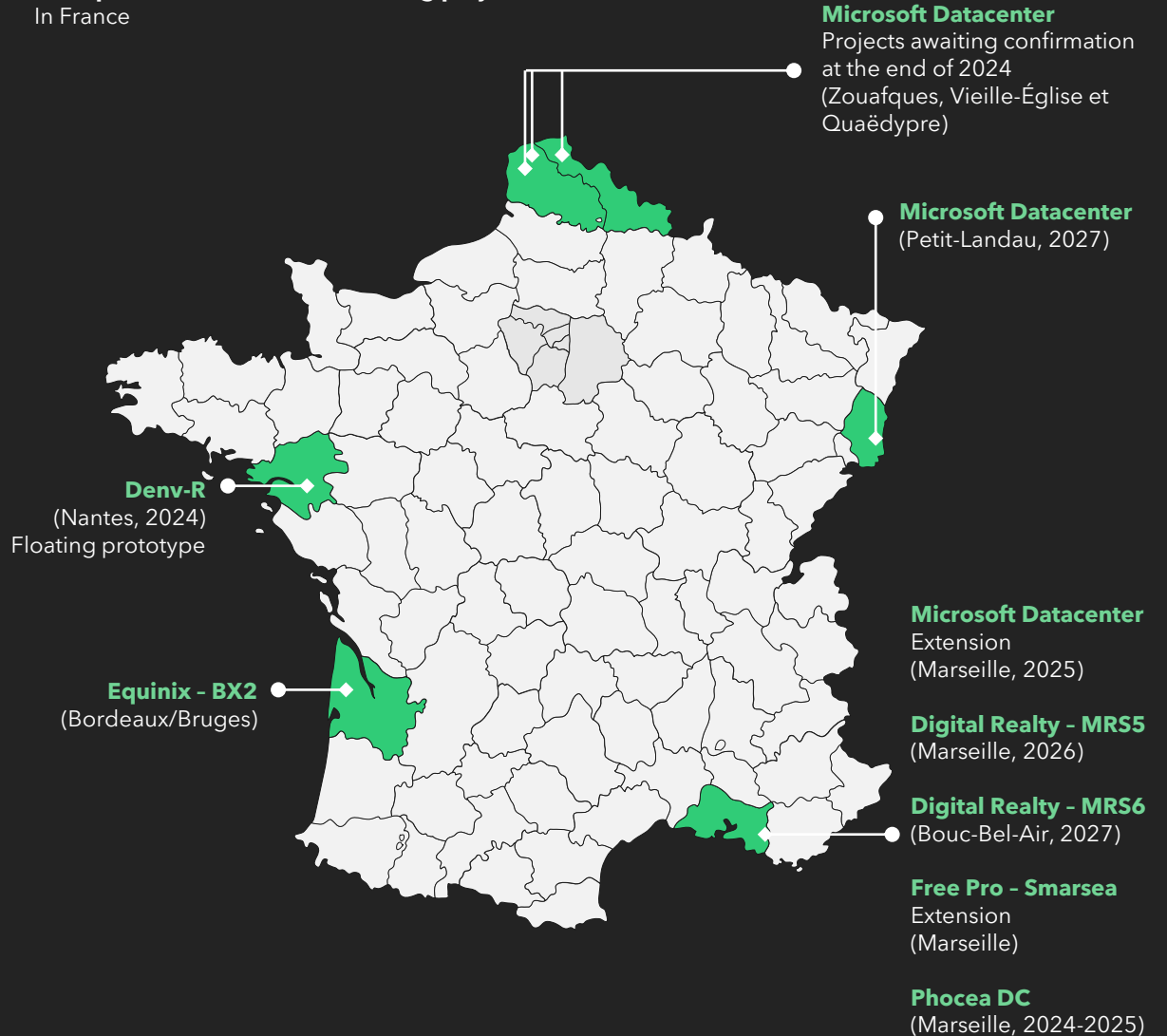
With **more than a third of data centres located in the Greater Paris Region, accounting for almost 60% of France's IT capacity**, the region is one of the most important hubs in the world (ranked 4th by Telegeography). The Paris market is particularly buoyed by its strategic location, at the crossroads of trade between London, Amsterdam and Frankfurt, and benefits from strong fundamentals. Business there is particularly buoyant, and developments by major players in the sector (Digital Realty, Data4, Equinix, etc.) are multiplying.

The Provence-Alpes-Côte d'Azur region, and Marseilles in particular, is the 2nd most popular region in France, and ranks 7th worldwide in the same ranking. The city of Marseilles boasts excellent connectivity (17

undersea fibre-optic cables connecting the American, Asian and African continents).

According to EY, based on data from INSEE, **the industry generated €3.4 billion in direct added value in France in 2023**, representing average growth of 9.3% over the past five years (after €2.2 billion in 2018).

Examples of recent and forthcoming projects in France





But concentrated in the Greater Paris Region

Examples of recent and forthcoming projects in the Greater Paris Region

1,000 m² Technical areas (computer rooms, etc.)

10 MW Total capacity

12,500 m² 30 MW

Equinix - Hyperscale 2 (PA12)
(Argenteuil, 2026)

8,400 m²

140 MW

Digital Realty - Paris Digital Park (PA10 & PAR11)

Extension (La Courneuve, 2025)

Paris Digital Park (PAR8, PAR9, PAR10 & PAR11)

12,500 m²

30 MW

NTT GDC

(Coudray-Montceaux & Corbeil-Essonnes, project)

Campus of 3 datacentres

84 MW

Digital Realty - PAR13
(Les Ulis, 2024)

Data4 - PAR1&2
Extension (Marcoussis, 2025)

Data4 - PAR3
(Nozay, several phases until 2030)

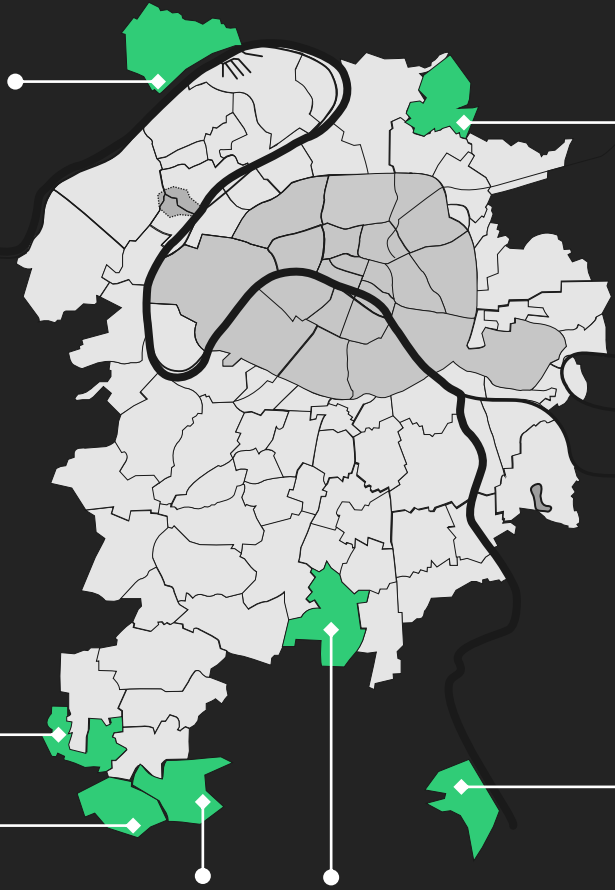
375 MW

Campus Data4 Paris-Saclay (PAR1, PAR2 & PAR3)

CyrusOne - PAR1
Extension (Wissous, 2024)

10,250 m²

27 MW





**“ The Greater Paris Region is the
fourth largest content exchange
hub in the world. ”**



France, a catalyst for investment

Although the main players in the industry are already present in France, they are significantly consolidating their positions. The Choose Paris Region summit, held in May 2024, saw a flurry of announcements, with 56 projects approved and a total of €15 billion committed.

American giant Microsoft, for example, unveiled a massive investment of €4 billion between now and 2027 to strengthen its network of datacentres in France and accelerate its development in the AI and Cloud sectors. The Group also aims to use only renewable energy by 2025 and will support the French tech ecosystem by helping more than 2,500 start-ups. Back in February, Windows announced an investment of nearly €15 million in Mistral, a French AI start-up.

Announcements included the following:

- Amazon will spend €1.2 billion on new infrastructure and expects to create 3,000 jobs in addition to the 2,000 previously announced.
- IBM will strengthen their Paris-Saclay campus with a €45 million investment to develop quantum technologies. Around fifty new hires are expected between now and 2025.
- Equinix and Telehouse will invest €630 million and €1 billion respectively in new facilities.

According to EY and France Datacenters, the industry will invest €12 billion in France over the next 10 years, 86% of which will be in the Greater Paris Region.

No. 1 country

in Europe for industrial investment and innovation

€12 billion

of investment expected in the data centre sector over the next 10 years

Primarily in the

Greater Paris Region



04. Outlook





ECONOMY

What does the future hold?

A more positive macroeconomic situation in 2025

Moderate rebound in French growth, expected by the Banque de France to average 1.2% in 2025 after a sluggish 2024, then 1.5% in 2026.

Continued disinflation, expected to fall to 1.5% in 2025 (from 2.5% in 2024) because of lower energy prices in particular.

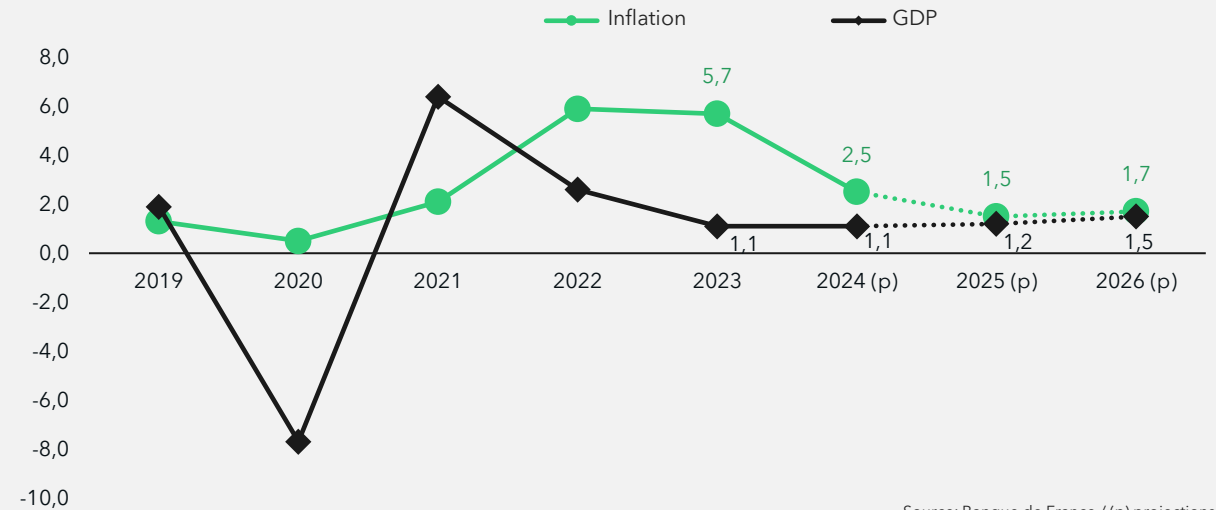
Significant increase in business investment in 2025, despite an uncertain geopolitical climate favouring caution.

A resilient employment market, with unemployment estimated at 7.5% in 2024, rising slightly to 7.6% in 2025, well below the pre-Covid level (8.5% in 2019).

A strong data centre market, a protected sector with little exposure to the economic downturn. This type of asset is very popular with investors looking to diversify their portfolios (high rates of return, long-term leases, etc.).

GDP and inflation

In %, in France, year-on-year

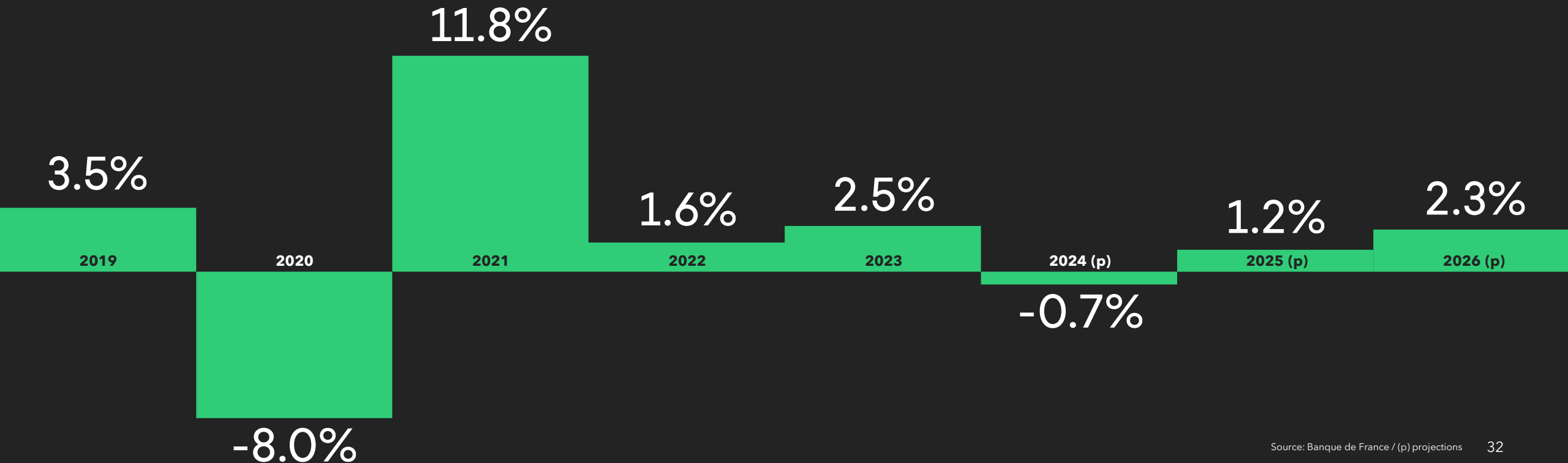


Source: Banque de France / (p) projections



Economic situation expected to improve

Trends in business investment
In %, in France





TOWN PLANNING

What does the future hold?

A rapidly expanding market in France and a favourable context for projects

Continued hierarchisation of the ecosystem, with increasing domination by the leaders in shared rental and cloud services, to the detriment of telecoms operators, and more large-scale data centres (mainly Tier 3 and 4).

The rise of two models: Edge, thanks to the arrival of 5G, which will limit latency, and hyperscale.

An increase in the number of sites in France, particularly in popular or high-demand areas such as the Greater Paris Region and Marseilles regions, near the coast (exchanges by undersea cable) or regional conurbations (Lille, Bordeaux, Nantes, etc.).

Improved territorial coverage, particularly in regions where there is a deficit despite expressed

needs (Nouvelle-Aquitaine, Brittany, etc.).

Creation of local jobs to boost employment in areas where there is a shortage.

Political will to develop innovation and attract tech giants, despite a tougher regulatory context (scarcity of available land, zero net artificialisation, etc.).

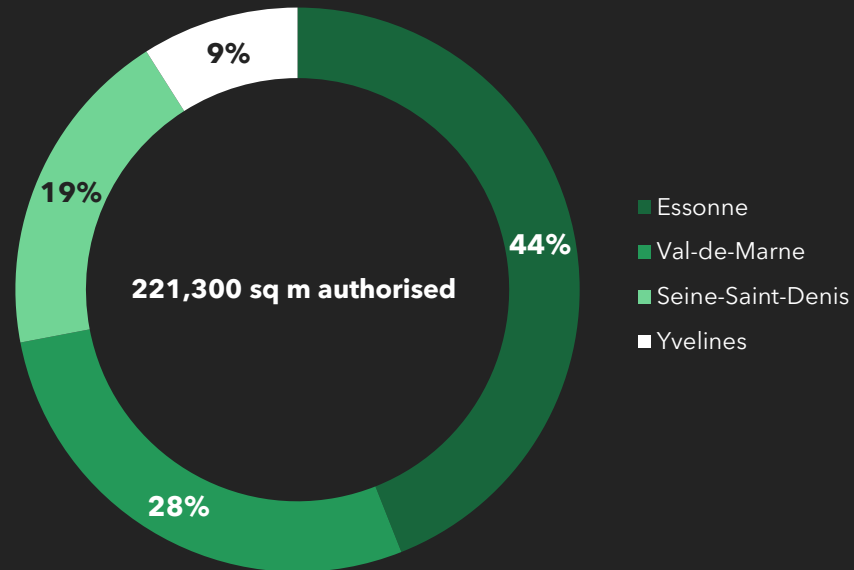




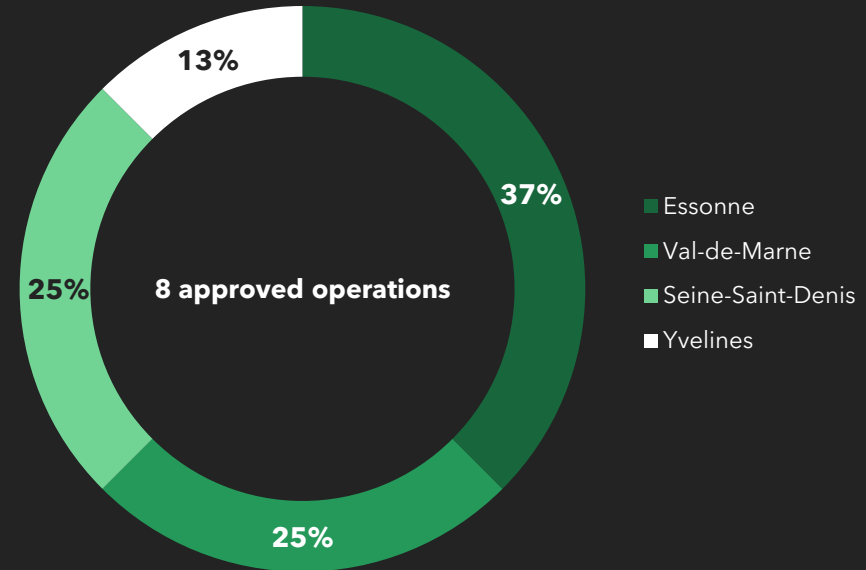
Essonne, a welcoming region for projects

Geographical breakdown of authorised projects for datacentres

In % of volume (sq m), in 2023



In % of number, in 2023





TECHNICAL & TECHNOLOGICAL

What does the future hold?

Growth driven by the digital revolution and technological challenges

Optimising infrastructure and equipment to reduce energy requirements and control operating and maintenance costs.

Accelerating the digitalisation and IT outsourcing of businesses, against a backdrop of cost-cutting, particularly for IT.

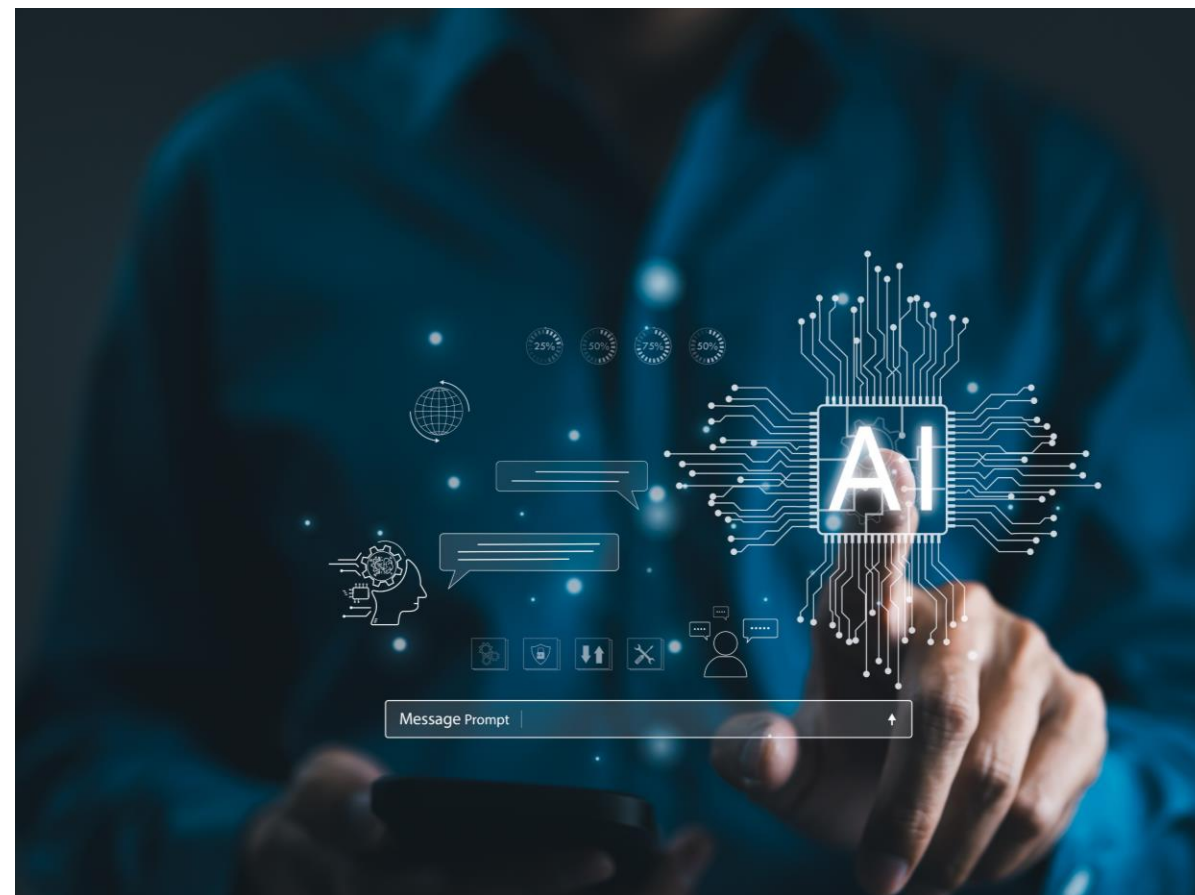
Growing adoption and integration of AI to improve performance or optimise infrastructures, and to detect and counter threats, despite questions about the ethics of this technology.

Increased security for assets and stored data, in line with increasingly restrictive regulations in response to the growing risk of cyber-attacks.

Increased certification or accreditation of operators and their equipment, a guarantee of

quality for users.

Difficulties in training and recruiting qualified staff, despite significant needs.





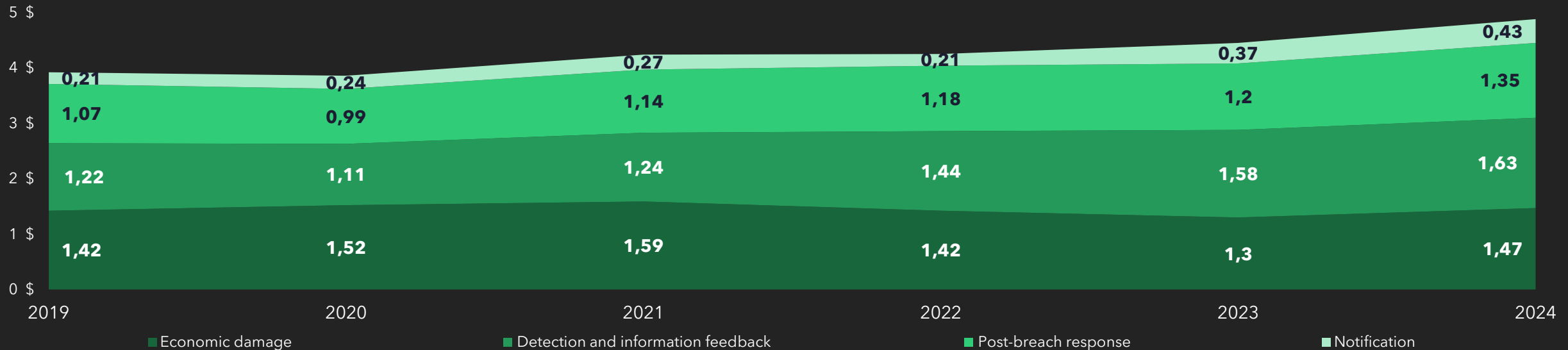
AI as a defence against breaches

In 2024
4 880 000 \$
 Global average cost of a data breach
 (+10% in one year)

VS

2 200 000 \$
 Savings from using AI to prevent breaches

Average cost of a data breach
In millions of dollars, worldwide





ECOLOGY & THE ENVIRONMENT

What does the future hold?

A growing commitment to reducing the sector's carbon footprint

Environmentally friendly design and decarbonisation of the industry through a transition to renewable energies, optimised management of resources (electricity and water) and more efficient equipment (reduction of refrigeration leaks, recovery of waste heat, improved PUE*, etc.).

Re-industrialisation in France to limit dependence on imports (electronic components, IT equipment, etc.).

Maintaining competitive prices, supported by the agreements reached between the government and EDF to guarantee the controlled cost of nuclear electricity.

Promoting self-consumption of energy with on-site production. Although this model is still not

widespread in France, it does provide greater energy autonomy and lower costs.

Raising awareness among users to encourage responsible behaviour, avoid over-consumption and make the most of highly efficient, less energy-intensive assets.

** Power Usage Effectiveness: calculation between the electricity consumed by the facility and that consumed by the IT equipment. The most efficient data centres tend to have a PUE of 1.*





Towards 100% green energy

An industry committed to reducing its carbon footprint

Considering the urgent need to tackle climate change, the industry is aiming for carbon neutrality by 2030. The Climate Neutral Data Centre has set out several tangible measures to achieve this, including improving PUE, using renewable and low-carbon energy sources, reducing water consumption, preventive maintenance and making the most of waste heat.

Operators are opting for a varied energy mix, giving priority to green energies. There are an increasing number of solutions for supplying sustainable power to sites: solar farms, wind turbines, hydroelectricity, biogas from waste recovery to name but a few. An appropriate energy mix is essential to limit price fluctuations and secure supplies.

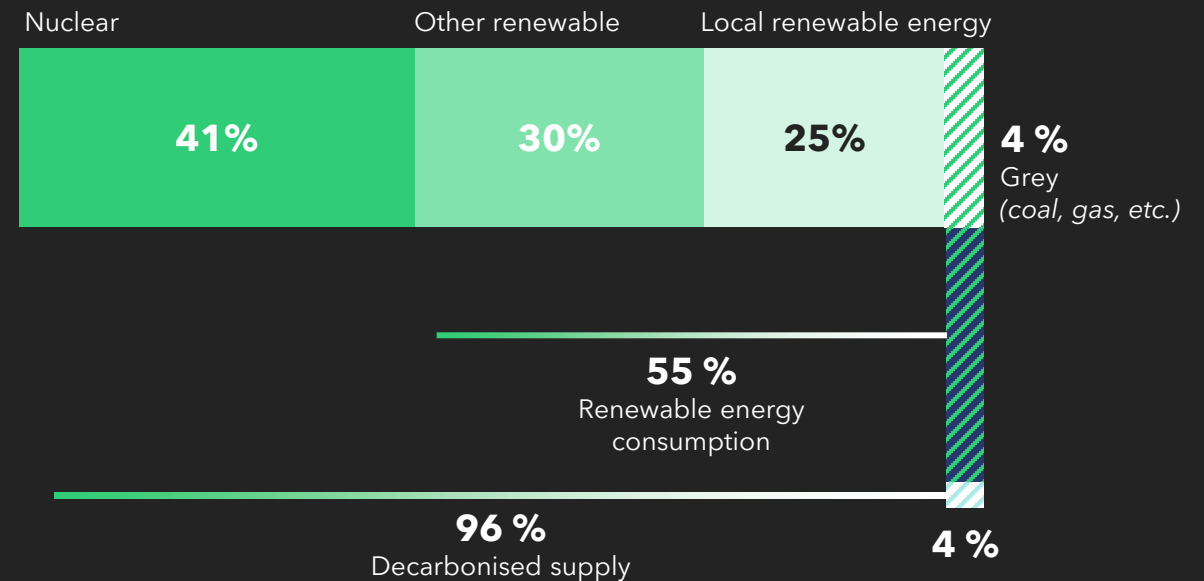
This decarbonisation is encouraged by legislation, such as the Energy Transition for Green Growth Act (LTECV, 2015), or programmes such as 'France 2030', which highlight the French government's targets, particularly for nuclear power.

The targets set by the LTECV include:

- Reduce fossil fuel consumption by 30% by 2030 (compared with 2012),
- Increase the share of nuclear power in electricity generation to 50% by 2025.

Energy consumption by the data centre sector in France

In %, in 2023





05. Knight Frank & datacenters





Knight Frank - a global vision

Knight Frank has in-depth expertise in the data centre real estate market thanks to:

- **In-depth knowledge of the major players and markets** through our offices in France and abroad (740 offices, 27,000 employees);
- **Increased visibility of committed projects** over the medium and long term, providing a clear picture of changes in the sector;
- An **in-depth understanding of the specific features and risks** associated with this property asset, particularly in terms of local and international regulations;
- **Strong transactional experience**, involvement of our teams in several GW (including projects);
- **Unique expertise**, based on **strategic partnerships** with recognised experts in the sector.



Knight Frank's Research Department

provides market analysis and strategic real estate consultancy services to a wide range of French and international private, institutional and end-user clients.

The data used to produce this study comes from sources recognised for their reliability as well as Knight Frank's property market monitoring tools.

All the studies are available on KnightFrank.fr



Le marché des bureaux en
Île-de-France | 3T 2024



Le marché de l'investissement
France | 3T 2024



Le marché de l'immobilier
d'enseignement | Juin 2024



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 Résidentiel
 Commercial

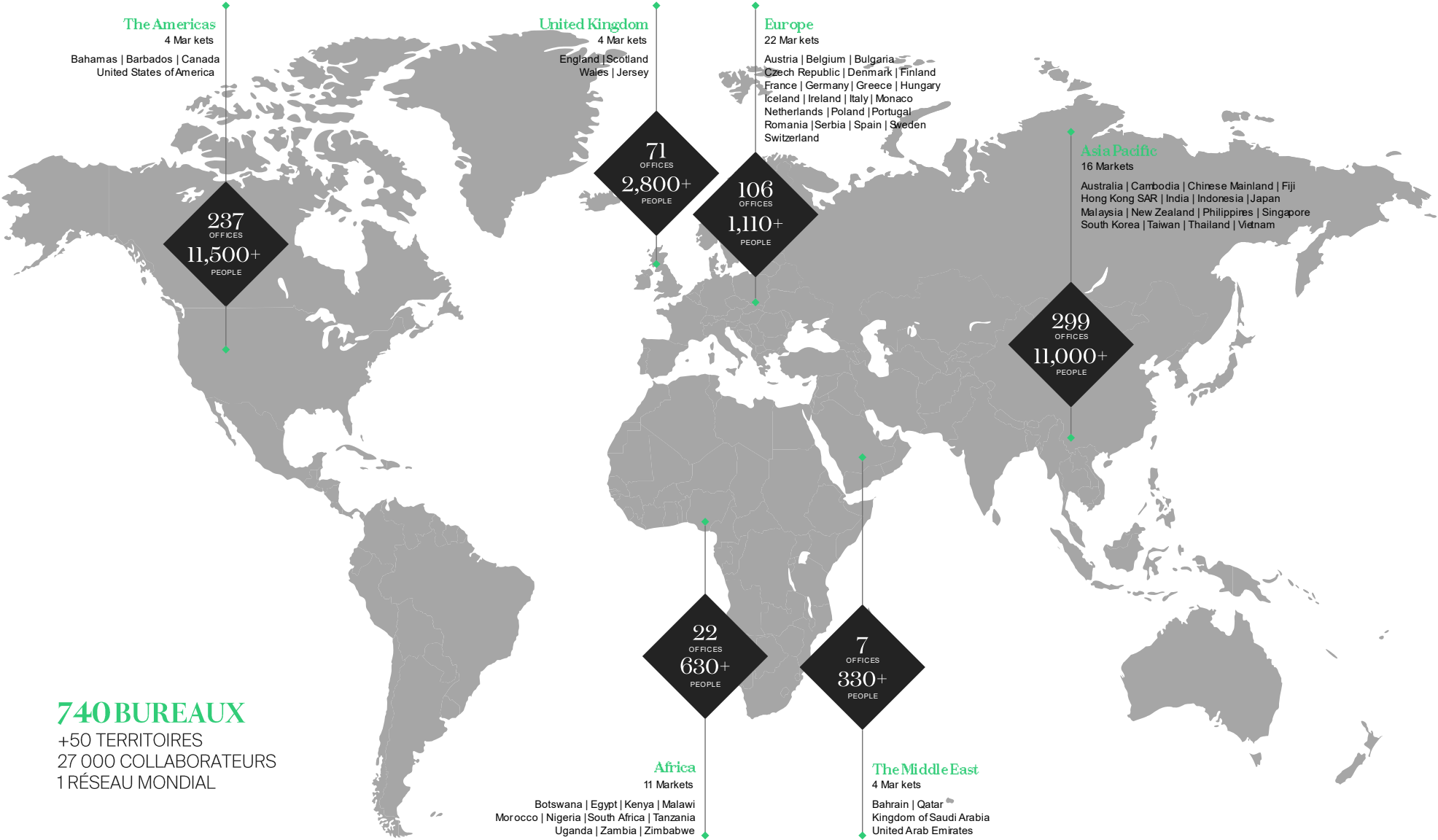
With more than **100 employees working from Paris**, Knight Frank France is organised **around 5 service lines**: the marketing of offices and advice to users (Occupier & Landlord Strategy and Solutions), the fitting out of workspaces (Design & Delivery), investment (Capital Markets), the retail leasing department and expertise through its subsidiary Knight Frank Valuation & Advisory.



Knight Frank

Founded more than 125 years ago in Great Britain, the Knight Frank group today offers its expertise as an international property consultancy thanks to more than **27,000 employees working from more than 740 offices in 50 countries.**

Its French branch, founded over 50 years ago, operates in the commercial and residential property markets.



740 BUREAUX
 +50 TERRITOIRES
 27 000 COLLABORATEURS
 1 RÉSEAU MONDIAL