

Gas transport network DEVELOPMENT

Exclusive right to develop

- In France, the historical network operators (TIGF and GRT gaz) have the **exclusive right** to develop the network
 - Authorization to operate a market network

What are the principal drivers of the development of gas transport network?

The design of the gas transport network mainly depends on:

- ⊕ the evolution of **French peak demand** and European demand (**transit**)
- ⊕ changes in the organisation of gas markets (**market integration**)
- ⊕ **security of supply** and **solidarity** between European states

Stakeholders are consulted by transport company under the « gas concertation » process in order to identify market's needs for the upcoming 10 years.



The Ten-Year Development Plan (TYNDP) addresses all of these issues in order to propose **a summary of investment considered to be required* by stakeholders.**

** The TYDP is a forecast of possible scenarios that are to be confirmed by the market; as such it is non-binding post n+1. It is submitted to CRE for approval; CRE notably check consistency with European TYNDP.*

Ten Year Network Development Plan

The TYNDP is an interactive approach with the market players to identify needs and meet demand

- ⇒ Analysis of the utilization of existing capacities
- ⇒ Open seasons (PIR)
- ⇒ Coordination with adjacent operators (PITTM, PITS)

This interactive approach is driven in concertation (in coordination with TIGF) and ends in a public consultation led by the Regulator

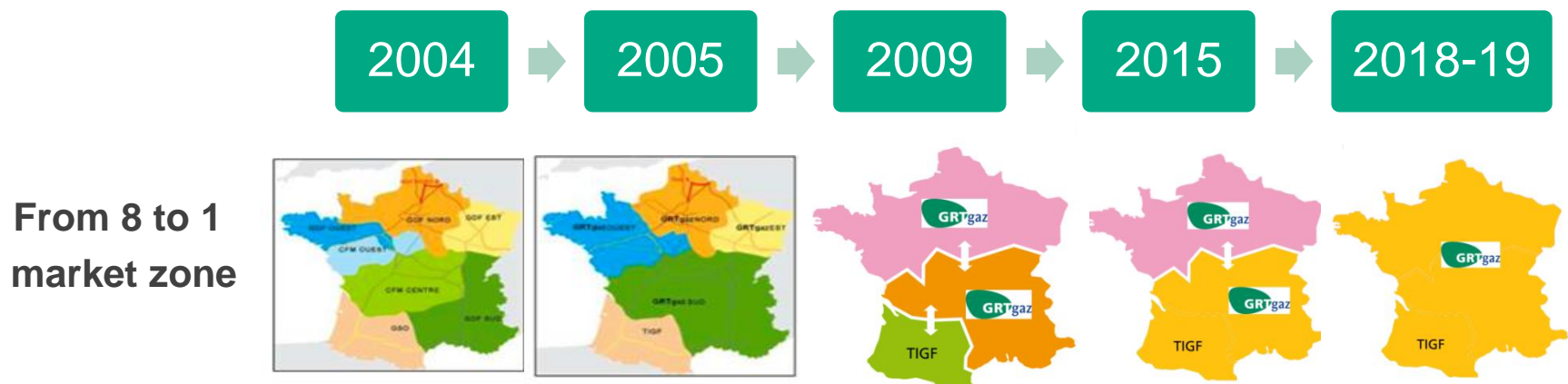
Ten Year Network Development Plan

It describes the possible developments in major transport infrastructure for the next ten years:

- ⇒ If market demands are confirmed (by LT commitments)
- ⇒ If investment projects are approved by regulator (CRE)
- ⇒ If the rate of return of these project is consistent with investors expectation (shareholders and/or banks)

The TYNDP is submitted to the regulator. CRE checks
the consistency with the European TYNDP published by **ENTSOG**
That all needs of investments are covered by the TYNDP

Impacts of the investment plan on French gas transport network

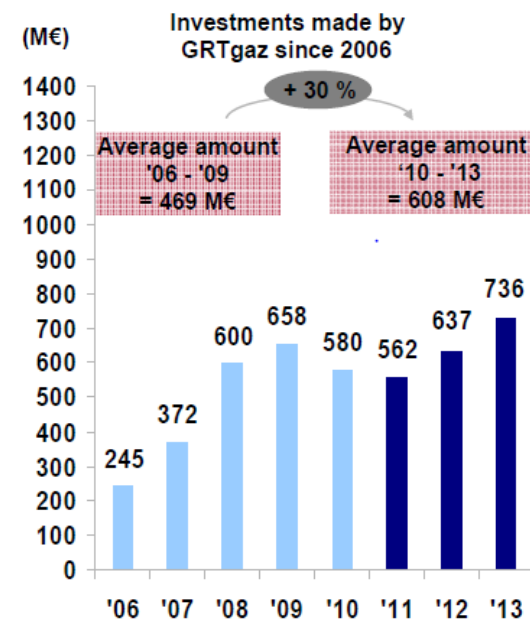


➤ Entry capacity (GRTgaz north+south)

- 2009 : 2740 GWH/j
- 2016 : 3345 GWH/j

➤ Exit capacity (GRTgaz north+south)

- 2009 : 548 GWH/j
- 2016 : 888 GWH/j



Case 1: Creation of a single marketplace in France

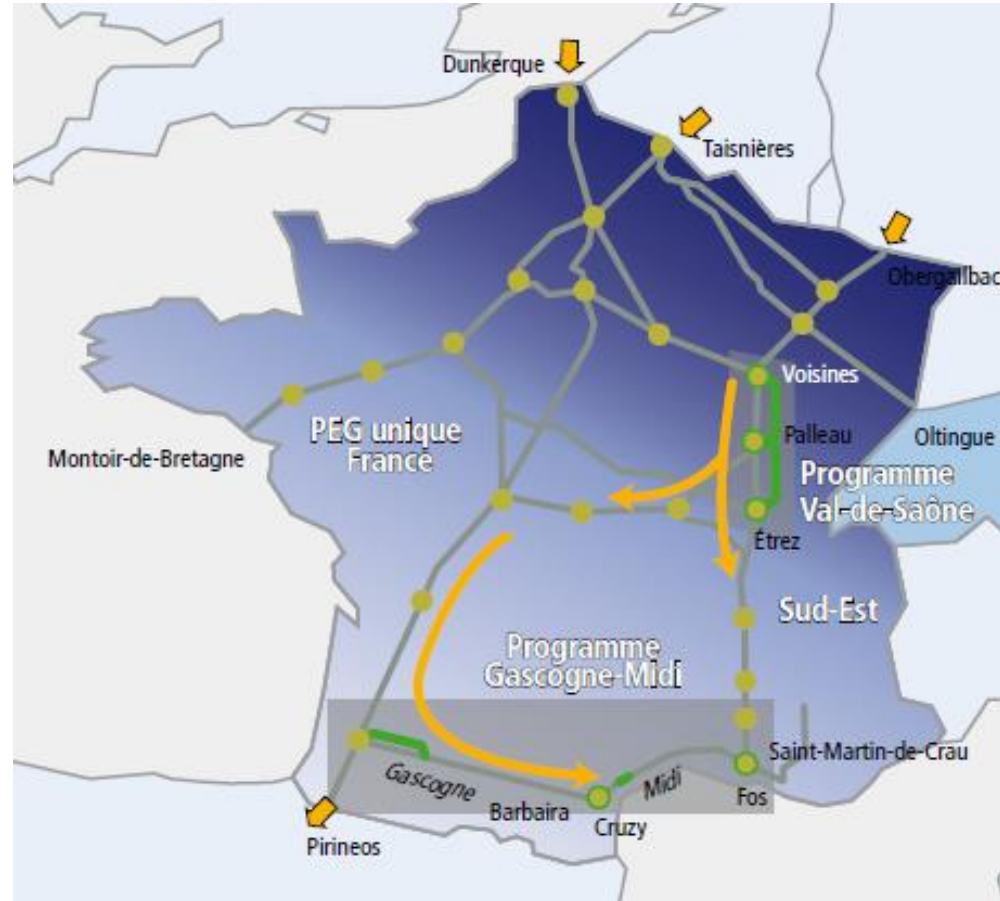
Overview of the project

Since April 2015, the South Trading Region has covered the former TIGF and PEG South zones (*merger concluded with no additional investments*)

After 2018: creation of a single market zone in France

Decision in May 2014 identified investments for Val de Saône and Gascogne-Midi to create a single zone in France

This single zone is based on configurations of flows shared with the market.



Case 2: Consolidation of the North-South corridor

Pending confirmed market interest

If one or more development projects for entry capacity in the south are confirmed (*Greenfield terminals or extensions in Fos, Midcat, storage*), the following facilities will be required:

Eridan

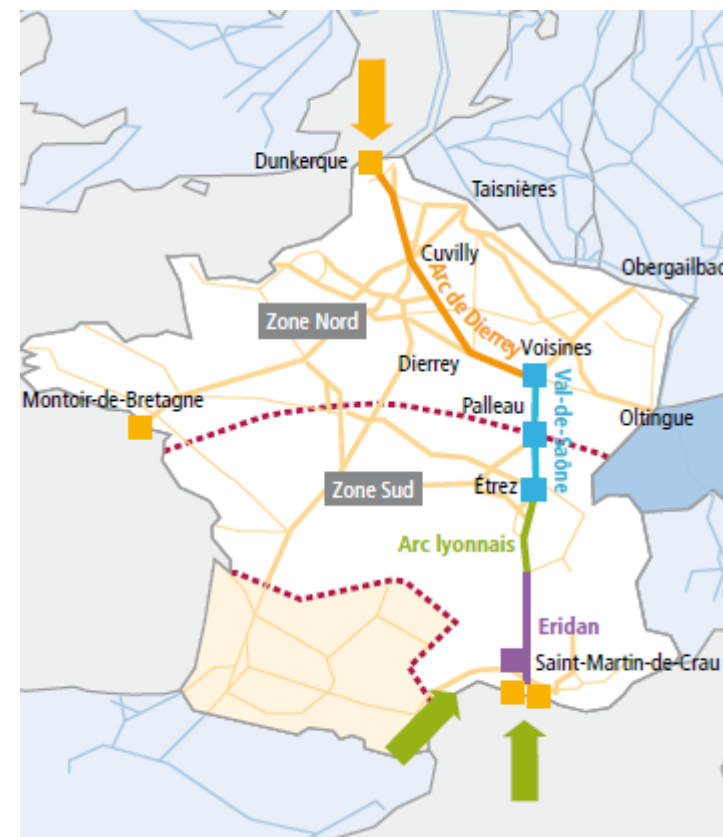
220 km between St Martin and St Avit

Authorisations obtained for a five-year period, renewable for five years (but 17 appeals are in progress)

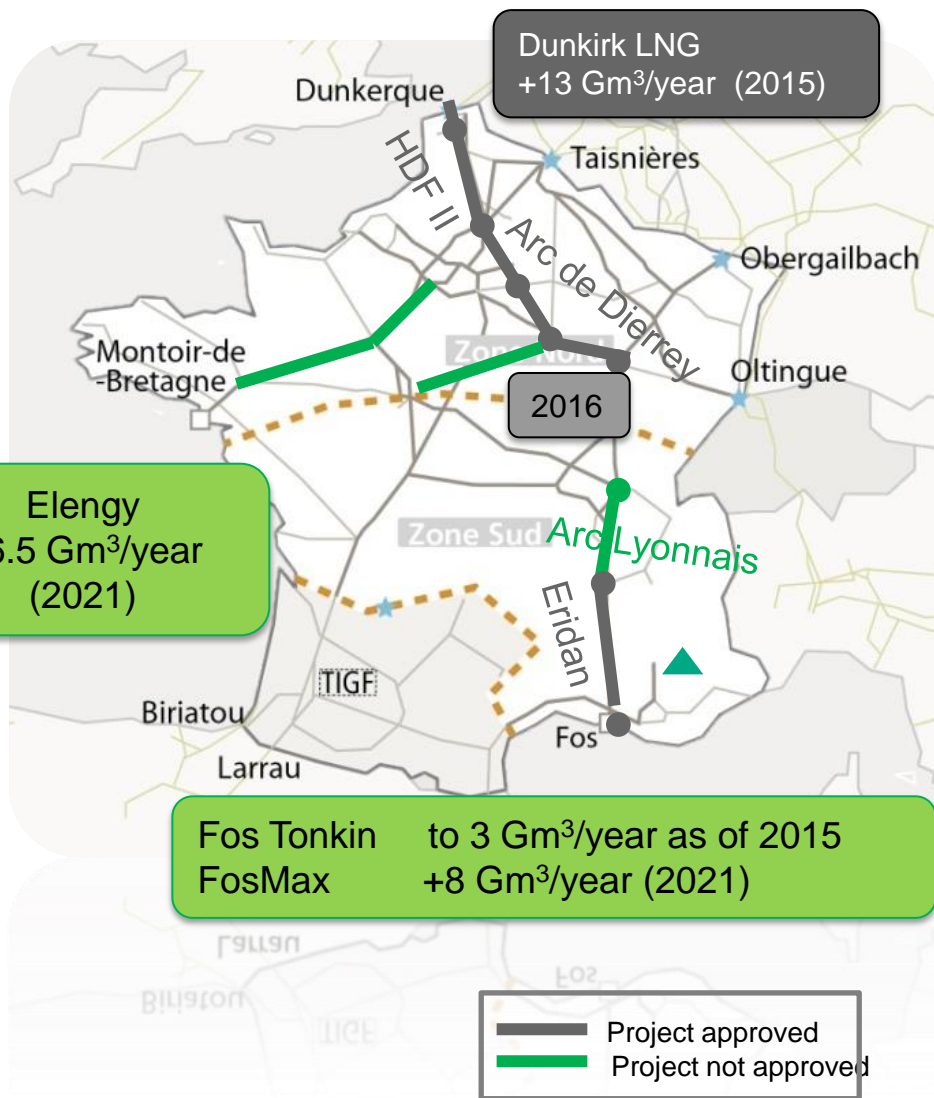
Arc Lyonnais

150 km between St Avit and Etrez

Studies suspended



Case 3: Potential development related to LNG terminals



Connection of the new LNG terminal in Dunkirk (2015)

Hauts de France (123 km, 2015)

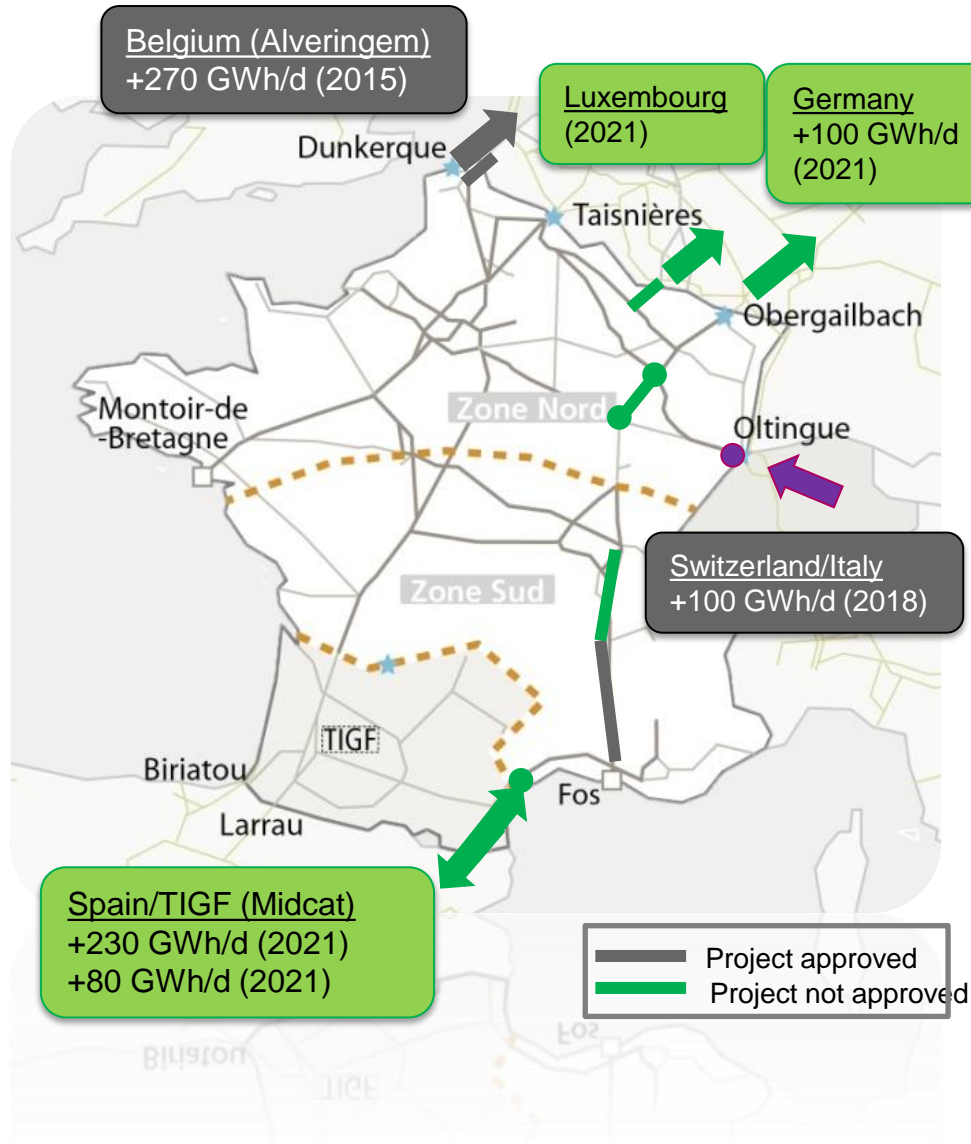
Arc de Dierrey between Cuvilly and Dierrey (180 km, 2015)

Arc de Dierrey between Dierrey and Voisines (120 km, 2016)

Development of LNG capacity in Fos sur Mer (2019, 2021)

Development of LNG entry capacity in Montoir (2021)

Case 4: Approved and potential development of interconnections



Creation of a new exit to Belgium (2015)

Non-odourised gas from the Dunkirk zone

Creation of new entry capacity from Italy via Switzerland (Oltingue, 2018),

Creation of new exit capacity to Germany (2021), project postponed, requiring harmonisation of odourisation practices → study in progress

Creation of exit capacity to Luxembourg (2021), → project postponed

Development of capacity with Spain (2021), → Midcat project under analysis

Orientations beyond ten years: overview

Gas demand for power generation:

With the nuclear energy share being limited to 50% (LPTE) And an RE share reaching 40%, with intermittence in this type of production

As of 2016-2017, RTE (Electrical transmission network) indicates a lack power generation capacity (three-hour risk)

Exacerbated problem of electricity usage peaks: development of electrical heating

Towards the Third Gas Revolution - diversification of the transport mix in favour of "cleaner" energy:

CNG is an alternative to "gas only"

Development of a network of refuelling stations (impact on the network's design)

Towards the 3rd Gas Revolution - development of "renewable gases":

Biomethane injection projects; design transmission/distribution interconnections

Power-to-gas to absorb and return excess renewable energy-based power generation

Continued integration of markets

Cost/benefit studies to measure the economic efficiency of potential additional interconnections or consolidation works

French regulatory frameworks focuses on incentives for investments and quality of service

Incentive to decide ambitious investments plans :
development of interconnection capacities, reduction
of the number of zones :

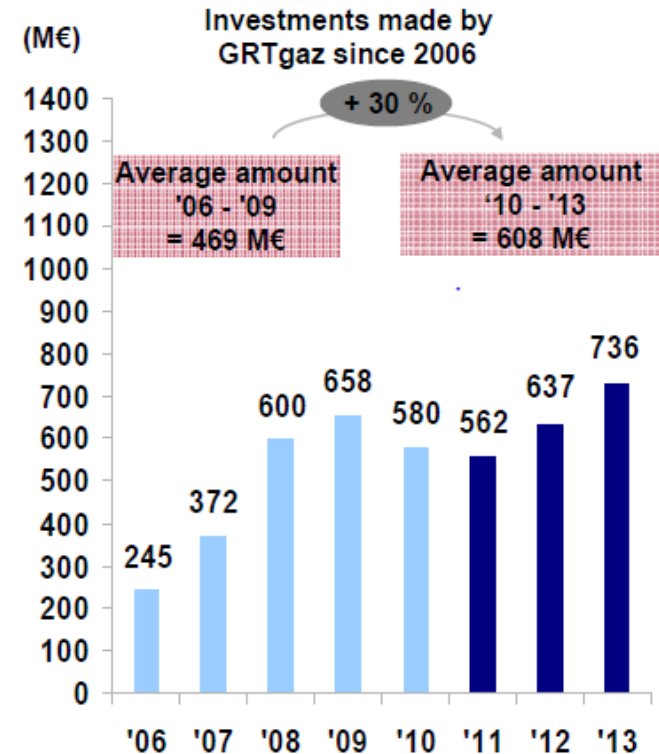
**Premium on investment remuneration 3% (pre tax
WACC 7,5%)**

Incentive to optimize capacity and services offered to
the market

sharing TSO/market of additional revenues

Incentive to optimize operational expenses:
sharing with the market of additional productivity
gains

Incentive to improve quality of services:
bonuses and penalties based on a set of indicators



Exclusive right to develop

The Mexican example for new gas pipeline and LNG terminals



- New pipelines are sponsored by public companies

CFE (electricity public monopoly) and PEMEX (oil & gas public monopoly)

- Tenders are organized to « build, own and operate » the new facility
- The public sponsor books 100% of the capacity for 25 years, and pays 100% of the tariff even if the pipeline is not fully used.
- Private companies bid on a transmission tariff and are selected on the lowest Net Present Value

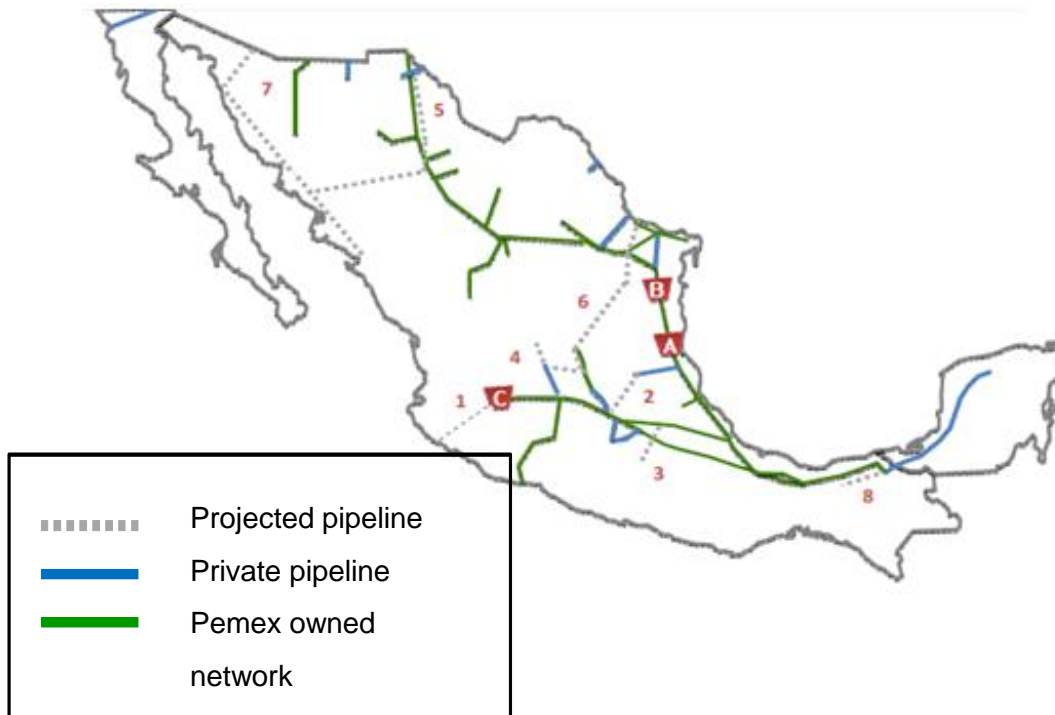
Exclusive right to develop

The Mexican example for new gas pipeline and LNG terminals



The public sponsor takes the risk related to the commodity (supply, trading, sales)

The private operator takes the risk of financing, construction, operation and maintenance.

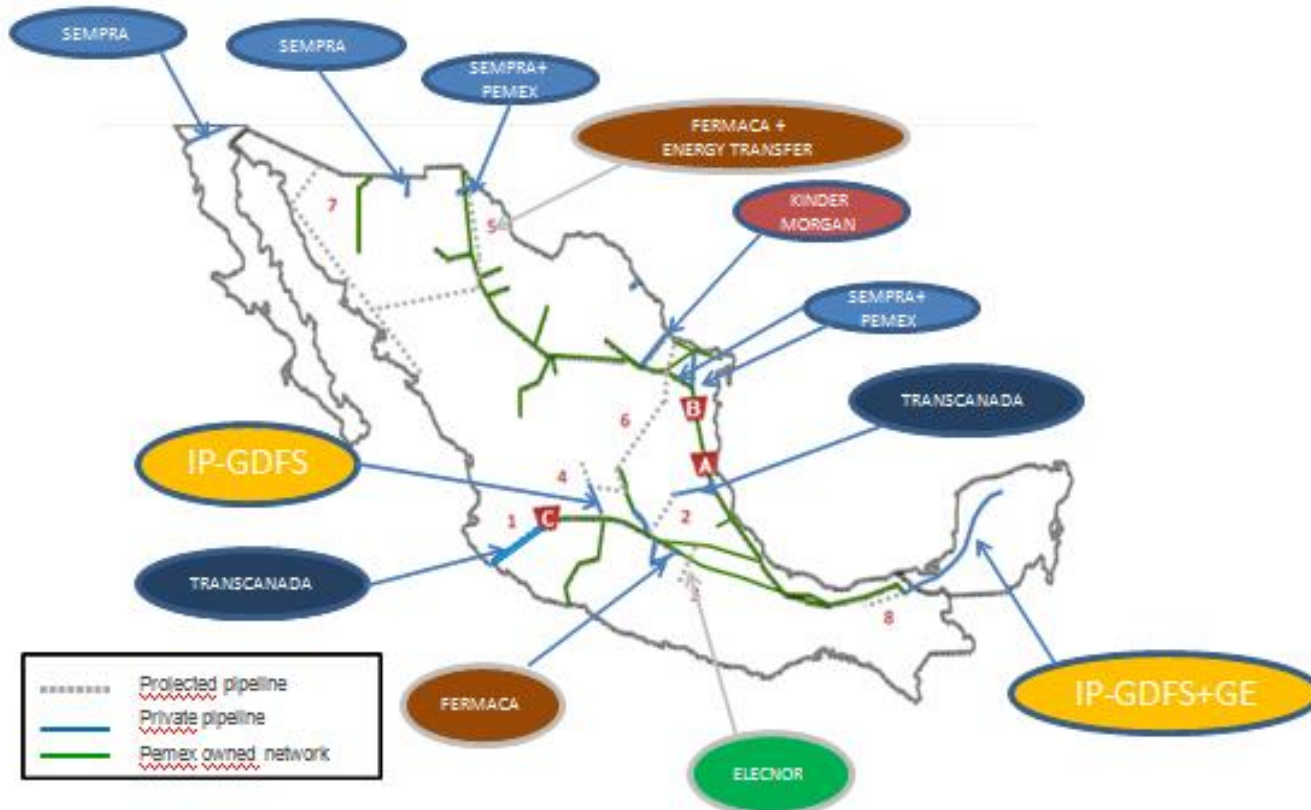


- PEMEX
 - Supply & Balancing
- Government & State owned companies (PEMEX and CFE)
 - Development planning

Exclusive right to develop

The Mexican example for new gas pipeline and LNG terminals

- Strong competition on projects



Exclusive right to develop

Reliable tenders to attract the best operators

- Permitting & marketing risk management
 - All the capacity is contracted by CFE (or PEMEX GAS) for 25 years (transmission service contract)
 - CFE usually provides the rights of way and permits. If not, delays or additional costs obtaining the rights of way are taken into account.
- Bids evaluation
 - Bid and payments in USD
 - Bid on a transmission tariff = Fix + Variable terms
 - Awarded on the lowest Net Present Value

Exclusive right to develop

Reliable tenders to attract the best operators

- Satisfactory transparent process & efficient timing
 - All the information is published on the CFE website
 - Final contract is available from the beginning
 - Visits and meetings are organized during the tender process
- About 1 year between first presentations to market and submission
- 3 months from the tender publication to submission
- Submission date is usually delayed 1 or 2 months during the tender process