entsog

european network
of transmission system operators
for gas

CBA Analysis

Case-study – step 1

TYNDP/CBA SJWS 4 – 27 March 2014

Objectives of the Case-study

To test the applicability of the methodology

- Following November 2013 methodology step-by-step
- Using inputs received from stakeholders during first SJWSs
- Applying it to all types of infrastructure projects

To illustrate the form of obtained results

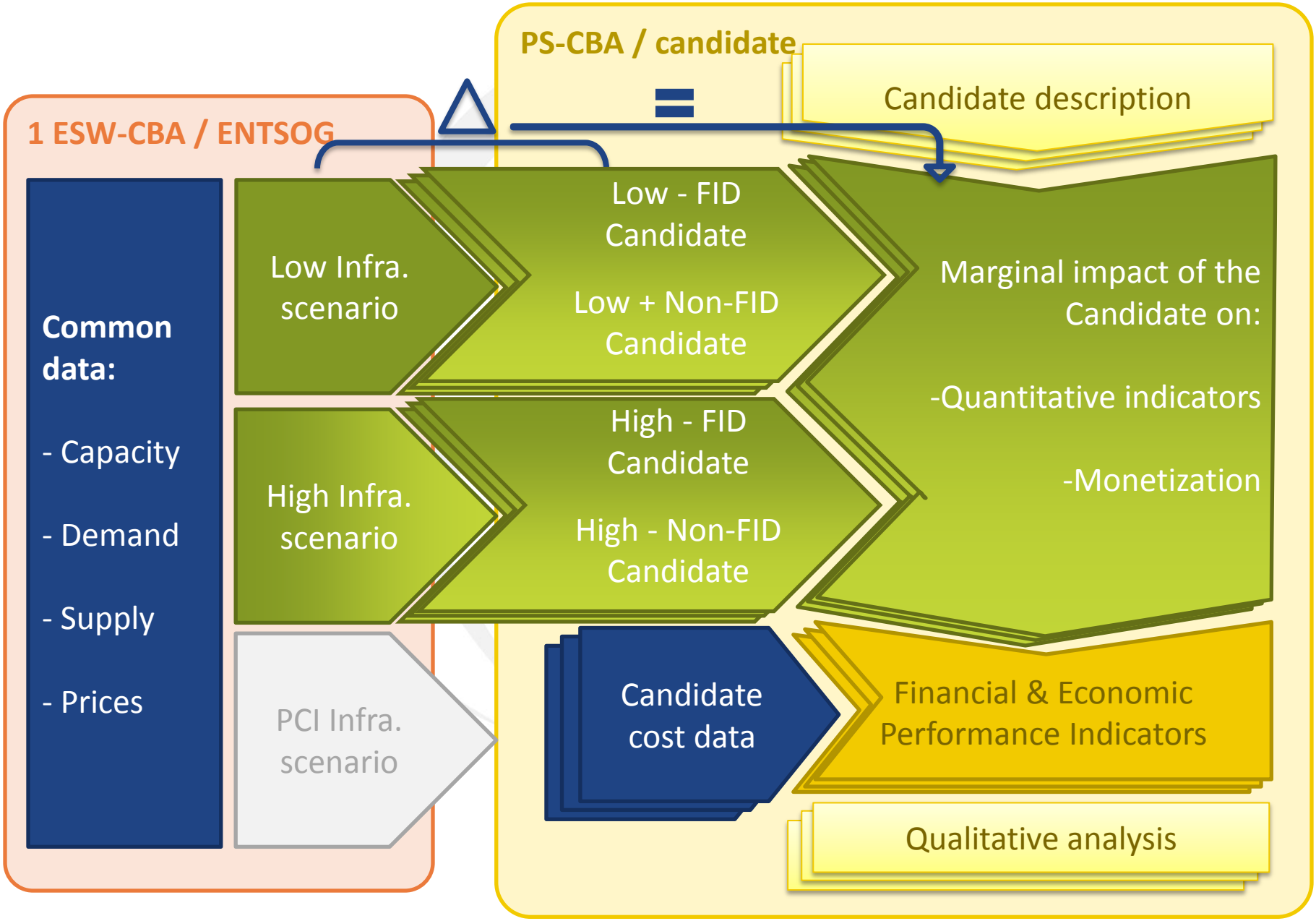
- For both the ESW and PS-CBAs
- Impact of the project through the calculation of quantitative indicators and monetization under a project and country perspective
- The Economic Performance Indicators of the projects

To highlight the link between input data and results

- The influence of the selected scenarios on results
- The sensitivity-analysis on project data

Results of the case-study shall not be considered as any kind of assessment of the projects

ESW/PS-CBA: an efficient division of labour



Selected projects

Gas Interconnector Poland Lithuania (GIPL)

> Status: Non-FID

> PCI Status: selected

> Capacity increment: PL > LT (68 GWh/d) & LT > PL (29 GWh/d)

Krk LNG Terminal (Croatia)

> Status: Non-FID

> PCI Status: selected

> Capacity increment: Send-out (61 GWh/d)

UGS South Kavala (Greece)

> Status: Non-FID

> PCI Status: selected

> Capacity increment: Injection (55 GWh/d), Withdraw (44 GWh/d) & WGV (3960 GWh)

Content of the case-study

Energy-System Wide CBA for 2022

> Calculation of indicators under Low and High Infrastructure Scenarios

> Monetization of costs of:

- Gas supply
- Coal for power generation
- CO2 emissions

Project-Specific CBA for 2022

> Same calculation of indicators and costs as for ESW-CBA:

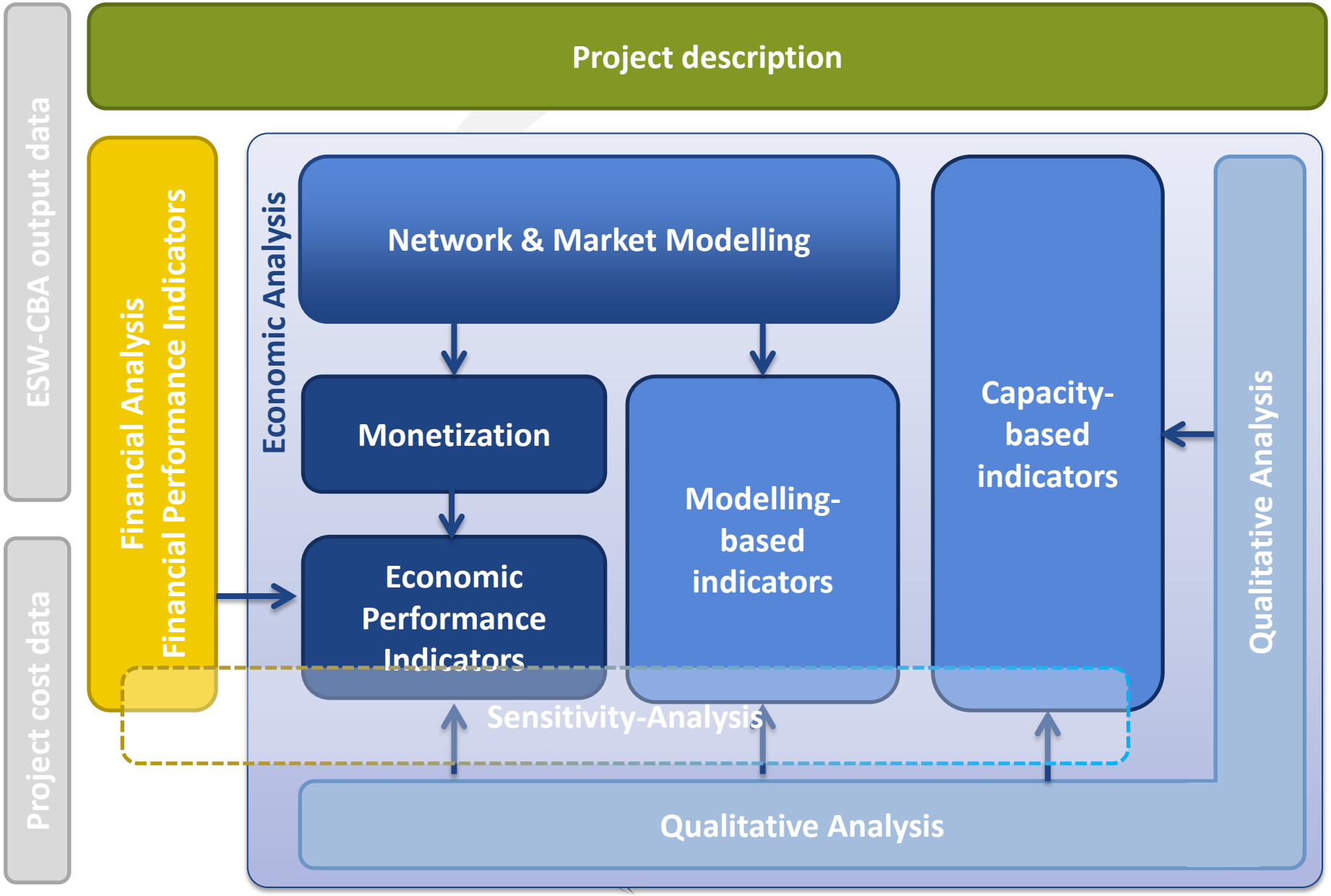
- For Low Infrastructure Scenarios plus Project
- For High Infrastructure Scenarios minus Project

> Benefits are assumed flat on 20 years of operation

> Calculation of Economic Performance Indicators (EPIs) based on above benefits and dummy project costs

> Sensitivity of EPIs to change in project OPEX, CAPEX, social discount rate and commissioning date

Content of the PS-CBA



Focus of SJWS #4

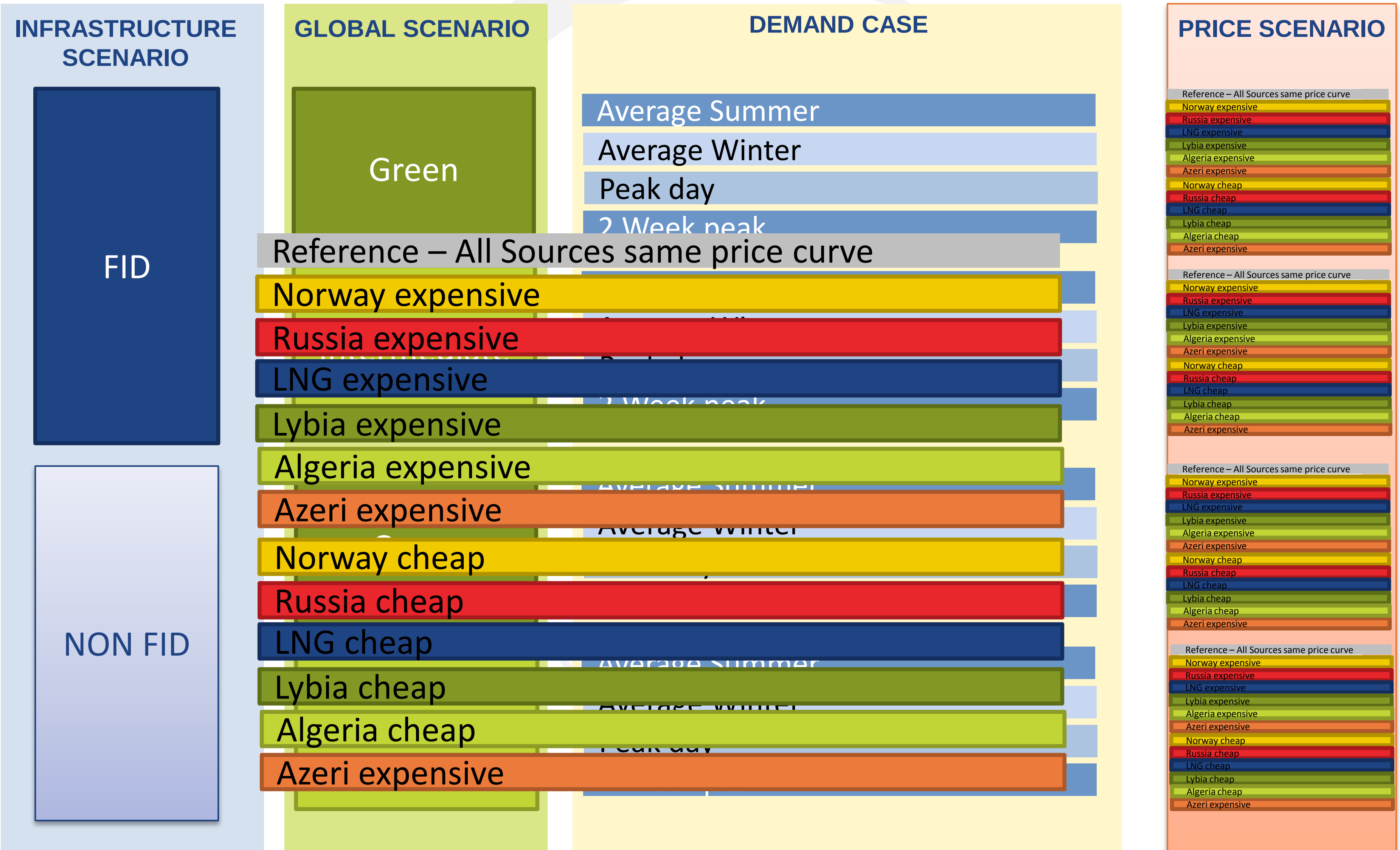
Step-by-step process

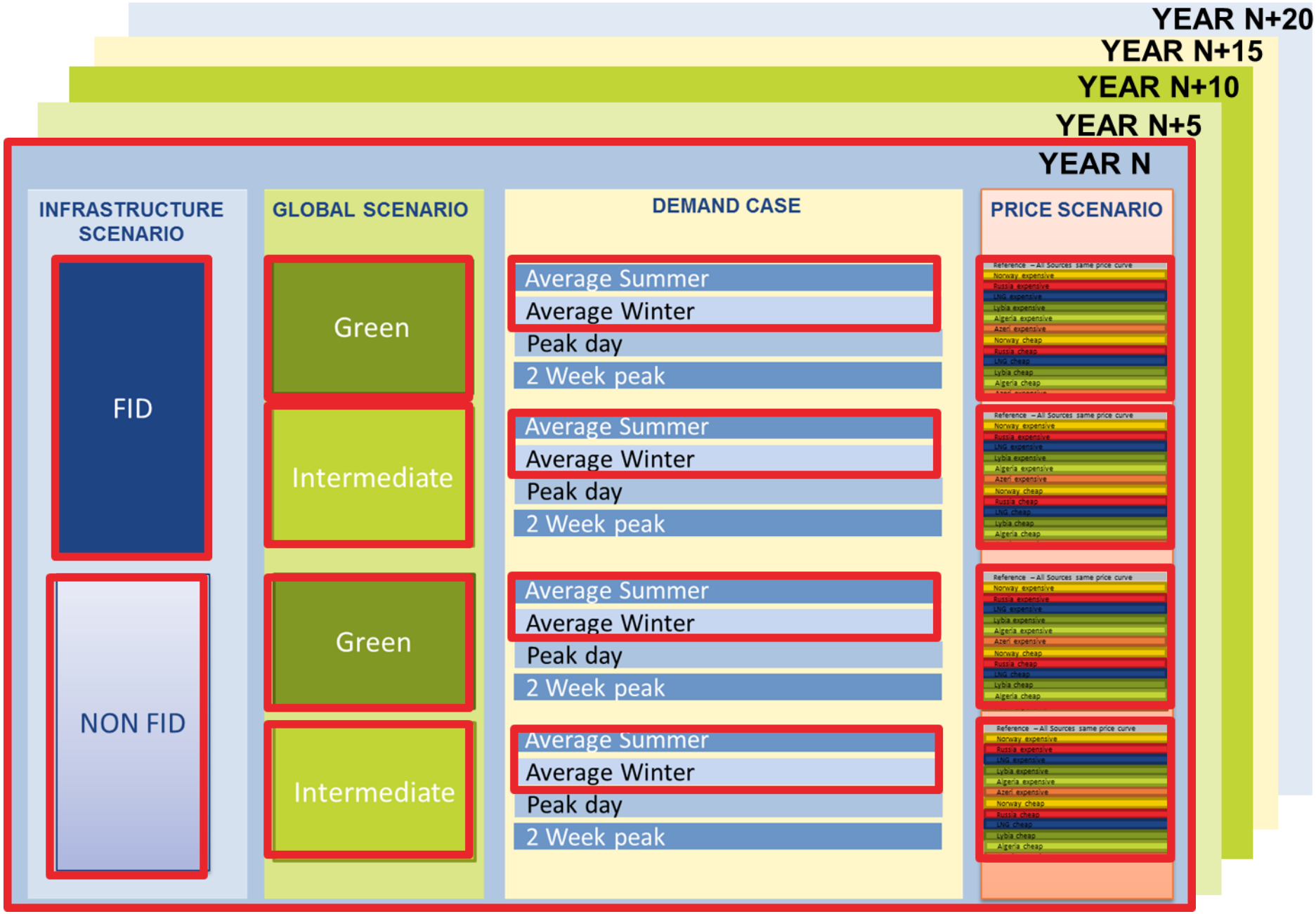
- The list of cases
- The input dataset
- Modelling process and flow pattern
- Calculation of capacity-based indicators
- Calculation of monetized layers

Project perspective

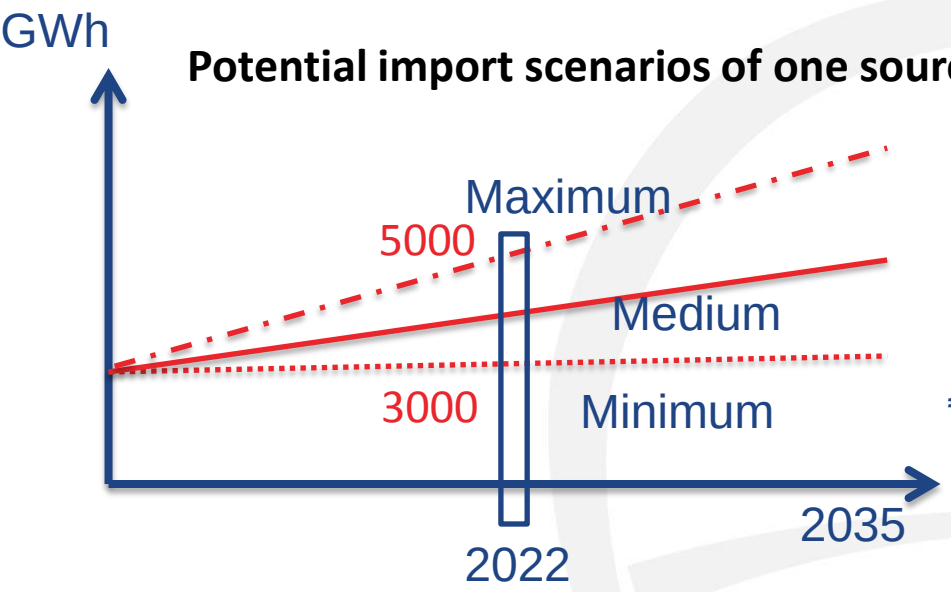
- Project impact through the comparison of simulation of the same case with and without the project

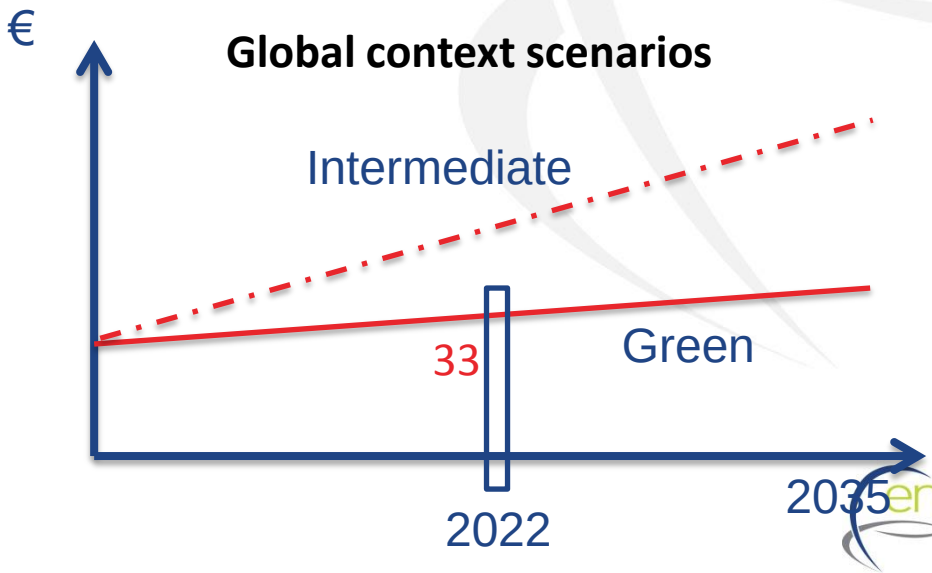
Case summary

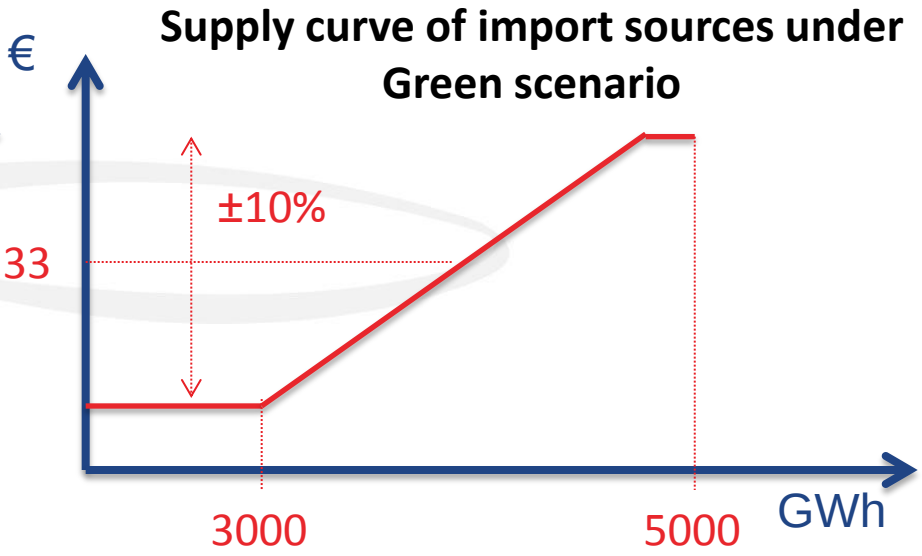



YEAR N+20
YEAR N+15
YEAR N+10
YEAR N+5
YEAR N
INFRASTRUCTURE SCENARIO
GLOBAL SCENARIO
DEMAND CASE
PRICE SCENARIO
FID
NON FID
Green
Intermediate
Green
Intermediate
Average Summer
Average Winter
Peak day
2 Week peak
Average Summer
Average Winter
Peak day
2 Week peak
Average Summer
Average Winter
Peak day
2 Week peak
Average Summer
Average Winter
Peak day
2 Week peak
Reference – All Sources same price curve
Norway expensive
Russia expensive
LNG expensive
Lybia expensive
Algeria expensive
Azeri expensive
Norway cheap
Russia cheap
LNG cheap
Lybia cheap
Algeria cheap

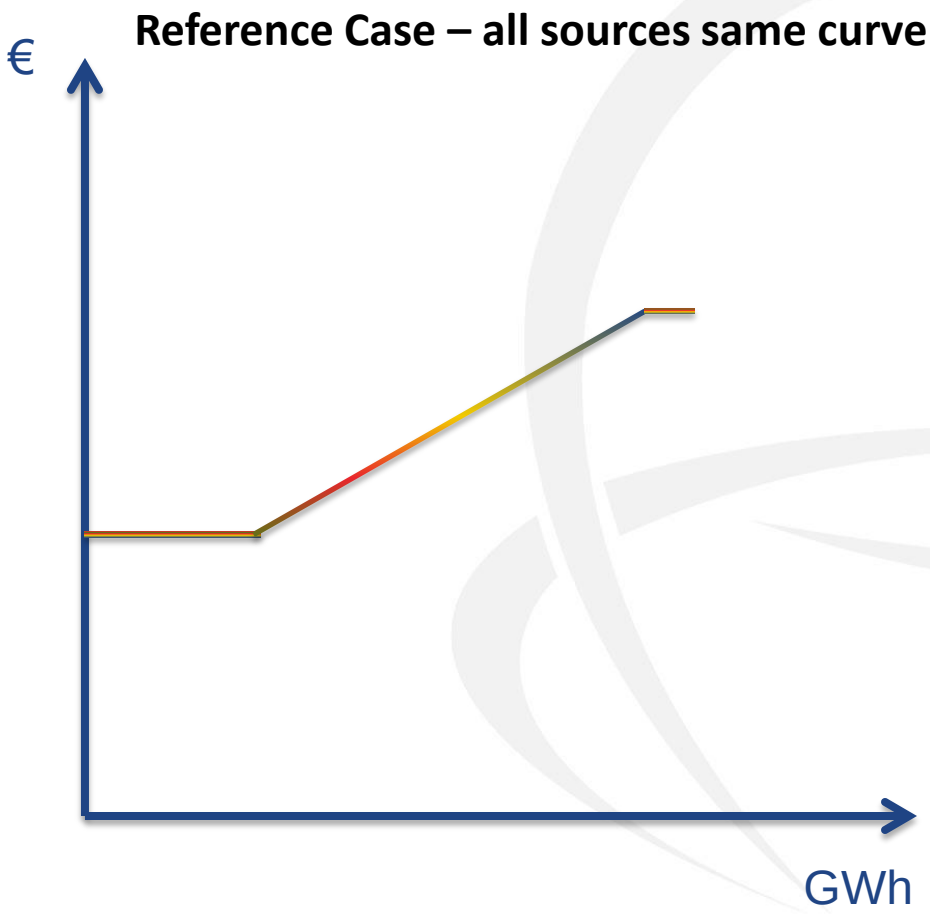
Supply- from scenarios to curves

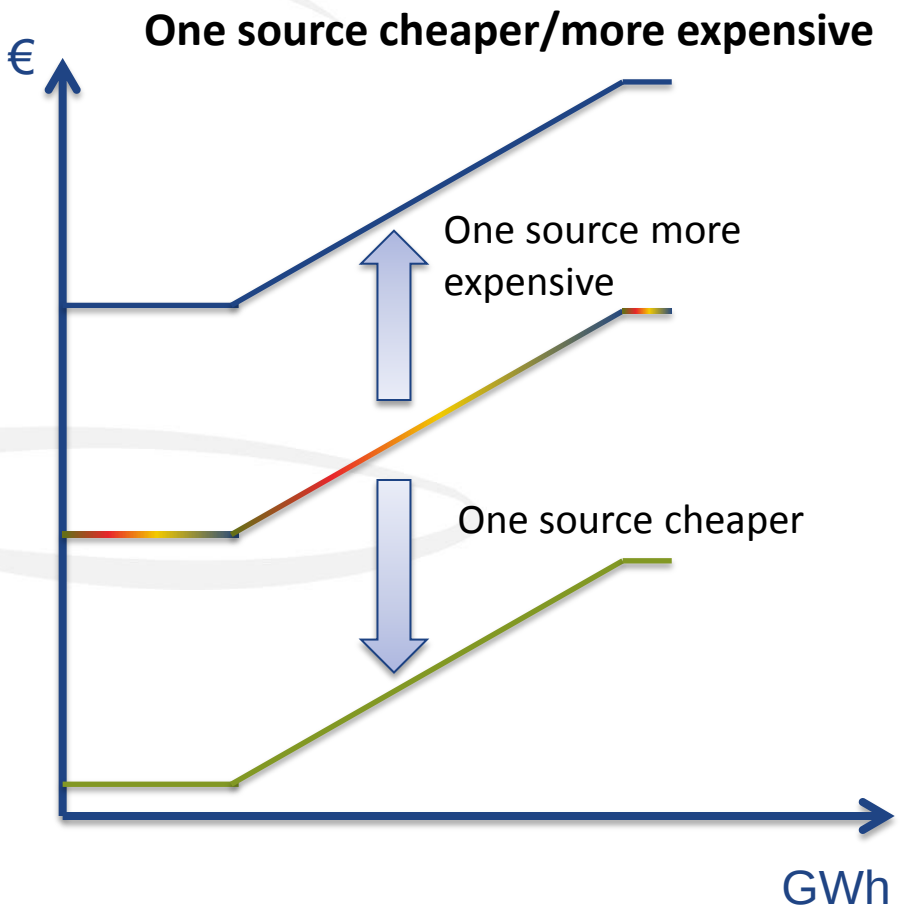






Supply- From reference to other cases





Focus of SJWS #6

Project perspective

> Completion of all steps not shown in SJWS #4 especially disruption and peak cases

> Guidance on result aggregation

> Guidance on the analysis of project interaction

> Economic Performance Indicators

> Sensitivity analysis on project specific data

Country perspective

> Breakdown of monetization by country

General guidance

The incremental approach

> For FID projects, impact is measured as:
  - Indicator (Low Infra. Sce.) – Indicator (Low Infra. Sce. - Project)
  - Indicator (High Infra. Sce.) – Indicator (High Infra. Sce. - Project)

> For Non-FID projects, impact is measured as:
  - Indicator (Low Infra. Sce. + Project) – Indicator (Low Infra. Sce.)
  - Indicator (High Infra. Sce.) – Indicator (High Infra. Sce.- Project)

> Same approach to be applied for monetization

Project interaction

> Understanding the difference of project marginal impact under the Low and High Infrastructure scenarios

Thank You for Your Attention

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