



Enedis: Digital DSO for Europe
When energy meets digital

October 2016

Enedis a major distribution system operator dedicated to public service

In France, most of distribution networks are owned by local authorities. Enedis is in charge of operating the grid with two main missions:

€ 3
billion

OF CAPITAL
EXPENDITURES
PER YEAR

1.3
million

KMS OF
POWER LINES

39,000

EMPLOYEES

35
million

CUSTOMERS

Ensuring service continuity and quality

Enedis is responsible for continuous electricity supply. To fulfill its role, the company ensures operation, maintenance and development of the network. Enedis constantly invests to modernise and secure the network, particularly against extreme weather conditions. If an unexpected weather event occurs, Enedis can quickly react to restore power at anytime and anywhere.

Non-Discriminatory access to the network

Enedis carries out its missions and activities in compliance with European regulatory framework. In this respect, the company has drawn up a Code of Conduct which ensures that its services are provided under objective, transparent and non-discriminatory criteria. This Code also ensures confidentiality of commercially sensitive information.

Low and uniform network tariff

In Europe, distribution and transmission costs range from 2 c/kWh to 7 c/kWh. With a distribution tariff of nearly 3 c/kWh, French households enjoy an excellent quality/price ratio. Enedis implements "tariff equalisation", meaning a solidary national tariff structure that ensure customers all over the national territory are charged "the same price" for distribution.

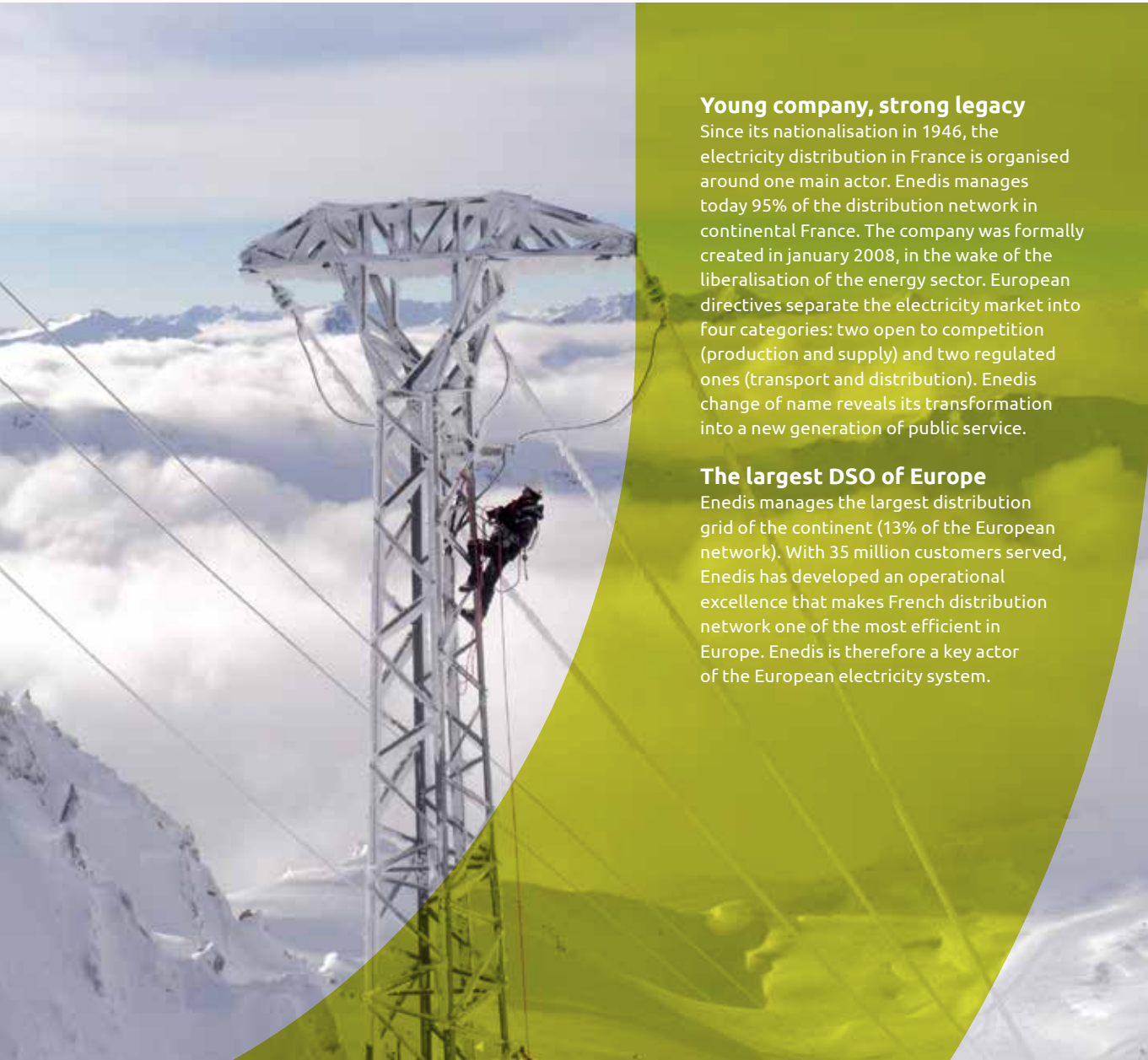
Enedis a major distribution system operator

Enedis committed to Europe

In the context of the completion of the Internal Energy Market, DSOs are increasingly impacted by European decisions. Enedis supports an active role of DSOs in European debate on equal footing with all stake-holders.

Enedis is active member of Eurelectric, UFE and EDSO. It is involved in the Task Force Smart Grids. Enedis also shares its expertise through public consultations.

Enedis has an office in Brussels.



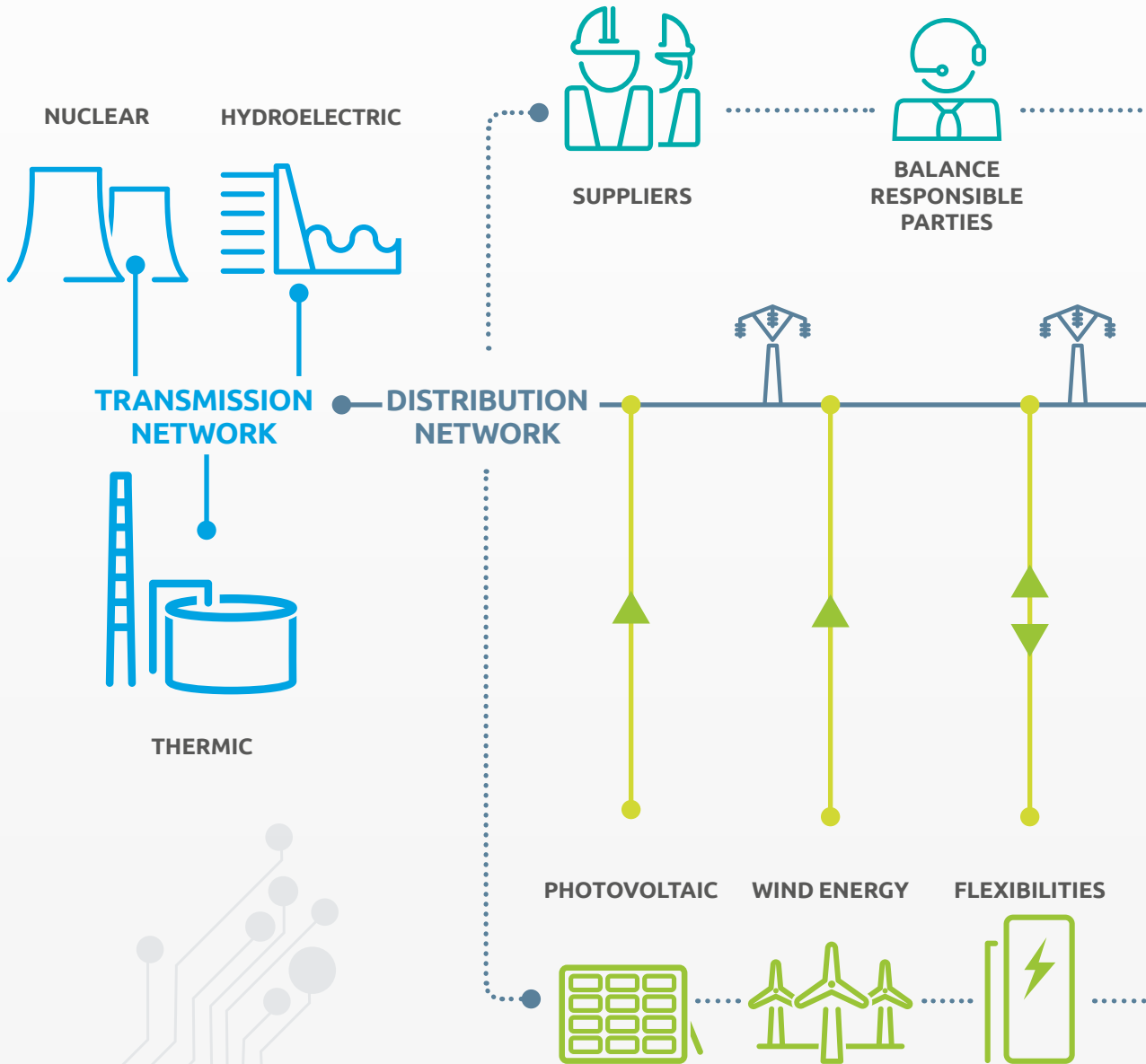
Young company, strong legacy

Since its nationalisation in 1946, the electricity distribution in France is organised around one main actor. Enedis manages today 95% of the distribution network in continental France. The company was formally created in January 2008, in the wake of the liberalisation of the energy sector. European directives separate the electricity market into four categories: two open to competition (production and supply) and two regulated ones (transport and distribution). Enedis change of name reveals its transformation into a new generation of public service.

The largest DSO of Europe

Enedis manages the largest distribution grid of the continent (13% of the European network). With 35 million customers served, Enedis has developed an operational excellence that makes French distribution network one of the most efficient in Europe. Enedis is therefore a key actor of the European electricity system.

ENEDIS AN ACTIVE DISTRIBUTION SYSTEM OPERATOR



DATA



CITIZEN
(OPEN DATA)



LOCAL
AUTHORITIES

ENEDIS MANAGES AND SECURELY SHARES DATA WITH ALL ENERGY SYSTEM STAKEHOLDERS FOR THE SUCCESS OF ENERGY TRANSITION



WITH DIGITALISATION, ENEDIS MANAGES THE DISTRIBUTION NETWORK MORE EFFICIENTLY

ENEDIS CONNECTS RENEWABLE ENERGY SOURCES AND NEW USAGES ON THE DISTRIBUTION NETWORK

ELECTRIC
VEHICLES



CUSTOMERS



LINKY, THE FIRST STEP OF SMART GRIDS

Linky is a smart metering system which enables remote operations, shorter intervention times and more detailed monitoring of electricity consumption. Customers will be invoiced by suppliers exactly for the electricity they use and suppliers will be able to tailor their offers consequently. Moreover, Linky also allows the development of energy efficiency services based on "home automation".



In the framework of the energy transition and digitalisation, Enedis is becoming a system manager, and is responsible for:

- Empowering consumers and producers connected to the public distribution network to fully participate in the market and the energy transition.
- Supporting the development of potential optimisation of the electrical system (flexibility) and helping players to develop their contribution to the electrical system *via* the public distribution network.
- Supporting local authorities for the development and optimisation of energy resources of the territory and the development of energy efficiency.
- Guarantying the protection and privacy of customers' information and data.

Two future applications:

Forecasting photovoltaic generation:

Enedis has tested fish eye camera to improve photovoltaic generation forecasts at GreenLys and Grid Vendée demonstrators. The purpose is to combine data from the sky (sunshine, cloud cover...) with weather forecasts and localisation of photovoltaic panels. Margin of error is divided by six compared to traditional techniques. With this innovative technique Enedis improves integration of renewable energy sources.

Empowerment of local authorities

Enedis assists Lyon Metropolis to determine the energy footprint, to develop electric mobility and Lyon Smart City

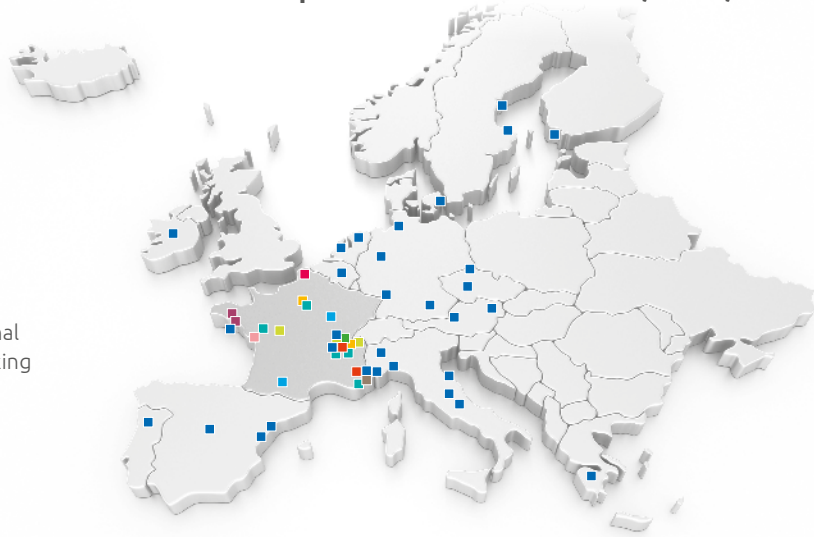
Enedis is an engaged supporter of "Smart Metropolis" led by Lyon which includes the construction of an Energy Master Plan, the deployment of electric vehicle charging stations, and the construction of the eco-district Lyon Confluence. The Energy Master Plan aims to provide guidance to build a Metropolitan energy transition policy. It makes Energy a structural component of public policy. Moreover, the Metropolis of Lyon with Enedis has been selected in the H2020 "Smart Cities & Communities" call of the European Commission. This project stands out by its global and multi-sector approach at a neighborhood level (energy, mobility, buildings, users...). Also, Lyon Metropolis will reach an implementation on the public domain of 900 normal and 20 rapid charging stations for electric vehicles by 2020. Enedis supports electric mobility development by carrying out optimisation studies for the electrical connection of the charging infrastructures.

Managing the technological breakthrough of smart grids

In France and Europe, Enedis is playing a key role for the development of smart grids in collaboration with more than hundred partners from utilities, ICTs, university and R&D.

Leading in innovation

Enedis is boosting its R&D investments to integrate new energy sources and uses. It means investments in asset management, maintenance optimisation, mobile solutions for field operators, smart metering, electric vehicle charging, decentralised generation and storage... Enedis is developing an internal policy to foster Open Innovation and is working with start-ups from Europe, the US and Asia.



From innovation to industrialisation

The energy transition requires new technologies in the fields of Smart Grids and Big Data systems. The mass roll-out of Linky smart metering system aims to replace 35 million meters by 2021. Enedis is creating a digital program to foster the development of new solutions (open and closed data, apps, infrastructure management, etc.). Last but not least, a roadmap for implementation of smart grid solutions in 2018 has been designed based on the first results of our 20 demonstration projects.

FRANCE

Linky LINKY PILOT PROJECTS

An experiment on nearly 300,000 smart meters.

ISSYGRID

District-wide energy optimisation.

InfinitiDrive INFINI DRIVE

Management of recharging infrastructure for electric vehicles.

HOUAT AND HOËDIC

Securing the power supply of two islands through power modulation and redistribution of energy.

SMART GRID VENDÉE

Optimising consumption and production over a region.

SO GRID

Development of a new PLC communication chain (Power Line Communication) to enhance the control of the distribution network.

POSTE INTELLIGENT

Digital technology embedded in primary substation for better interface between high and medium voltage networks.

NICE GRID

Contribution of a smart-solar district: handle demand peaks and better take advantage of photovoltaic.

WATT & MOI

Secure one-line access to electric consumption information.

VENTEEA

Integration of important capacities of wind energy in a rural network.

GREENLYS

Smart grid contribution to urban areas equipped with LINKY.

SMART COMMUNITY LYON

Management of smart buildings, electric vehicles and solar energy.

SMART ELECTRIC LYON

Experimentation of innovative offers and services for customers downstream the meter.

SOLENN

Multiply actions for energy efficiency over a large territory and develop tools to secure power supply.

EUROPE

ADVANCED

Assessment and comparison of active demand management alternatives.

EVOLDSCO

Experimentation of innovative offers and services for customers downstream the meter.

IGREENGRID

Massive integration of renewable energy sources.

GREEN-ME

Increasing the observability, management and prediction of the injected Production.

GRID4EU

This European project under Enedis leadership brings together 6 European power distributors in an investigation of key Smart Grid functions.

GRID+

Providing operational support for the development of the European Electricity Grid Initiative.

INTERFLEX

Demonstrating that combining network automation with the local generation and/or consumption flexibilities (including the coupling between electricity, gas and heat distribution networks), can make local energy systems more competitive and more reliable.

SMARTER TOGETHER

Offering replicable smart solutions to improve citizen life quality.

TRANSFORM

Contributing to low carbon city's development through multifluid and integrated energy planning

Enedis is a public service company that manages the electricity distribution network. It develops, operates and modernises the electrical grid and manages the associated data. Enedis carries out customer connections, 24 hour and 7/7 troubleshooting, meter readings and all technical interventions. It is independent of the energy suppliers, which are responsible for the marketing and management of the electricity contract. Enedis employs 39,000 people and serves 35 million people, that are connected by a low and medium voltage network with a length of one million, three hundred thousand kilometers.

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