



## Orange – Connectivity

Connectivity is Orange's core activity and the root of its innovations. In order to meet its customers' increasing needs for connectivity and to provide them with the best network quality, Orange is continually investing in:

- Extending very-high speed fixed and mobile broadband coverage through fibre and 5G networks
- Using virtualisation to transform its networks in order to increase flexibility and adapt to customer demand
- Automating its networks operations
- Increasing energy efficiency

### Orange priorities for fixed networks:

FTTH lies at the heart of Orange's fixed network strategy. The FTTH capacity means that Orange can offer consumers fiber access of up to 2 Gbit/s, and up to 10 Gbit/s in the near future by upgrading certain types of equipment. By end of Q1 2021, Orange had 50 million connectable households with FTTH lines in France, Spain, Poland, Slovakia, Jordan and Ivory Coast. Orange's goal is to have 69 million connectable homes by 2023.

### Orange priorities for mobile networks:

Orange has been expanding its mobile coverage in its footprint and has more than 100,000 radio sites over its 26 countries.

With 5G and in addition to existing networks, Orange wants to maintain its leadership in networks with new useful services adapted to its customers' changing usage patterns. Orange considers the development of 5G around three areas:

- improved high-speed mobile broadband
- very high-speed fixed broadband access
- new applications to support the digital transformation of businesses

5G is commercially launched in six European countries (France, Luxembourg, Poland, Romania, Slovakia and Spain). 45% of Orange's European device portfolio are already 5G compatible in Q1 2021, supporting the growth in 5G usage. By 2023, Orange will have rolled out 5G across 26,000 sites in Europe. Orange is also preparing for the transition of core networks to 5G Stand Alone that will bring new technical performance from 2023. This will allow the introduction of various different uses for consumers (immersive videos, cloud gaming) as well as for business customers, for whom 5G will be a real breakthrough (optimized production time, remote machine control, predictive maintenance, etc.).

### Other updates on networks and innovation from Orange include:

- **network functions virtualization** developed across Orange's footprint and will continue in the coming years, with full 5G networks and advanced 5G services. This virtualization consists in deploying a standardized infrastructure, which hosts network software functions enabling the development of new services and increasing flexibility. With the transformation towards On Demand Networks and 5G, Orange is also preparing for the **Edge computing** era, in which, telcos, with their distributed architecture, have an opportunity based on their secure and well connected real-estate asset. The on-demand and network slicing promises of 5G, combined with cloud offers proposed at the edge (of the network), will enable Orange to develop new business revenues associated to specific services that require on-demand quality.
- **network automation and AI** is also an area Orange is developing in order to improve the quality of network monitoring and the customer experience management. The "Self-Organizing Network" (SON) features (or self-organisations) are implemented on two-thirds of Orange's

mobile networks. AI is also being used in various processes (e.g. in optimizing energy consumption of radio sites, fault analysis and network intervention decisions on copper/fiber in France) and will further expand.

- **Development of green networks.** In the past months, Orange has signed several Power Purchase Agreements (PPAs) in France, Spain and Poland. With these contracts, Orange has secured access to green electricity for the coming years.

#### **Our sustainable network strategy:**

- **Agreements to purchase electricity from renewable sources in Europe:**

We strive to reach net zero carbon emissions by 2040, which is why we make increasing use of renewable energies. The Group aims to meet over 50% of its electricity needs with power generated from renewable sources by 2025, compared with 31% in 2020. In 2020, we signed several Power Purchase Agreements (PPAs), the first of which in France was concluded with Boralex and came into effect on 1 January 2021 for a five-year period. Boralex will supply Orange with 67 GWh of green electricity each year generated by the Ally-Mercoeur wind farm in south-central France. In Poland, Orange signed a 10-year PPA with wpd AG that will also come into effect in 2021. Two wind farms will supply Orange Poland with 500 GWh of green electricity over the course of the contract.

Furthermore, in Spain, we signed an agreement with Iberdrola, which from late 2020 will supply 200 GWh of green electricity every year for 12 years. Generated by a solar farm in Extremadura, the electricity will power over 9,000 facilities.

- **Data centers that consume less energy:**

Our Green ITN action plan launched in 2008 continued in 2020 with the “Green program” built around our commitments for 2025. It harnesses a number of new tools to enable the Group to better control its energy consumption, including artificial intelligence, advanced standby mode and enhanced active network sharing. Furthermore, we have sustained efforts to improve the energy performance of data centers at new facilities, such as in Antwerp, Belgium, which cools servers using air from outside to reduce the need for conventional air conditioning. This innovative “free cooling” technology will also be deployed in the Normandie 2 data center in northern France following the positive results obtained at the first facility operating on the site. Meanwhile, Orange Poland began construction on the Warsaw Data Hub in 2020, which will also be equipped with this cutting edge technology.

- **Making customers aware of their digital footprint:**

Available since December 2020 on the customer account page as well as the two apps Orange et moi and My Sosh, the “Carbon footprint” service gives the 14 million Orange and Sosh customers in France the opportunity to quantify the carbon equivalent of their digital habits on the mobile network. This feature also informs people of best practice they should adopt to become more eco-friendly by minimizing the environmental impact of their phone and other connected devices. Through this initiative, we not only raise awareness but also offer tangible solutions that people can put into practice in their daily lives.

#### **Orange's international networks continue to expand**

Orange continues to make substantial investments in international connectivity projects, to guarantee and continue to improve the quality of its international network service with more than 40 submarine cables throughout the world.

With customers all over the world, Orange's global network footprint connects more than [300 Points of Presence](#) with 45,000 km of fiber across Europe, the US, Africa and Asia.

Through its subsidiary, Orange Marine, the company also has access to a fleet of survey and cable ships, and internationally-recognised expertise, placing it at the heart of deployment and maintenance for these connections, which are vital to all of its communications.

**Recent news:**

May 11<sup>th</sup>, 2021 - [Orange leader in solar panels deployment in African countries](#)

March 19<sup>th</sup>, 2021 - [Orange launched 5G in Le Havre French harbor](#)

Feb 18<sup>th</sup>, 2021 - [Creation of TOTEM Orange Towerco](#)

Feb 15<sup>th</sup>, 2021 - [Orange and Engie announce a global solution for renewable energy PPA](#)

January 19<sup>th</sup>, 2021 - [5 Million Residential and Commercial Premises within Coverage of Orange Światłowód \(Orange Fiber\) in Poland](#)

January 19<sup>th</sup>, 2021 - [Orange leader in submarine cables between Europe and North America with 2 new cables](#)

December 8<sup>th</sup>, 2020 - [ARCEP confirms Orange first in mobile quality for 10th year](#)

December 3<sup>rd</sup>, 2020 - [Orange launches its 5G network in France](#)

November 10<sup>th</sup>, 2020 - [Orange is strengthening its position as leader in connectivity in Africa with Djoliba, the first pan-West African network](#)

November 9<sup>th</sup>, 2020 - [Orange supports LACROIX to prepare introduction of 5G in industry 4.0](#)

October 1<sup>st</sup>, 2020 - [Orange gets the largest 5G spectrum bloc in France](#)

September 29<sup>th</sup> - [Orange and Schneider electric test 5G use cases in a factory in France](#)

July 8<sup>th</sup>, 2020 - [Orange signs a contract for renewable electricity in France](#)

February 22<sup>nd</sup>, 2020 - [Orange Romania signs 5G roaming agreement with Etisalat](#)

February 18<sup>th</sup>, 2020 - [Orange and Telxius teaming up on Dunant submarine-cable](#)

January 15<sup>th</sup>, 2019 - [Orange inaugurates its new Kanawa submarine cable](#)

November 8<sup>th</sup>, 2018 - [Orange launches LTE-M-network in France and two other European markets](#)

October 26<sup>th</sup>, 2018 - [Orange and PCCW Global team up to land the new PEACE submarine cable](#)

October 12<sup>th</sup>, 2018 - [Orange collaborates with Google on a new submarine cable across Atlantic](#)

September 13<sup>th</sup>, 2018 - [Orange reinforces its connectivity on the West African Coast through a major investment in the MainOne submarine Cable](#)

**Further information:**

[Orange Marine](#)

Please refer to 5G fact sheet for more information on Orange's activity on 5G.