EDF Group Gas Infrastructure developments in South East Europe

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Agenda

1. EDF Group in Southern Europe
2. South East gas context
3. EDF Group gas infrastructure projects in South East Europe
4. EDF Group gas strategy and perspectives

EDF Group in Southern Europe

CROATIA

Edison
E&P

ROMANIA

Edison
Trading Office

Dalkia Romania
(EDF 50%)

PORTUGAL

EDF EN
(EDF 100%)
496 MW

Dalkia SGPS
(EDF 50%)

SPAIN

Elcogas
(EDF 31,48%)
320 MW

EDF EN
(EDF 100%)
SIIF Energies Iberica
Biomass

Fotosolar
(90% de SIIF Energies Iberica)
PV ground, roof

EDF Fenice Ibérica
(Fenice 100%)

Dalkia España
(EDF 50%)

EDF Representative Office

ITALY

Edison
(EDF 99,478%,
•15.8 Gm3
•1,3 million de clients
•Trading

Fenice
(EDF 100%)
508 MW
3 192 MWth

EDF EN (EDF 100%)
487 MW (+38 MW)*

EDF ENR / Solare
92MWc (+28 MWc)*

SIRAM
(EDF 50%
via Dalkia)

EDF Representative
Office

GREECE

Elpedison
(50% Edison)
• CCG 800 MW
• Trading

EDF EN
EEN Hellas / RETD
315 MW (+45 MW)*
PCC Renewables

Edison Hellas :
Representative
Office

BULGARIA

EDF EN
(EDF 100%)
110 MW

Edison
Trading office

Dalkia Bulgaria
(EDF 50%)

TURKEY

Edison
Representative
Office

EDF EN
(EDF 100%)
Polat Enerji
219 MW (+115 MW)*
Enerkon

Dalkia Enerji
(EDF 50%)

Generation	Solar	Grids
Thermal	Wind	Transmission
Hydro	Gas	Supply
	Eco-efficiency services	

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Main challenges of the South East European countries

- Rising energy demand
- Need to replace low efficiency thermal power plants
- Future development of RES and need to manage intermittence
- Lack of integration in SE European countries
- Diversification of gas supply sources and routes

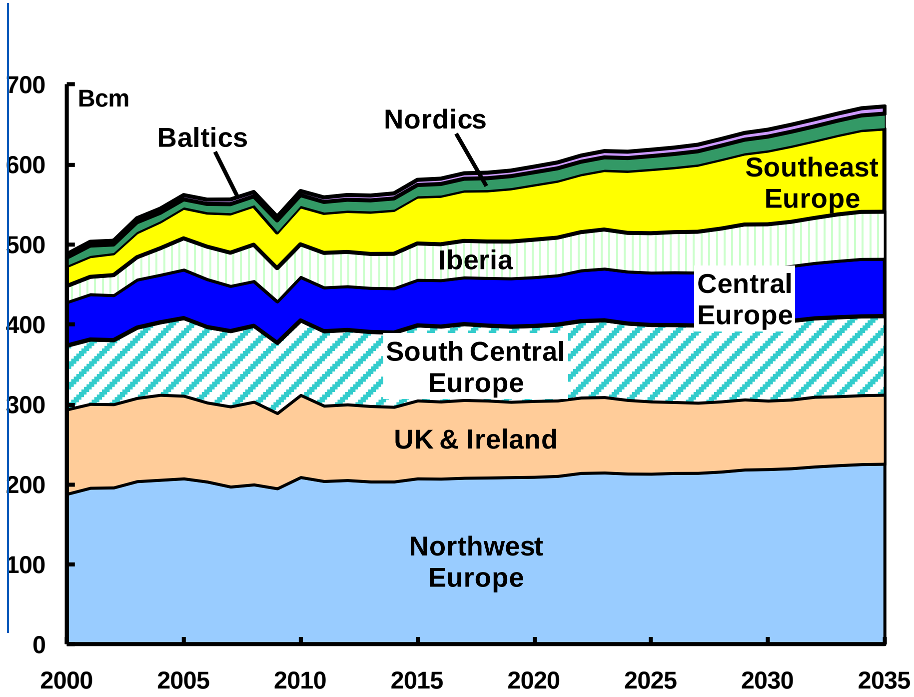
STRATEGIC NEED TO DEVELOP GAS INFRASTRUCTURES

EDF

Gas demand growth will be significant in South East countries

Good perspectives in terms of GDP growth in South Eastern countries

- GDP growth is expected to be of 3% on average in South Eastern countries, 4% in Turkey against an average below 2% in Western.



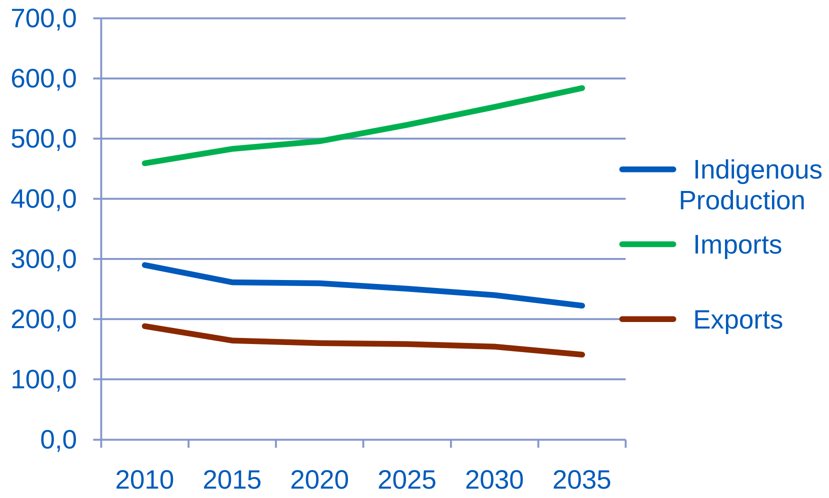
Source: IHS CERA

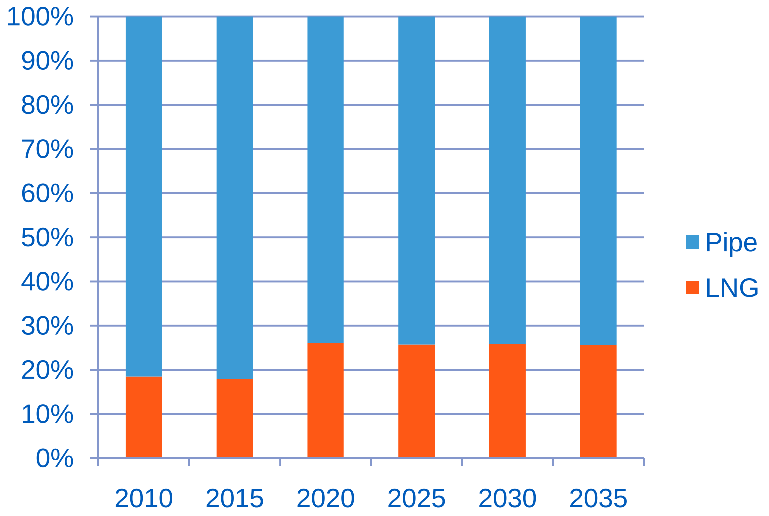
Half of the incremental gas demand will come from South East Europe

- European demand is expected to continue to grow from 567 bcm in 2010 to 665 bcm in 2035
- Turkey will increase its domestic gas demand of 45 bcm for new power generation as well as for residential and commercial uses
- Other Eastern Europe countries will record +13% by 2020 and +29% by 2030 (vs. 2011)

Despite demand uncertainties, imports will grow

- **Declining domestic production**



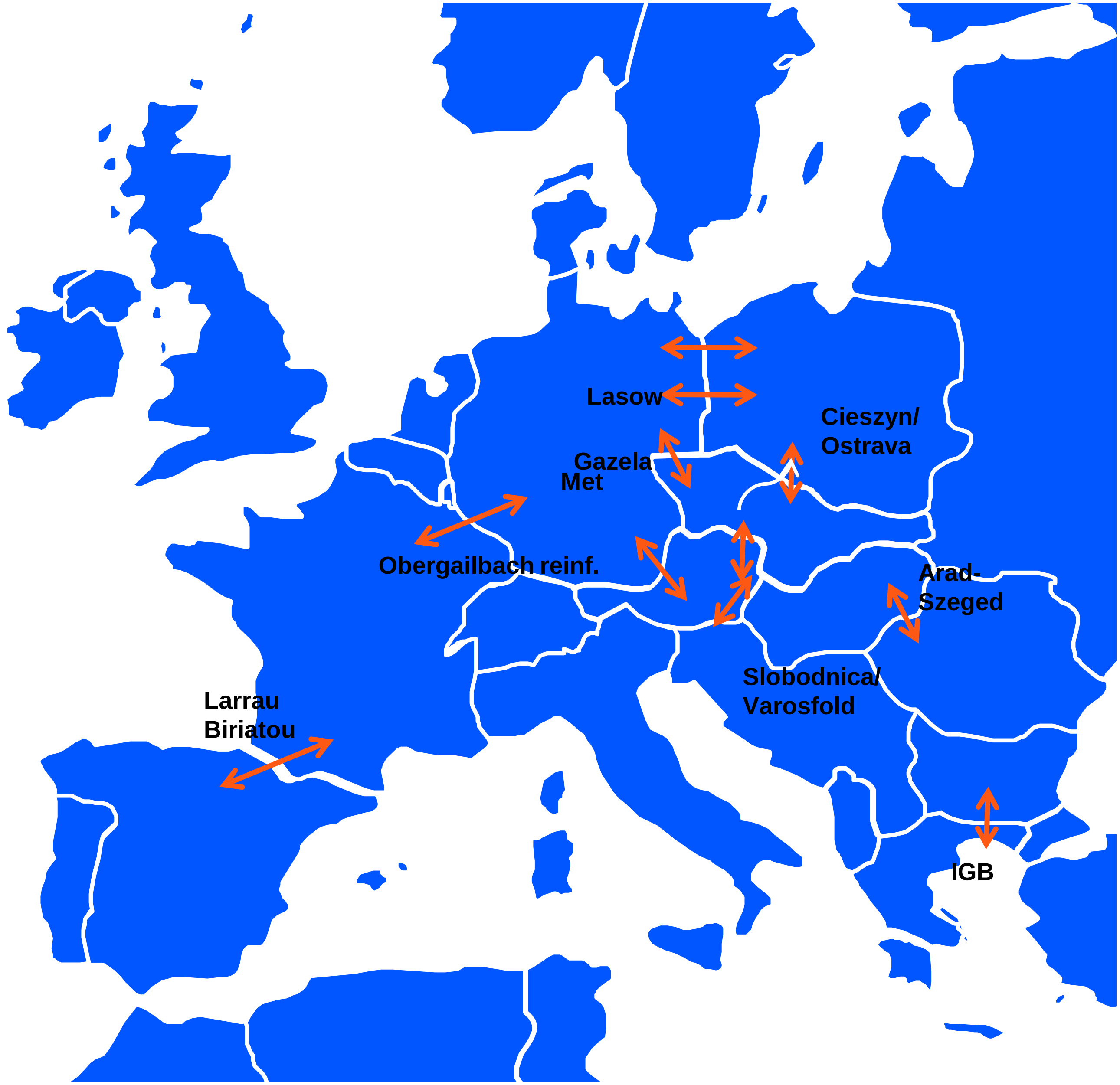


Source: IHS CERA

- **Growth will rely mainly on pipeline supply for Europe's growing import requirements**
  - Russia is well placed to grow volume in the short term as LNG supply is limited (the LNG market continues to tighten, with pending decisions on Japanese nuclear plant restarts)
  - Competition with LNG is expected in the second half of the decade
  - Limited shale gas reserves and likely to be more expensive to operate than in the US
- **But uncertainty over LNG import levels due to competition with other regional markets (Asia, US)**

New interconnections will provide some liquidity but not enough…

- Interconnections may ease the transport of flexibility
- Around 15 new interconnections (operating or under construction) since 2009 for a total of 95 Gm3
- A lot of projects have been eligible for the European Energy Programme for Recovery (ex: ITGI)
- Further connections planned:
  - Example: Greece/Bulgaria (IGB),
  - Recent announcements: to connect storage to other markets (Haidach connected to the Austrian market by 2014, Bierwang connected to the Austrian market)



EDF Group contribution to security of supply

- **EDF group is a new player in gas market**
- **More than 3 millions gas customers and 10 000 MW of gas fired power plants**
- **Intends to establish long term relationships with gas suppliers**
- **Constitute a portfolio of contracts and assets to have direct access to gas and benefit from competitive gas sourcing and flexibility**

EDF TAKES PART IN MAJOR INFRASTRUCTURES DEVELOPMENT

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EDF's gas infrastructures projects in SE Europe

South Stream : a new route for European gas supply
63 Bcm/y capacity

- The off-shore part of the South Stream project is under development and it is on track, accordingly to a FID (Final Investment Decision) which is scheduled in November and a start-up of the first pipe planned end 2015.

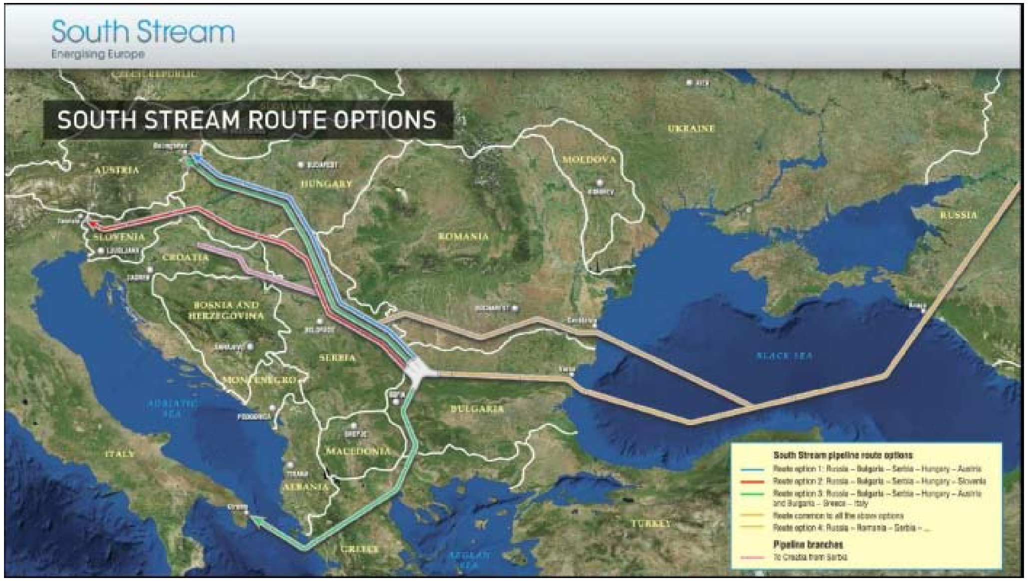
- The project development company STTAG with a staff of around 25 FTE manages the two main subcontractors: IntecSEA (approx 100 FTE) in charge of Engineering design and URS (approx 100 FTE), in charge of Social and Environnemental Assessement.

- Tender for the supply of pipes will be launched before the end of the year.

- Permitting execution plans have been completed for Bulgaria, Turkey and Russia.

Steel : 3 millions of tons

6 years construction



900 km length

2000 m depth

ITGI : the opening of « South corridor »
10 Bcm/y capacity

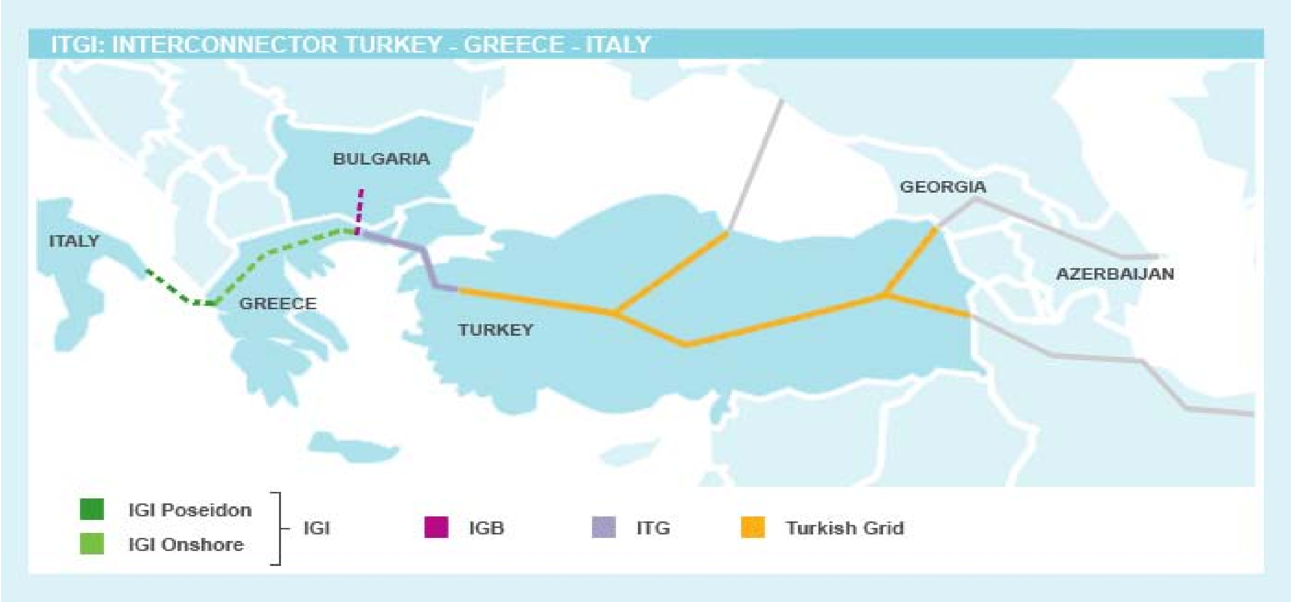
- Other projects competing : TAP (in an exclusivity negotiations phase with Shah Deniz 2 consortium), West Nabucco (10bcma)

- But at more early stages than ITGI, which has been granted all the necessary authorizations

- ITGI is a project of European interest which was included in the Economic Recovery Plan

- ITGI still enjoys the support of the Italian and Greek governments.

- ITGI remains open to export natural gas from SD, it has in fact submitted a Revised Proposal to SD 2 consortium, however it is also considering alternative sources of gas (Eastern Mediterranean…).



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EDF's gas strategy all along the gas value chain

1 E&P

Sign **partnerships with oil and gas** companies built mainly on Edison's expertise

2 Storage

Control the cost of flexibility

Examples:

- Hole House Farm storage expansion (UK)
- Italian storage expansion and projects
- Etzel storage (in Germany)

3 Transport

Develop importation infrastructures (LNG and pipelines) to have direct access to gas sources avoiding dependency, and anticipate our future needs.

Examples:

- South Stream project
- ITGI project (Edison)
- Dunkirk LNG
- Rovigo

4 Sourcing

Ensure **security of supply** through appropriate mix of LT contracts and market access

5 Supply

Dual offer (electricity and gas) for domestic customers

In 2011, 127 TWh of gas sold to end-users

GAS STRATEGY IN A NUTSHELL:

- **Offer a dual offer electricity/gas to final customers**
- **Supply EDF's gas-fired power plants worldwide**
- **Benefit from arbitrage opportunities**

Natural gas end markets for EDF

➢ EDF Group's gas sales in 2011: 127.4 TWh

- EDF gas sales in **France: 21.4 TWh**, or a 4% market share (512,000 residential and professional customers)
- **In Italy, in the UK and in Belgium, customers portfolios are far more developed**
  - **Italy:** ~600,000 customers (~50TWh)
  - **UK:** ~1.7 M customers (~30 TWh), ~4% market share
  - **Belgium:** ~520,000 customers (~25.6 TWh), ~14% market share

➢ EDF gas volumes for power generation: 120 TWh

- Growing role of gas in electricity generation, because of **lower CO_2 emissions and high flexibility**
- **In 2011, EDF had approx. 11 GW of gas fired assets** (combustion turbines, cogeneration power plants, CCGTs) in France (557 MW), Italy (5.7 GW*), the UK (819 MW), Belgium (1.15 GW) and the Netherlands (435 MW)
- In November 2011, power generation from the 430 MW CCGT in Blénod started. In July 2012 **a new CCGT 450MW started in Martigues** (second unit will be commissioned in 2013).
- Additional CCGTs are currently being developed in France (1x465 MW), in the UK (1x1,305 MW), and in Belgium (2x890MW +1x920MW).

** In addition, EDISON holds a 50% stake in Elpedison, which operates two CCGT in Greece (810 MW)*

2012+ : Gas development : perspectives

Start of Etzel Storage (Germany)

Start of Dunkirk Terminal

OTHER PROJECTS UNDER DEVELOPMENT:

- Storages (France, Italy, UK)
- E&P
- Pipelines (Galsi)

Start of Bouchain CCG (France)

2012 → 2013 → 2015 → 2017

Start of Martigues CCG (France)

Start of South Stream construction

Decision ITGI construction

THANK YOU FOR YOUR ATTENTION