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AIJA CONGRESS IN PRAGUE

POWER PLANT CONSTRUCTION PROJECT SCHEME: EPC MODEL OR SEPARATE LOTS?

– CASE STUDY: CCGT PROJECT IN TORUŃ (POLAND)

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AGENDA

1. General information about EDF S.A. Group
2. Main activities of EDF in Europe and Poland
3. Current Rules of procurement in Poland
4. Case study: CCGT in Toruń (Poland)

EDF GROUP - A GLOBAL LEADER IN ELECTRICITY

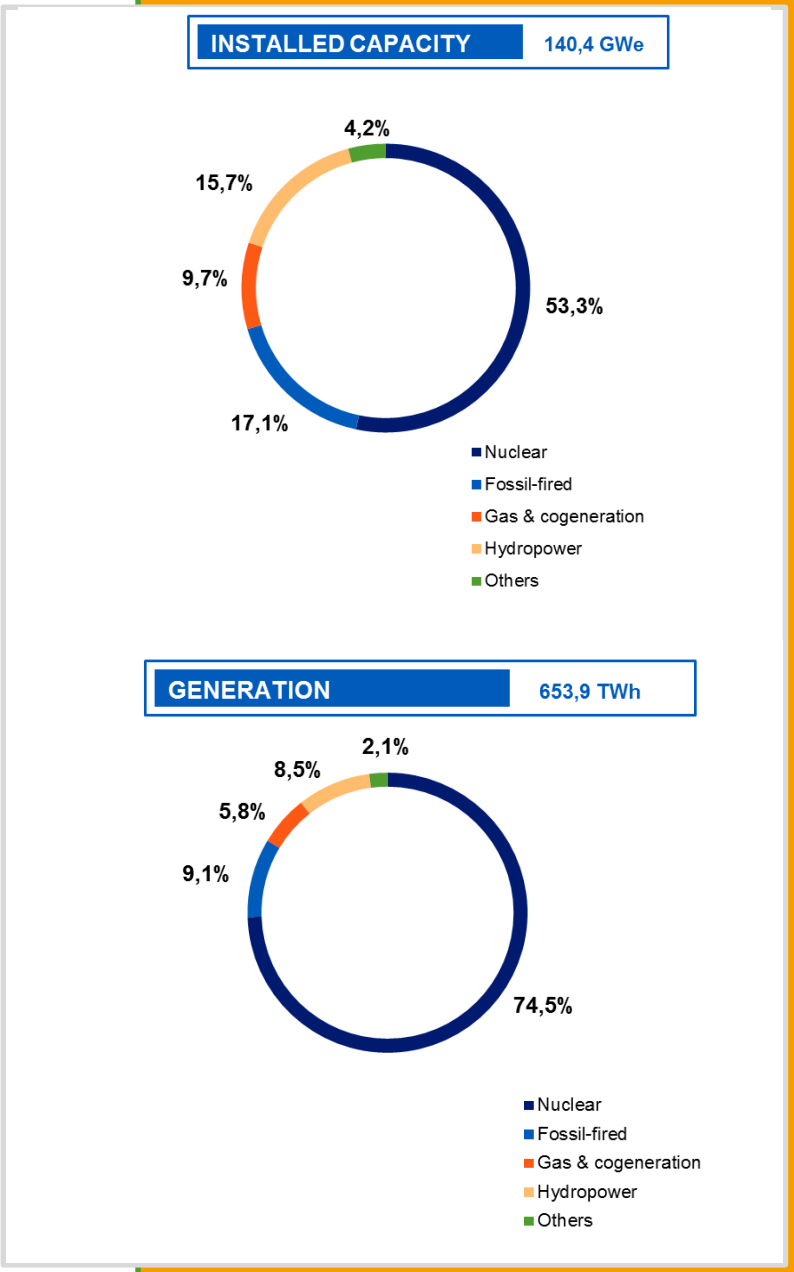
We are a world leader in electricity

covering all activities: generation (from nuclear to renewables), networks, sales and trading

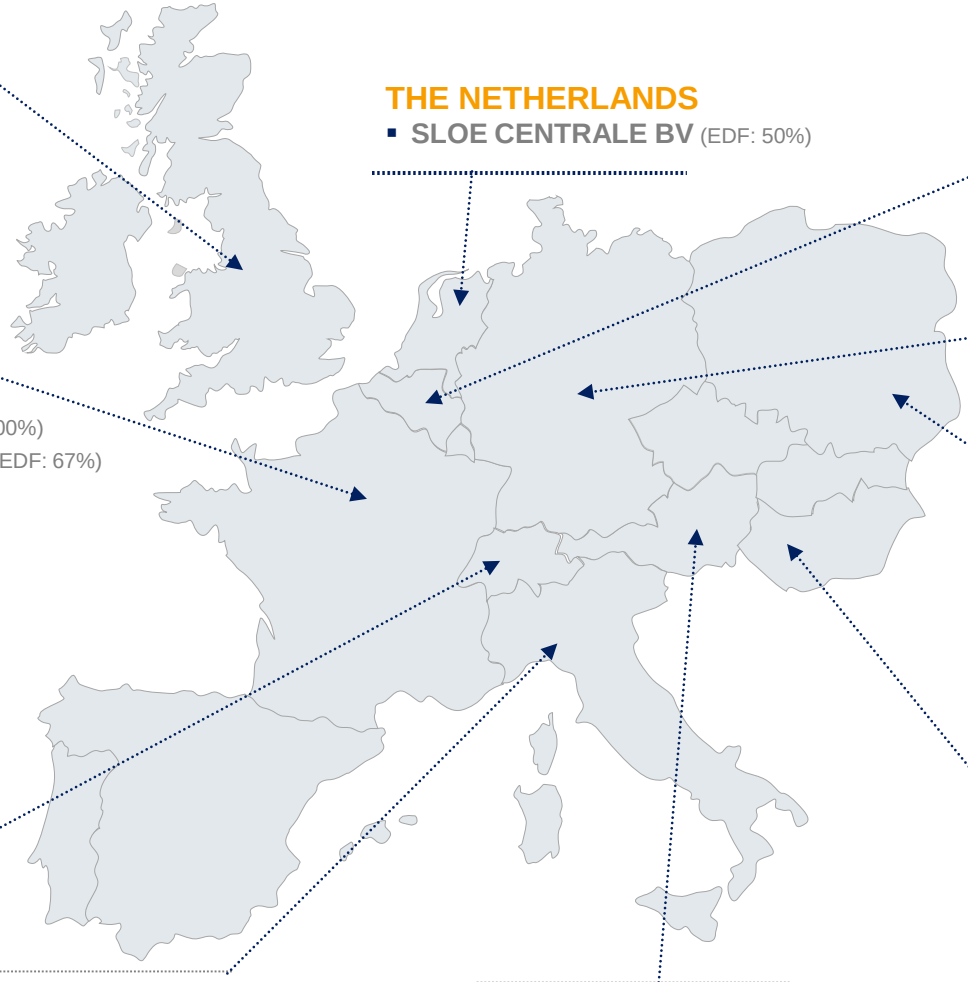
We are an international group

with roots in Europe and long-term partnerships and cooperation, agreements in high-growth countries

- **€75.6 billion** in sales
- **39.1 million** customers
- **158 467 employees** worldwide
- **85.1%** of generation **without CO_2 emissions**



EDF GROUP – ACTIVITIES IN EUROPE



UNITED KINGDOM
- EDF ENERGY (EDF: 100%)
- EDF TRADING (EDF: 100%)

THE NETHERLANDS
- SLOE CENTRALE BV (EDF: 50%)

BELGIUM
- EDF LUMINUS (EDF: 63.5%)

GERMANY
- EDF DEUTSCHLAND (EDF: 100%)

FRANCE
- EDF, ERDF, RTE, PEI (EDF: 100%)
- DALKIA INVESTISSEMENT(EDF: 67%)
- ELECTRICITE DE STRASSBOURG (EDF: 88,64%)
- TIRU (EDF: 51%)
- DUNKERQUE LNG (EDF:65%)
- EDF ENERGIES NOUVELLES (EDF: 100%)

POLAND
- EDF POLSKA
- EDF TORUŃ
- KOGENERACJA
- EC ZIELONA GÓRA
- EDF PALIWA

HUNGARY
- EDF DEMASZ (EDF: 100%)
- BE ZRT (EDF: 95,620%)

SWITZERLAND
- ALPIQ (EDF: 25%)

ITALY
- EDISON (EDF: 97.4%)
- FENICE (EDF: 100%)

AUSTRIA
- ESTAG (EDF: 25%)

EDF GROUP IN POLAND

EDF has been present in the Polish energy sector for 16 years

- **10% share** in the electricity market
  (over 15 TWh of electricity generated in 2013)
- **15% share** in the district heating market
  (over 9 TWh of heat generated in 2013)
- **c. 3300** employees
- **One of the largest coal purchasers in Poland**
  (c. 7 million t annually)
- **ISO 14001** certified in all companies

- heat & electricity generation
- electricity generation
- head office
- EDF Paliwa / EDF Polska Branch No 2 CUW in Cracow (Shared Service Centre)
- electricity trading
- heat distribution & supply

EDF INVESTMENTS IN POLAND: OVER €800 M (1)

- **Desulphurisation:** new DeSOx installations for 5 units :
  - **Rybnik, Wrocław, Kraków, Gdańsk, Gdynia**
  - Modernisation of the boilers to meet the environmental requirements of the IED Directive (Industrial Emission Directive) in force from 1st January 2016
  - SOx emissions below 200 mg/Nm3: divided by 5 to 7 depending on site
  - Technology: wet gypsum - limestone desulphurization
  - Contracts already signed, onsite works started in Wrocław, Kraków, Gdańsk, Gdynia

- **Denitrification:** new DeNOx installations for 5 units :
  - **Rybnik, Wrocław, Kraków, Gdańsk, Gdynia**
  - Modernisation of the boilers to meet the environmental requirements of the IED Directive (Industrial Emission Directive) in force from 1st January 2016
  - NOx emissions below 200 mg/Nm3: divided by 2 to 3 depending on site
  - Technology: SNCR (non catalytic) and SCR (catalytic)
  - Contracts already signed for Rybnik, Wrocław, Kraków, Gdańsk

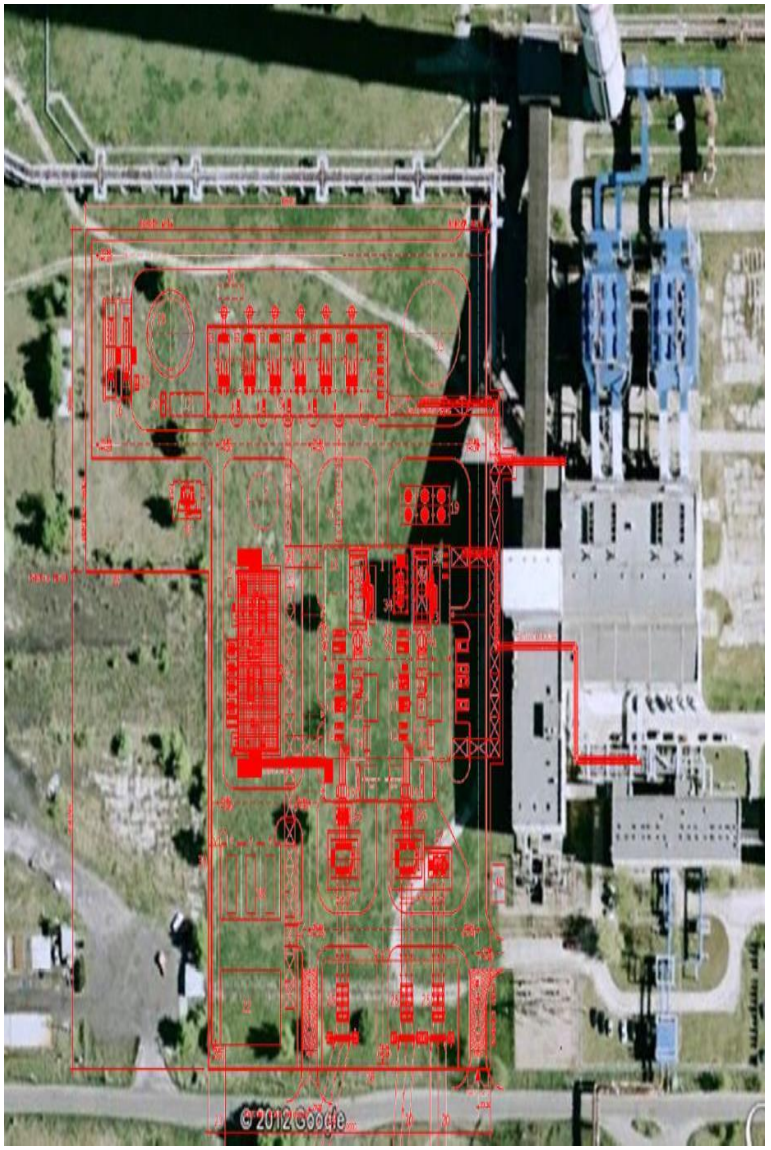
EDF INVESTMENTS IN POLAND: OVER €800 M (2)

- **Life Time Extention of Rybnik Power Plant**
  - Modernisation of all production assets in order to improve operational performance and extend their lifespan by 2030
  - New investments: deSOx (IMOS II), deNOx (SCR and SNCR), waste water treatment plant (WWTP), demineralization station, flue gas interconnection ducts
  - Life time extension (LTE) for all units
  - Total cost: over **1,4 bln PLN (350 mln euro)**
  - Timing of realisation: **years 2014 - 2018**
- **Economic and social effects**
  - Improvement of air quality
  - Assure the long-term security of supply
  - Employment for 600 contractors

EDF INVESTMENTS IN POLAND: CCGT IN TORUŃ

- **New Gas fired Power Plant Construction in Toruń (GT50 PROJECT)**
  - Estimated value of investment:

    c. 100.000.000 EUR (complete project)
  - Planned timing of realisation: **2017**
  - Location: Premises of EDF Toruń S.A.
  - Power output: 100 MW
- **Main equipment**
- 6 Heat Only Boilers
- 2 Cogeneration units, each consisting of:
  One aeroderivative gas turbine (50 MW class, NG fired) with generator and transformer, stack, hot water heat recovery boiler equipped with supplementary firing (NG fired)



EDF POLSKA PROCUREMENT RULES

1) Previously Polish Public Procurement Law Act was applied which is a transposition of the EU Procurment Directives in Poland

2) From 2013 EDF Polska S.A. and its subsidiaries when awarding the contracts apply:

Internal Regulation based on EU Utilities Directive (unique situation in Poland) due to the fact that EDF Polska S.A. is controlled by French State Tresury, not Polish State Treasury

CASE STUDY – CCGT IN TORUŃ

EPC contract Model vs. Division into lots

MAJOR CONTRACTS IN GT50 PROJECT

Vendor	Scope	
Gaz-System	Gas connection agreement	
Gaz-System	Gas transmission agreement	
Edison	TSA – bidding phase	
Edison	Owners Engineer – execution phase	
Energa Operator	Grid connection agreement	
Energa Operator	Transmission agreement (power)	
GT supplier	**GT scope (including LTSA) – DELIVERY CONTRACT**	
BOP supplier	**BOP scope – CONSTRUCTION WORKS CONTRACT**	
HOB supplier	**HOB scope – DELIVERY CONTRACT**	
Engineering company	Generic civil design + obtaining the construction permit	
Techcom-Projekt	Gas pipe development: land locking services, basic design, construction design, construction permit, documentation for gas pipe tendering (construction)	
Gas pipe erection company	Construction and commissioning of the gas pipe	

GT50 PROJECT SCHEME

I. **At the begining of the GT50 Project „EPC scheme" (including GT, BOP and HOB lots) was implemented – due to business and technical reasons tender was cancelled**

II. **Tenders were restarted using the dividsion scheme comprising of 4 main lots:**

GT scope (including LTSA):

Gas turbine & generator
Erection & commissioning
LTSC

BOP scope:

Civil works for complete site (buildings including HOB building, roads, structures) + update of the construction permit
Complete piping system (incl. valves, actuators, etc.)
Complete electrical system including transformer station and integration with the existing site
Gas supply system on site: gas booster, gas distribution satiation, piping, valves etc.
Fuel oil tanks and systems; Process water station
Erection, installation, commissioning

HOB scope:

6 Heat Only Bolers (dual fuel oil and gas fired) with a total capacity of appr. 180 MWt
Transportation, installation & commissioning
Note: HOB building, stacks, ducts, piping (water, fuel), power supply are included in the BOP scope

Gas pipe:

Construction of ca. 10 km gas pipe (secure of the title to the land by easement agreements + construction of gas pipeline)

MAIN FEATURES OF EPC

I. COMPLETE LIABILITY OF EPC CONTRACTOR FOR:

a) PERFORMANCE / IMPROPER PERFORMANCE,
b) DELAYS (OVERALL SCHEDULE),
c) MANAGEMENT OF LOTS,
d) ACTIONS OF SUBCONTRACTORS OF DIFFERENT TIERS,
e) PERMITTING,
f) DAMAGE ON CONSTRUCTION SITE (property, hazardous materials)

II. PROS AND CONS:

- ONLY 1 TAKING OVER CERTIFICATE FOR WHOLE EPC SCOPE / COHESIVE INSURANCE AND SECURITIES UNDER CONTRACT
- UNIFIED WARRANTY PERIOD FOR THE WHOLE FACILITY (EQUIPMENT / SERVICES / CONSTRUCTION WORKS)
- MANAGEMENT OF THE SITE IS SOLE RESPONSIBILITY OF EPC CONTRACTOR IN COOPERATION WITH THE OWNER
- POTENTIALLY PRICE IS HIGHER IN CASE OF EPC CONTRACT, BUT COST IS KNOW AT THE BEGINING OF THE PROJECT
- DECREASED CONTROL OF THE PROCESS BY THE OWNER / SMALL INTERNAL RESOURCES INVOLVEMENT
- GREATER PROJECT RISK IN CASE OF WITHDRAWAL OR INSOLVENCY OF EPC CONTRACTOR

MAIN FEATURES SEPARATE LOTS

I. INCREASED LIABILITY OF OWNER FOR:

a) MANAGMENT OF INTERFACES BETWEEN CONTRACTORS ON SITE,
b) DELAYS (NOT ALWAYS COVERED BY LD's),
c) PERMITTING,
d) ACTIONS OF SUBCONTRACTORS OF DIFFERENT TIERS,
e) COORDINATION ON SITE (H&S regulations),
f) DAMAGE ON CONSTRUCTION SITE BETWEEN CONTRACTORS (property, hazardous materials),
g) CBC (Contract Breakdown Schedule) COORDINATION.

II. PROS AND CONS:

- INCREASED CONTROL OF THE PROCESS BY THE OWNER / INTERNAL RESOURCES INVOLVED
- POTENTIALLY LOWER PRICE IN CASE OF SEPARATE CONTRACTS + POSSIBILITY TO CHOOSE BEST SUPPLIERS IN EACH FIELD
- NUMEROUS TAKING OVER CERTIFICATES FOR WHOLE SCOPE
- INCOHESIVE INSURANCE UNDER THE CONTRACT (potential loops resulting from negotiations)
- POTENTIALLY DIFFERENT WARRANTY PERIODS FOR PART OF FACILITY
- SMALLER RISK IN CASE OF WITHDRAWAL OR INSOLVENCY OF CONTRACTOR (ASSIGMENT OF SUBCONTRACTS)

THANK YOU !