BACKGROUND

On 3 March 2015, the Council of Ministers approved the **Italian Ultra Broadband Strategy** with the aim of closing the country's digital gap in terms of both infrastructure and services, in line with the goals of the **European Digital Agenda**. Subsequently, the European Commission set new objectives for 2025 with a view to achieving a genuine **Gigabit Society**:

- coverage of at least 1 Gbps for 100% of railway stations, airports, businesses and major public administrations across Europe
- coverage of at least 100 Mbps for 100% of European homes, including those in rural areas, with the possibility of upgrading to 1 Gbps

CORPORATE STRUCTURE

It is in this context that **Enel Open Fiber S.p.A.** was founded, set up by Enel in December 2015 with the aim of installing, supplying and operating high-speed fiber optic electronic communication networks throughout Italy. Following integration with **Metroweb**, completed in the first quarter of 2017, **Open Fiber** was founded with a shareholding structure of **Enel S.p.A.** and **Cdp Equity S.p.A. (CDPE)** - a company belonging to the Cassa Depositi e Prestiti Group - each holding a 50% stake.

THE BUSINESS PLAN

Open Fiber aims to guarantee coverage of Italy's major cities and the connection of industrial areas, with the goal of creating a pervasive and efficient ultra-broadband network to drive the recovery of the country's competitiveness: a widespread network capable of providing increasingly advanced services and functions for citizens, businesses and the public administration. Open Fiber does not sell fiber optic services directly to the end customer, but operates exclusively in the **wholesale-only** market, offering access to all market operators interested in using its network.

Open Fiber is involved in building a fiber optic infrastructure in all the areas into which Italy has been divided by the Ministry of Economic Development:

1. In the **black areas** (clusters A and B), where the main urban centres are located, the network will be built entirely in fiber to the customer - Fiber To The Home (**FTTH**) - with direct and exclusive investment by Open Fiber.

2. In the **white areas** (clusters C and D), the network will be built using FTTH and FWA (Fixed Wireless Access) technology following the award of public tenders by Infratel - which will retain ownership of the network, entrusted in concession to OF for 20 years - for the construction, operation and maintenance of the ultra-broadband infrastructure.

Open Fiber has signed a EUR 4.145 billion loan with a pool of some of Europe's leading commercial banks, the EIB and Cassa Depositi e Prestiti. This is the **largest ongoing structured finance operation for the development of a fiber optic network in Europe** . Open Fiber's overall plan, comprising private and public investment, is worth **over EUR 7 billion** and involves connecting **more than 19 million properties** in Italy's cities (black areas), the most isolated and smallest municipalities (white areas) and industrial districts (grey areas).

Open Fiber has cabled a total of over 11 million properties, confirming its position as by far the **leading FTTH (Fiber To The Home) provider in Italy**, the **third in Europe**, after Telefonica and Orange, and the **biggest wholesale-only operator on the continent**. A recent **IDATE** report published by the FTTH Council, an organisation of European companies founded to accelerate the deployment of fiber connectivity and the development of the digital society in Europe, ranks Italy third (out of 28 European states) in FTTH/B coverage. Specifically, with 3.8 million properties cabled with FTTH/B in 2020, the country ranks second in terms of annual growth rate after France (+4.7 million) and ahead of Germany (+1.9 million) and the United Kingdom (+1.8 million). Around 80% of 2019-2020 growth is attributable to Open Fiber.

Open Fiber has signed commercial agreements with over 100 national and international operators for the use of its ultra-broadband network. The plan that Open Fiber is implementing in all regions is a driving force for the Italian economy: currently around 10,000 people are employed on construction sites opened by OF.

CLUSTERS A AND B

In Open Fiber's business plan Clusters A and B cover 271 Italian municipalities, reaching roughly 9.5 million properties for an investment of around EUR 4 billion in the creation and development of the network. To date, marketing of OF fiber services has been opened up by partner operators in 175 cities. Open Fiber's plan foresees private investment coverage of the **271 biggest cities in Italy**.

CLUSTERS C AND D - INFRATEL TENDERS

Open Fiber has been awarded all three Infratel tenders for the design, construction, operation and maintenance of fiber networks in those areas where operators have shown no interest in investing. The first tender involves the building and operation of an ultra-broadband network in Abruzzo, Emilia Romagna, Lombardy, Molise, Tuscany and Veneto. The second Infratel tender concerns municipalities in 10 regions (Piedmont, Valle D'Aosta, Liguria, Friuli Venezia Giulia, Umbria, Marche, Lazio, Campania, Basilicata, Sicily) plus the Province of Trento. The third Infratel tender involves Calabria, Puglia and Sardinia. In total, **Open Fiber will reach over 6,500 towns** in all 20 Italian regions, cabling around 9 million homes, businesses and public administration offices.

Fiber To The Home (FTTH)

Open Fiber's ultra-fast network is built using **Fiber To The Home (FTTH)** technology, meaning the entire connection from the exchange to the customer's home is in optical fiber. This provides maximum performance with **speeds of up to 1 Gigabit per second (Gbps)**. The service is therefore "future-proof", capable of supporting the potential of all new technologies set to arrive in the next few years. Connection to a fixed network is achieved by laying an underground cable that connects the user's home or business to the serving area interface, which in turn is connected to the exchange. In the case of ADSL, the cables used in the two sections are entirely in copper, while with FTTC one connection is in copper and the other in fiber optic. **With FTTH, both connections are entirely in fiber**, providing performance levels that are unachievable with copper (ADSL) or fiber/copper (FTTC) networks.

Greater reliability

Fiber optic connections are more stable and productive because they are less prone to interruptions and technical problems than copper, thus reducing maintenance costs and ensuring a higher quality of service for end users.

High performance

Fiber optic networks are 'ultra-wide', something akin to a 100-lane road where there are very seldom traffic jams, so information travels faster. Moreover, with FTTH fiber, access speeds are always guaranteed.

Increased efficiency

The telecommunications networks of the future (Next Generation Networks - NGN) run on fiber optic cables because they permit a long infrastructure lifetime and significantly higher transmission speeds than traditional technologies.

Readiness for new technologies

Fiber optic is the only 'future-proof' solution with a transmission capacity going forward of up to 40 Gbps. With FTTH technology, the fiber reaches homes directly, ensuring compatibility with rapidly evolving network services.

The advantages of fiber optic for citizens, businesses and public administrations

Thanks to fiber connections, the territories concerned are able to be more competitive in several areas, from innovation to start-ups, teleworking to telemedicine. The spread of fiber optics will accelerate the country's digitalisation process, simplifying and improving relations between

citizens and the public administration, between students, schools and universities, increasing the productivity and competitiveness of businesses and the efficiency of government.

Benefits and services for the citizen

The deployment of fiber optic enables citizens to access advanced public administration services such as online government, SPID (digital identity), citizen service portals, administrative simplification, mobility and e-government. Optical fiber favours the digitalisation of the health sector with applications such as telemedicine, electronic health records, and drug allocation. E-commerce and remote access to bank services (home banking) are also enhanced by high-speed connectivity. Fiber facilitates the diffusion of home automation and the Internet of Things (IoT), as well as the development of leisure and recreational activities (online gaming, high-definition TV over IP, video on demand, video streaming).

Benefits and services for public institutions and the public administration

As far as public institutions and the public administration are concerned, optical fiber facilitates the deployment of sustainable mobility services in municipalities, such as electronic control of access to restricted traffic zones in cities, info-parking, traffic flow management and electric vehicle recharging. There are also many advantages for municipalities in the area of security and territorial monitoring through video surveillance and environmental remote sensing, efficient management of street lighting, and digitisation of tourist, museum and cultural services. The public administration also benefits from the development of ultra-broadband in commercial transactions in areas such as e-procurement and e-billing. An important dimension deriving from high-speed connectivity is e-government, which makes it possible to overcome the country's digital divide and mitigate disparities and inequalities thanks to projects such as **SPID**, the Public Digital Identity System that allows access from all devices to Public Administration online services with a single identity, the electronic ID card, and the National Register of the Resident Population (ANPR).

Benefits and services for enterprises

For the business world, there are numerous benefits and advanced services that can be enabled by fiber optics. Just think of smart working and teleworking, the dematerialisation of documents, and electronic data storage and sharing (cloud computing). "Industry 4.0" also defines ultra-broadband as an enabling infrastructure, recognising the centrality of fiber optics for the country's growth. According to studies by authoritative institutions (World Bank, McKinsey, Booz & Company), a 10% increase in broadband connectivity would correspond to an estimated growth of between 1.3 and 1.5 points in national GDP.

Sustainability

In 2020 Open Fiber launched a programme aimed at systematising all of the company's sustainability activities. One of the most important aspects of the project was the intention to communicate its sustainability performance to the outside world, drafting its first Sustainability

Report for 2020. The Sustainability Report is a concise and effective way to inform the organisation's internal and external stakeholders of its commitment to economic, social and environmental issues and the initiatives taken.
Among the key items that will be reported is the definition of the Open Fiber materiality matrix: the identification and evaluation of relevant issues to reflect the economic, environmental and social impacts of the organisation and influence the decisions of stakeholders. Relevant topics for stakeholders are those that can substantially influence their assessments and choices. As part of the same programme, Open Fiber has drafted its own ESG Policy. The policy describes how the company, in addition to pursuing the goals set out in its business plan, is committed to generating positive impacts through ESG (Environmental Social & Governance) initiatives aimed at meeting the needs of its internal and external stakeholders.

5G

Open Fiber, in collaboration with WINDTRE, has won the Ministry of Economic Development's call for tenders to begin trialling 5G technology in the cities of Prato and L'Aquila. The project has engaged other important Italian companies, research centres and technology suppliers in a shared aim to create innovative services for the 5G City in areas such as health, mobility, security, emergency prevention and management. Although it concerns two quite distinct and circumscribed areas in the towns of Prato and L'Aquila, the trial has characteristics that are replicable nationwide and across Europe. In three years of work, dozens of use cases were developed. In Prato, Open Fiber successfully conducted experiments on urban video surveillance, virtual and augmented reality applied to cultural heritage, smart industry, and smart city sensors. The project was concluded successfully in June 2020. Open Fiber and WINDTRE are now fully prepared to play their part in any activities that might arise from the House of Technology scheme promoted by the Ministry of Economic Development and sponsored by the municipalities of Prato and L'Aquila.