



Connect everywhere, faster

Overview of TDF

March 2022

[tdf.fr](https://www.tdf.fr)



TDF: a neutral, open infrastructure operator



TDF supports key players in the digital sector in the strategic connectivity challenges they face in Metropolitan France and its overseas territories.

Whether for radio and DTT broadcasting, mobile ultra-fast broadband coverage or fibre deployment, TDF provides its customers with business expertise, a unique and innovative technology mix, and top-notch territorial proximity.

In a world that is becoming more connected every day, for more than four decades, thanks to its fleet of 19,200 sites, TDF has enabled Telecom and Media companies to connect territories and the French population everywhere, faster.





Turnover

56%
telecoms



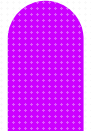
23%
television



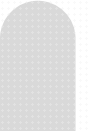
15%
radio



5%
fibre



1%
others



€731.7M
€731.7M

consolidated revenue in
2021



Shareholders

45%

Brookfield
Infrastructure Group



45%

APG Asset Management N.V.
PSP Investments
Arcus Infrastructure Partners



10%

Crédit Agricole
Assurances





Olivier Huart, Chief Executive Officer of TDF Group

We work alongside our clients to bring them our technical skills, innovation expertise, and financial strength, with the support of shareholders who are among the world's leading infrastructure managers.





The Executive Committee

T D F - O V E R V I E W



Olivier Huart
Chief Executive Officer



Benoît Mérel
Deputy
CEO, COO



Jean-Louis Mounier
Joint Managing Director of the
TowerCo BU



Roland Chedlivili
Joint Managing Director of the
TowerCo BU



Cyril Gasc
Managing Director
of the Fibre BU



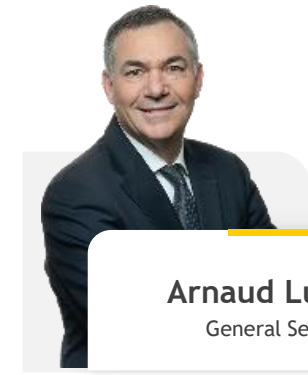
Karim El Naggar
Managing Director
of the Audiovisual BU



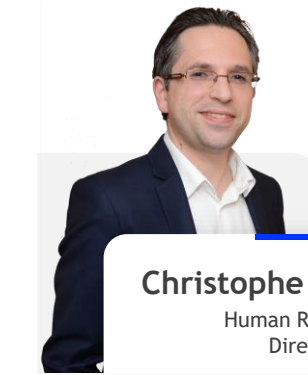
Tatiana Bergamo
Managing Director
of the Operations Division



Hélène Kyanakis
Managing Director of Finance,
Strategy & Purchasing



Arnaud Lucaussy
General Secretary



Christophe Maximilien
Human Resources
Director



Sites & Personnel

19,200
sites

1,800*
employees



T D F - O V E R V I E W



* full-time equivalent



19,200 sites

In Metropolitan France and overseas territories



Telecoms, radio, and DTT infrastructure

Pylons, towers, water towers, rooftops, etc.



Indoor coverage

3,000 stations of which 10 sites are already under construction/work



Data centres

4 sites in Metropolitan France



Ultrafast Broadband infrastructure network

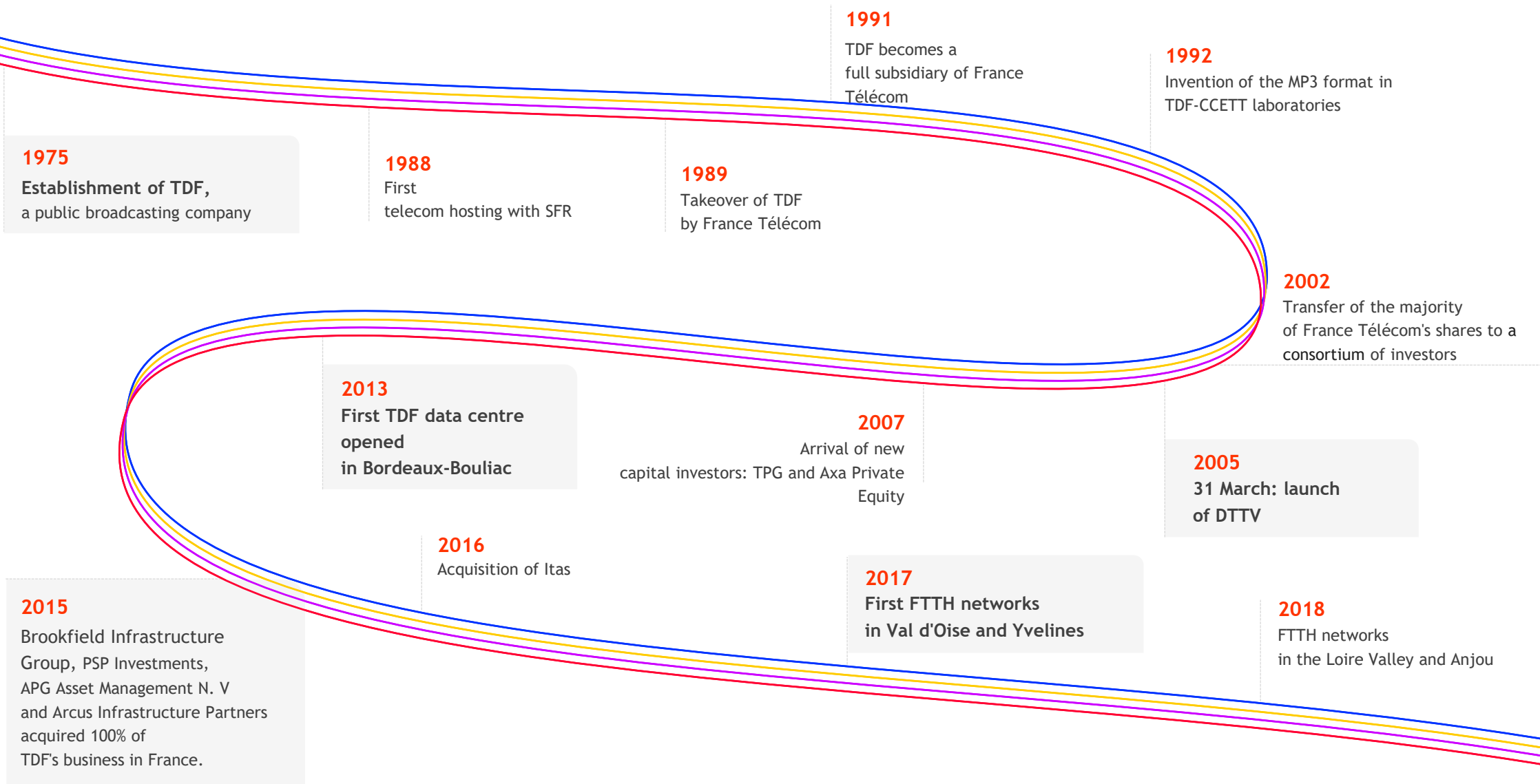
750,000 plugs to be deployed





45 years of digital development

T D F - O V E R V I E W





TDF and the French territories: a strong local anchor



TDF: an open, neutral partner for media and telecoms coverage in French territories.

Its ambition

To be the leading partner for communities.

Thanks to its long-standing territorial roots, TDF offers local authorities comprehensive, tailored digital development solutions.

This means that TDF designs and deploys infrastructures that meet the needs and challenges of broadcasting and connectivity of everyone: individuals, businesses and public bodies.



Telecoms
Infrastructure



Audiovisual



Fibre



Telecoms Infrastructure

Accelerating territorial connectivity.





Telecoms Hosting

Operating throughout Metropolitan France and its overseas territories, TDF supports mobile operators, major private and public bodies and local authorities **in accelerating mobile broadband coverage and territorial connectivity.**



Hosting of telecoms equipment

A turnkey hosting service for telecom equipment on high point sites:
site location, engineering, layout, works, provision of infrastructure, and hosting of telecoms equipment.

In rural areas on existing sites



On new pylons



In urban areas on rooftops





Indoor & PMR

End-to-end **mobile coverage solutions** for public or private companies.



Design



Deployment



Operation



Maintenance



Improving Indoor mobile coverage

A multi-operator mobile coverage service to boost mobile coverage inside buildings, with proven expertise in underground networks, tunnels, stations and tertiary buildings.



Deploying secure networks dedicated to professionals

A secure mobile coverage service (PMR - private mobile radio) to provide critical and private services. TDF teams have comprehensive expertise ranging from private network design to 24/7 monitoring and surveillance.





Data centres

TDF has four regional **data centres** in Aix-Marseille, Bordeaux, Lille and Rennes, and provides spaces designed to accommodate racks and servers in a completely secure environment.

Very high availability

Site security
Measured natural
& technological risks

24/7 control centre (NOC)

Proximity

Regional location
Technical
& sales teams
On-site action

Modularity

Tailor-made solutions
Shared, private, or semi-private rooms
Option of extension into adjacent bays

Neutrality

Sites accessed by the main operators
Extent of connectivity services available on site: from dark fibre to cloud services





DTTA & MEC

Connectivity **services** supporting our hosting solutions.



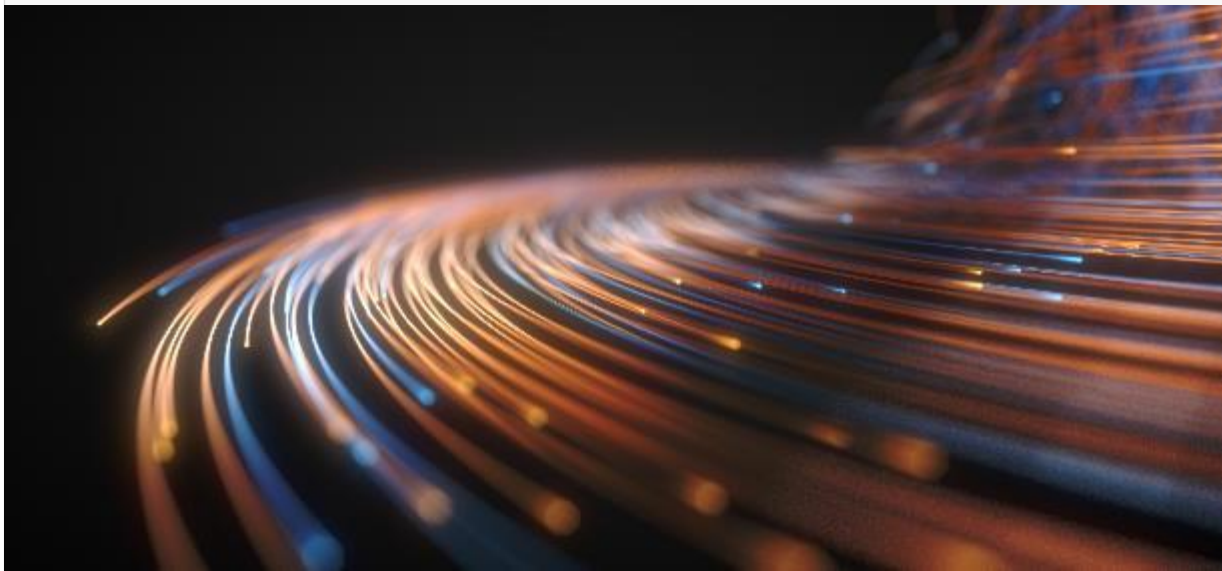
Pylon connectivity (DTTA)

Connection of the pylons by operators' optical fibre via the provision of sleeves.



Multi-access edge computing





Mini data centres at the base of the pylons to facilitate 5G mobile application performance.





Smart City

TDF offers key Telecom **infrastructures** for the implementation of service platforms for the smart city. TDF teams support local authorities both in the network design phase and in the construction, operation and maintenance of the local networks necessary for the smart city (IoT, Wi-Fi, 4G, 5G, etc.).

-  Design
-  Deployment
-  Operation
-  Maintenance



Some smart city services deployed in city of Vichy (experimentation)

- Wi-Fi coverage in the city centre
- LoRa network "outdoor" coverage
- Technical management of buildings: monitoring and optimisation of energy consumption
- Data analytics and management platform
- Data security

Les infrastructures numériques TDF, fondation des services Smart city

- Stationnement intelligent**
gain d'émission de CO² de 30 %
- Gestion intelligente des déchets**
optimisation & diminution du nombre de tournées
- Densification de la couverture mobile urbaine grâce à TDF**
- Sécurité, vidéoprotection**
système de vidéo surveillance connecté
- Pollution de l'air, Météo**
capteurs de suivi de la pollution
- Objets connectés**
20 milliards en 2020 [1]
- Véhicules autonomes**
sur la voie publique dès 2020

Meilleur pilotage des services publics et optimisation des ressources pour une démarche optimale et responsable.
 Pour plus d'information sur les expérimentations Smart city TDF : contact.telecom@tdf.fr



ITAS

Through its subsidiary ITAS, the TDF group builds its own pylons in France at its Beauzelle plant near Toulouse (31).



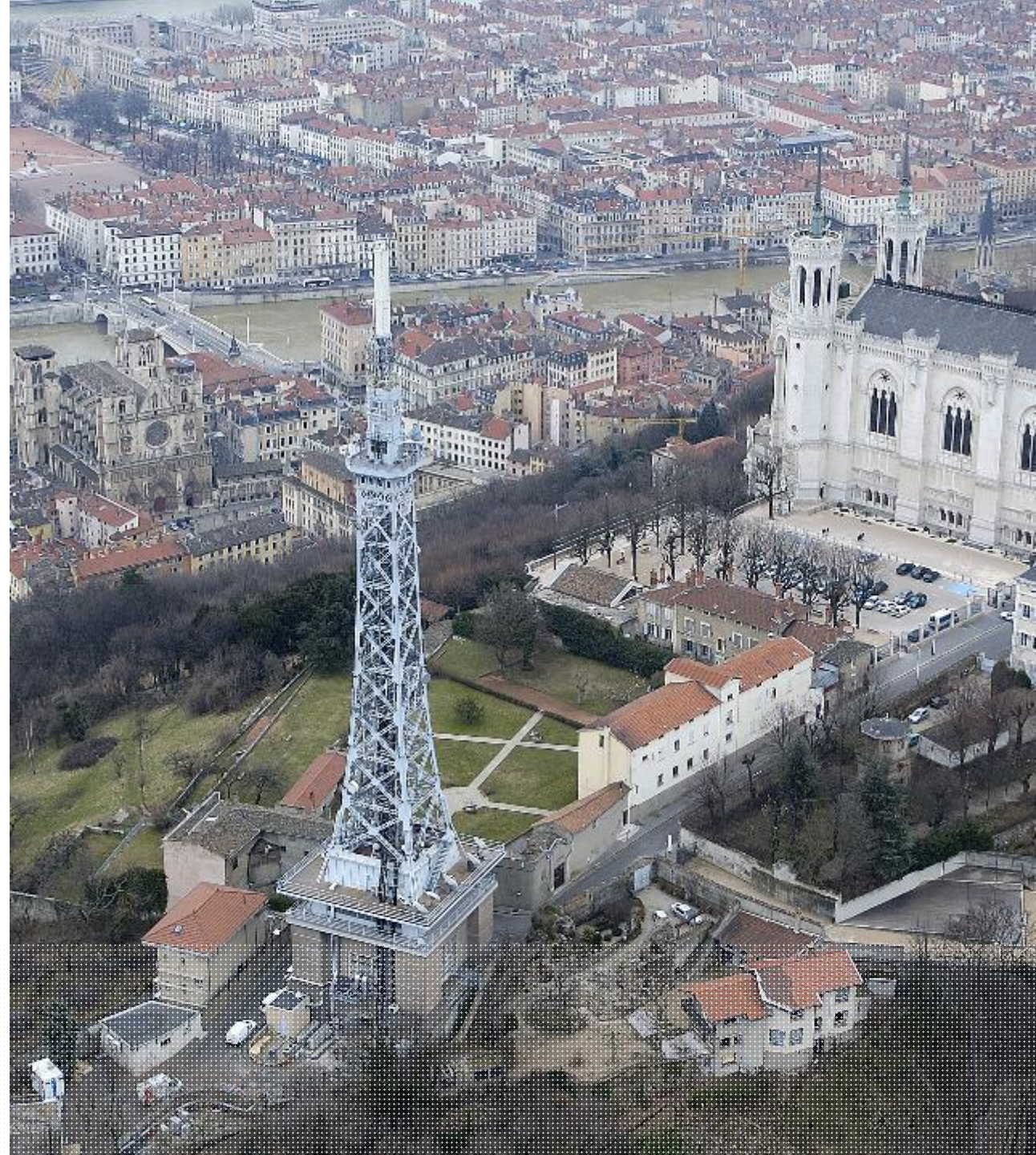
- **4,500m² factory**, 15 welding stations, 7 overhead cranes
- A workshop dedicated to the construction of lattice towers from 12 to 50 m. Production capacity: **600 pylons/year**
- A workshop dedicated to the production of monotubes from 12 to 50 m. Capacity: **100 pylons/year**
- A paint workshop
- A design office composed of **5 estimators and 5 designers** (standardised approach in the production of TDF pylons)





Audiovisual

Broadcasting of Digital Terrestrial Television (DTT) and of radio (FM and DAB+) throughout the country.





Broadcasting



Digital Terrestrial Television (DTTV)

Specialist in audiovisual broadcasting in France.

More than 7,500 DTTV broadcasting service points throughout Metropolitan France and in French overseas departments and territories, for national multiplexes and local television networks.

In partnership with its clients, realisation of experimental broadcasts in Ultra Broadband at major sporting or cultural events.



FM Broadcasting

Expert in radio broadcasting in France.

Broadcasting of over 300 public and private radio programmes at more than 4,800 points of service.

Broadcasting of several motorway radio stations thanks to the synchronous broadcast control, which optimises the coverage of single-frequency networks.





Broadcasting



Digital Terrestrial Radio (DAB+)

DAB+ broadcasting for over 100 radios stations.

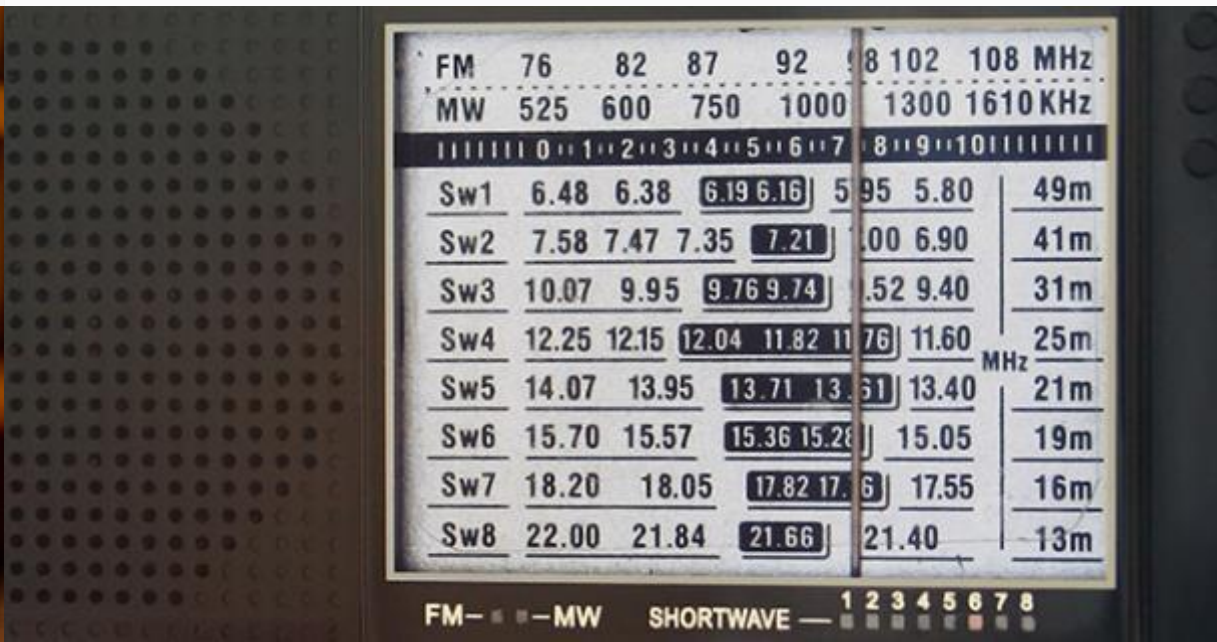
Multiplex operator in the cities of Paris, Marseilles and Nice through its subsidiary RMux.



Shortwave (or decameter wave) broadcasting

TDF is a shortwave broadcaster of RFI programmes and of several international radio stations such as NHK and Deutsche Welle.

Coverage is concentrated in Africa, Asia and the Middle East.



FM	76	82	87	92	98	102	108	MHz
MW	525	600	750	1000	1300	1610	KHz	
	0	1	2	3	4	5	6	7
Sw1	6.48	6.38	6.19	6.16	5.95	5.80		49m
Sw2	7.58	7.47	7.35	7.21	7.00	6.90		41m
Sw3	10.07	9.95	9.76	9.74	9.52	9.40		31m
Sw4	12.25	12.15	12.04	11.82	11.76	11.60		25m
Sw5	14.07	13.95	13.71	13.61	13.40			21m
Sw6	15.70	15.57	15.36	15.28	15.05			19m
Sw7	18.20	18.05	17.82	17.6	17.55			16m
Sw8	22.00	21.84	21.66	21.40				13m



Head-ends, Transfer & Wi-Fi



Head-ends

TDF's mastery of signal coding, multiplexing and the management of data associated with programs enables it to operate, DTTV and DAB+ head-ends, meeting very high quality and availability requirements.



Transmitter power networks

Transfer of signal to DTTV, FM and DAB+ transmitters using its Ultra High Speed network. This network, consisting of optical links and microwave beams, provides high-speed digital transmission with a high quality of service.





Head-ends, Transfer & Wi-Fi



Teleport

Uplink services to the orbital positions commonly used in France.

The location of TDF's teleport in Nantes provides it with optimal weather conditions and **geographical diversity** compared to other teleports located in the Paris region.



Wi-Fi

Territorial Wi-Fi: support for local authorities in setting up facilities providing city centres with Wi-Fi for craftsmen, shopkeepers, private individuals, tourists, etc.

HD Wi-Fi: full "High Density" major public event Wi-Fi service integrating deployment, network operation, Internet bandwidth and the collection of statistical data.





Ad Valem Technologies



Through its subsidiary Ad Valem, TDF operates a full range of services around the management of television streams



Teleport & Broadcasting Facilities

Ad Valem takes care of the entire transfer of TV streams from the place of production (stadiums, theatres, etc.) to the TV channel studio or client radio station.

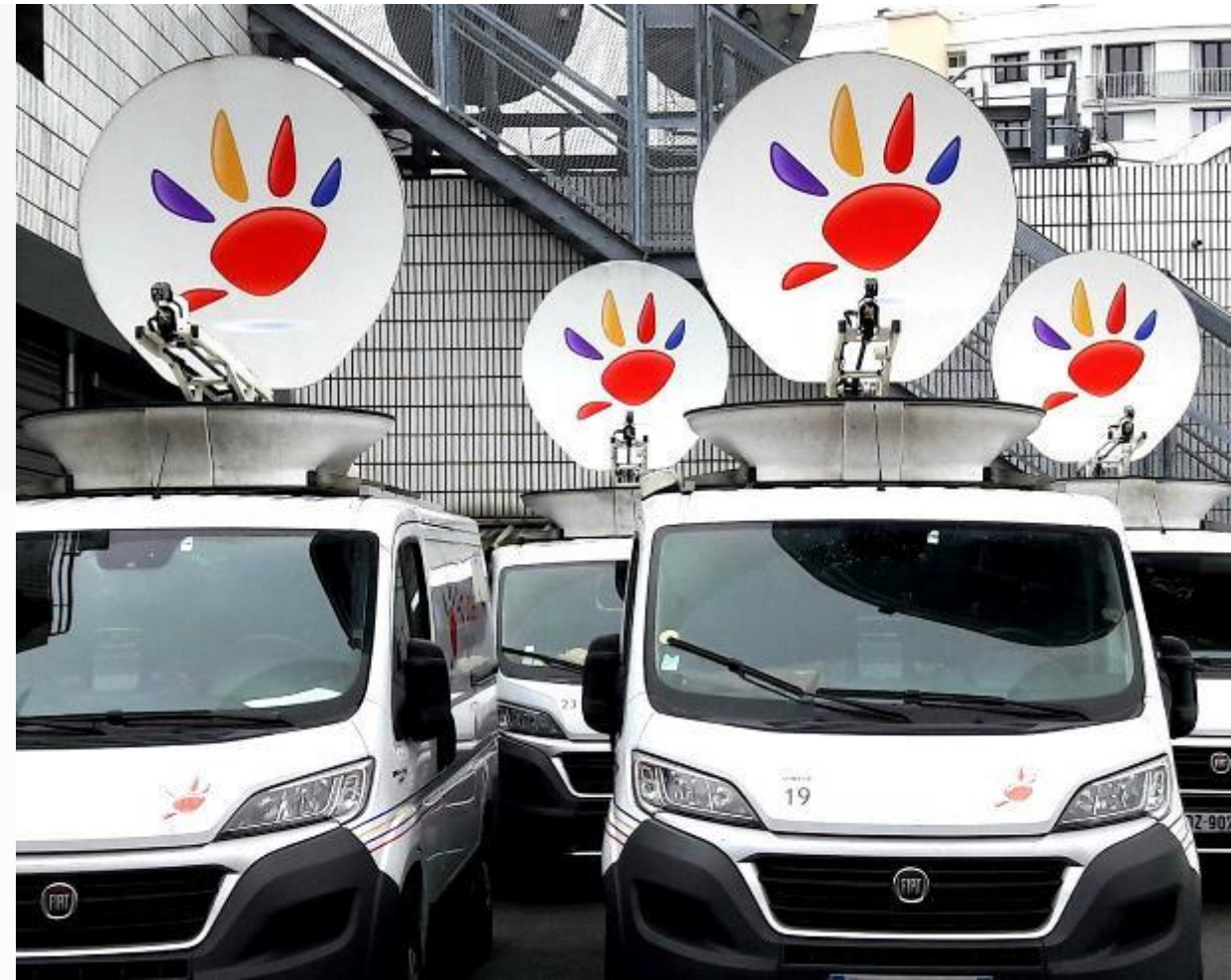
Satellite stream reception and transmission:

- Permanent: reception of foreign television and radio broadcasts for redistribution to Internet service provider "boxes".
- Events: capture of events (sports, shows) for the provision television channel studios.



Mobile stations

Transfer of fibre and satellite contribution streams from an event site (stadiums, theatres, etc.) to the client's studio via a fleet of retransmission trucks.





Ad Valem Technologies



Ad Valem covers sporting, cultural and musical events for the main French television channels.



Video feed transfer

Delivery of video signals (SDI or IP format) point to point with monitoring.

Exchanges of video streams between television channels thanks to the occasional switching service.



Transfer network

A network of points of presence (50 stadiums, data centres, etc.) in France and Europe through partnerships with international players.

An optical fibre network managed and operated by TDF, supplemented by links leased to the largest operators on the French market.





Fibre

Construction of infrastructure networks for the digital development of territories





Fibre

With expertise in the construction and operation of infrastructure, TDF works alongside communities and makes every effort to **connect 100% of sparsely populated or rural areas with optical fibre broadband network**



FTTH network design, financing and deployment



Marketing



Infrastructure operation and maintenance






Our territories

From investment to operation, TDF has **complete solutions** to provide what is needed, whatever the legal model chosen (concession, leasing).

Since 2017, five departments (grouped into four territories) have entrusted TDF **with the deployment, marketing and operation of the FTTH** (fibre-to-the-home) optical fibre network in the sparsely populated areas of Val d'Oise, Yvelines, Val de Loire (Indre-et-Loire and Loir-et-Cher) and Maine-et-Loire.


TDF currently operates **750,000 plugs** for the development of innovative uses and services for individuals and businesses, boosting the attractiveness of these regions.

Val d'Oise (95)



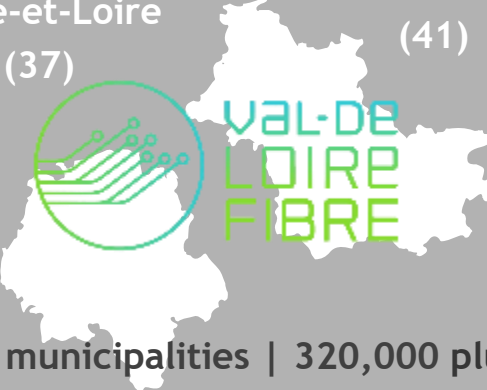
116 municipalities | 86,000 plugs

Yvelines (78)




160 municipalities | 100,000 plugs

Indre-et-Loire (37) Loir-et-Cher (41)



513 municipalities | 320,000 plugs

Maine-et-Loire (49)



142 municipalities | 222,000 plugs



Training mission

As part of the deployment of optical fibre, TDF is developing employment throughout the country and continues its involvement **in integration and vocational training**



Being involved in fibre infrastructure deployment is a unique human and professional experience. The aim of this large-scale project is to **strengthen** the **economic attractiveness** of the country, particularly in rural areas, and contributes to the **development of new activities** in the areas of health, education, the environment, etc.



In Val d'Oise, TDF is involved in the establishment and activity of Ecoen's departmental training centre (the Tesla Hub).
In Yvelines, TDF is a partner of the Aubergenville training centre (EA-ITEDEC).
In Anjou, TDF has three training centres located in Baugé-en-Anjou, Segré-en-Anjou and Doué-La-Fontaine (in partnership with AFPA).
In the Loire Valley, two mobile training platforms have been created and are available to train organisations for fibre-related jobs.





Innovation

With a keen eye on the technology of tomorrow, TDF stands ready to seize the opportunities presented by virtualisation, smart territories, 5G and the Internet of Things.





Innovation

TDF is committed to and invests in numerous research projects.

TDF participates in think tanks within competitiveness clusters and identifies potential partners for the development of innovative projects.

The Group's involvement in innovation is supplemented by its collaboration with Technological Research Institutes, resulting in the publication of these publications, patent filings and their exploitation.

5 TDF technology and innovation centres

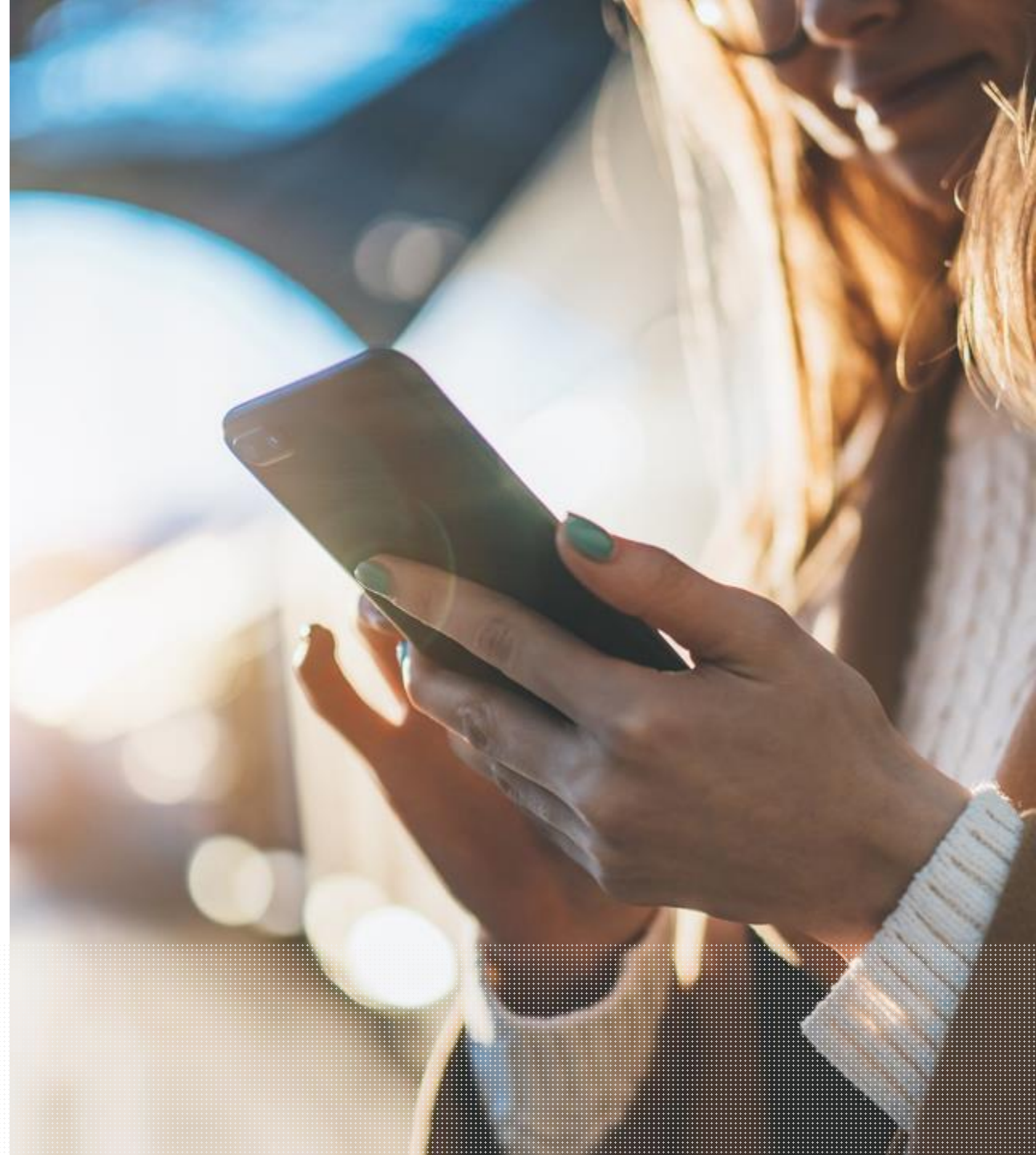
TDF has 5 technology and innovation centres throughout the country.

The TDF Campus, showcasing the Group's operational excellence, is located at Fort de Romainville in Les Lilas (93). It comprises 5 laboratories in which the technologies of the future are tested. The TDF Campus is certified Ready2Services by the Smart Building Alliance and Certivea, which promote connected and communicating HQE buildings as part of a sustainable and smart city approach.





Quality of service





TDF's monitoring centre



Also known as NOC, which stands for **Network Operations Centre**, TDF's monitoring centre is located on the TDF Campus in the heart of Fort de Romainville in Les Lilas. The NOC teams provide **24/7** real-time monitoring of the transmission and broadcasting networks, infrastructure and energy.

Technicians can then handle incidents - **nearly 50,000 operations per year** - remotely via remote maintenance or by triggering operations in the field.





Corporate Social Responsibility





Corporate Social Responsibility (CSR)



TDF's CSR policy

TDF has been committed to a responsible approach on a daily basis for many years and follows the objectives of its CSR (Corporate Social Responsibility) policy.

This document sets out a framework that enables everyone to reconcile economic performance, quality of service, and social responsibility.

The CSR policy can be accessed at www.tdf.fr.



The TDF Group Code of Ethics

describes the general principles governing the conduct of its activities, companies' rules of behaviour, the conduct of all the Group's employees and their relations with the various internal or external partners, in compliance with ethics and the applicable laws.

The code of ethics is available at www.tdf.fr.



Since 2014, TDF has been a member of the UN Global Compact.

The company is thus committed to directly or indirectly supporting the 10 principles of the Compact, in terms of respect for human rights, international employment standards, the environment, and the fight against corruption.

To this end, every year the company publishes its communication on progress, which is available at www.tdf.fr.





The management of CSR at TDF



TDF's corporate social responsibility policy is managed by the HSE-CSR department. This department coordinates CSR policy in a cross-functional manner and involves all of the Group's departments.

A dashboard and a monthly monitoring of actions, shared with the Chief Executive Officer, report on how work is progressing. A CSR committee meeting of the members of the Executive Committee is organised annually.

Each member of the Executive Committee has a CSR objective.





TDF's commitments

The TDF Group is committed to carrying out its activities on a daily basis within the framework of a CSR approach. TDF's CSR policy has 3 main themes and includes 12 commitments.





To link up the territories

To continue to grow our business for ever more connected territories and to ensure its sustainability.



Broadcasting and telecommunication infrastructures are essential for enabling local authorities to support the digital evolution of lifestyles and society in the service of employment and the attractiveness of the French territories. As a key player in the deployment and operation of networks, TDF makes investments that meet the needs and challenges of broadcasting and connectivity for all: citizens, businesses and public bodies. The ambition: to become the go-to partner for the territories.



At the heart of TDF's strategy, the role of innovation is to identify and support the development of tomorrow's technologies. By fostering exchanges, networking, and cross-functionality between TDF's various activities, innovation is a powerful driver of employee engagement. And because innovation is not only technological, it also involves the company's ability to set itself challenges and to transform its processes and operating methods for greater social and environmental flexibility.





To ensure wellbeing in the work place

To ensure a balance between economic performance and social innovation.



Social dialogue is part of TDF's identity and enables it to listen to and respond to collective expectations in line with corporate strategy. Human Resources supports development of the business. Major issues such as professional equality, the quality of life at work or the forward-looking management of jobs and skills are at the heart of its human resources policy. Agreements dedicated to these aspects and entered into with social partners confirm this positive dynamic.



TDF undertakes to identify and qualify upstream the risks associated with its activity and to define the preventive rules that apply to its employees, customers and subcontractors. TDF implements programmes to ensure the improvement of working conditions, the safety of its infrastructure and the reduction of its impact on the environment. These programmes are part of a continuous improvement loop to achieve TDF's ambition of achieving "Zero serious accidents".



For TDF, the quality of life at work is a factor in the development of the wellbeing of employees, both individually and collectively. To this end, the company intends to place it at the heart of its social policy and to encourage an approach that will be embraced by all employees and supported by the company's management. The quality of life in the work place agreement signed in 2018, one of the pillars of HR policy, strikes a balance between economic and social performance.





To be an ethical and civic-minded enterprise

To meet stakeholder expectations.



AGIR EN CONFORMITE AVEC NOTRE ETHIQUE

Concerned with the fundamental principles of the fight against corruption, the TDF Group adheres to the principles established by the OECD and condemns any fraudulent practice or bribery, whether active or passive. Led by the Audit and Internal Control Department, supported by management and applying to all employees, an anti-corruption policy is in force within the company.



CONTRIBUER AUX ACHATS RESPONSABLES

By including CSR clauses in its terms and conditions of purchase, TDF ensures the ability of its industrial and commercial partners to apply a policy of social responsibility equivalent to its own: respect for human rights and the Sapin II law in particular. The company reserves the right to conduct inspection audits for this purpose. In addition, TDF is committed to defining CSR criteria in its specifications in order to meet the challenges of sustainability.



RENFORCER NOS ACTIONS POUR LA DIVERSITE ET LA SOLIDARITE

TDF is part of a corporate citizenship dynamic and takes action to promote diversity and solidarity. Firstly, TDF is committed to professional equality, within the framework of an agreement on professional equality between women and men, signed in 2017. Within TDF, the gender index is 93/100. Secondly, the company encourages solidarity informed action, through the support of associations and the commitment of its employees to mentoring young people (Elles Bougent associations, Article 1, Arpejeh).



DEVELOPPER NOTRE ECOUTE DES PARTIES PRENANTES

Whether it is responding to a call for tender or deploying a new service, installing a new site or operating it, integrating new employees or improving their working conditions, TDF measures the importance of continuous dialogue with all its internal and external stakeholders on a daily basis. It acts as the point of contact and channel of discussion for each stakeholder. The company's goal is to build lasting and trusting relationships that address the key concerns of its partners.



To protect the environment

To help combat global warming and reduce the environmental impact of our activities.



OPTIMISER NOS CONSOMMATIONS
D'ENERGIE

TDF implements technical solutions for maintaining a satisfactory ambient temperature in its technical rooms for the working comfort of employees and the maintenance of production buildings. The production needs for 24/7 services require a constant supply of energy that is of impeccable quality, which means that using wind or solar systems is therefore complex. However, TDF is continuing to explore different renewable energy solutions.



OPTIMISER LA GESTION DE
NOS DECHETS

TDF has identified 19 disposal channels for the waste generated by its tertiary and production activities. This waste is mainly common industrial waste, scrap metal, scrapped electrical and electronic equipment, paper and cardboard, and occasional cleaning chemicals. Responsible waste management is a regulatory, environmental and economic issue for TDF to share with its stakeholders. TDF selects approved partners with the aim of increasing the treatment of its waste for recycling.



MISE EN LA
BIODIVERSITE
UN LEVIER DE CREATION DE VALEUR

TDF's plants are sometimes located in areas that require special attention from the company when constructing infrastructure, but also throughout their lifetime. Taking biodiversity into account in its activities, particularly through partnerships, enables TDF to contribute to the preservation of ecosystems, respond to concrete issues on the ground, and develop knowledge of biodiversity within the company.





www.tdf.fr

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