entsog
european network
of transmission system operators
for gas

Brussels – 31 May 2017

CBA methodology update

Webinar on identified possible improvements

Stefano Astorri – Adviser System Development

Laurent Percebois – Adviser Market

Image Courtesy of Thyssengas

Agenda

1. Introduction
2. Timeline for updating
3. Online survey
4. Identified CBA update principles
5. Conclusion

Introduction

Why a CBA methodology

> Regulation (EC) 347/2013 represents the regulatory reference for the Energy-System Wide CBA methodology

> Regulation (EC) 347/2013 defines the use of CBA Methodology for
  - the development of TYNDP
  - as input for the selection of Projects of Common Interest (PCIs)
  - as basis to investment request (incl. Cross Border Cost Allocation)
  - as basis to allow promoters to request financial assistance (CEF)

> CBA methodology is a mandatory step in the preparation of TYNDPs by ENTSOG

CBA methodology is a core element for TYNDP, PCI selection and a reference for investment requests and financial assistance

Why to update CBA methodology (1/3)

> Current CBA methodology was developed in several stages by ENTSOG
  - initial version November 2013
  - adapted version August 2014
  - approved by the EC in February 2015

> Current CBA methodology has been used by ENTSOG
  - for TYNDP 2015 and 2017
  - to contribute to the 2nd and 3rd EC PCI Selection process

From the experience built in previous TYNDPs and PCI selections ENTSOG sees benefit in updating the CBA methodology

Why to update CBA methodology (2/3)

- Reg. 347/2013 states that the CBA Methodology 'shall be updated and improved regularly' and ENTSOG or ACER can set off the CBA methodology updating process

- The proposed CBA methodology update principles incorporate feedback received from stakeholders in different occasions (TYNDP, PCIs…)

- Reg. 347/2013 states that 'prior to submitting their respective methodologies, the ENTSO for Electricity and the ENTSO for Gas shall conduct an extensive consultation process involving at least the organizations representing all relevant stakeholders

Stakeholders input represents a key element for the CBA methodology update

Why to update CBA methodology (3/3)

- "ENTSOG sees benefits in updating and improving the CBA methodology to be applied for the preparation of its TYNDP 2018, as foreseen in Article 11(6) of Regulation (EU) 347/2013".

- ENTSOG 2017 Annual Work Programme (AWP) lists CBA methodology update in 2017 and 2018 as one of the main deliverable

- The current CBA methodology has been applied to develop TYNDP 2015 and TYNDP 2017. For TYNDP 2017 ENTSOG has complemented the CBA methodology with additional elements on a voluntary basis

Early enough approval of CBA methodology is key for implementation in TYNDP 2018

CBA Prime Movers

In January-February 2017, ENTSOG consulted Prime Movers

> As part of Reg. 347/2013, CBA Prime Movers (CBA PM) group was set up in order to identify most expected improvements for CBA methodology

> CBA PM gathered:
- Representatives of network users
- Industry associations
- Consultancies and experts
- International policy organisations
- ACER
- The European Commission
- Representatives of gas infrastructures

The proposed CBA methodology update principles take into account CBA PM contribution

Scope of CBA in Reg. 347/2013

the ENTSOs to publish "…methodologies…for a harmonised energy system-wide cost-benefit analysis at Union level ***for projects of common interest****…"*

art. 11

Energy System Wide CBA methodology for PCI projects

"…applied for the preparation of each subsequent 10-year network development plan…"

ENTSOG TYNDP

PS-CBA

Projects applying for PCI	Investment request	Grants for works
Annex III	**art. 12**	**art. 14**
for "mature" projects wanting to apply for PCI status	for "mature" PCI projects for investment request for CBCA	for "mature" PCI projects for grants for works (CEF)
based on ENTSOG methodology pursuant to art.11	***consistent with ENTSOG methodology pursuant to art.11***	***consistent with ENTSOG methodology pursuant to art.12 ****

Annex III

"…proposed gas infrastructure projects….shall be part of the latest available 10-year network development plan for gas developed by ENTSOG…."

Annex V

Input and assessment period: *The methodology shall be based on a common input data set representing the Union's electricity and gas systems in the years n+5, n+10, n+15, and n+20*

* that refers to art. 11

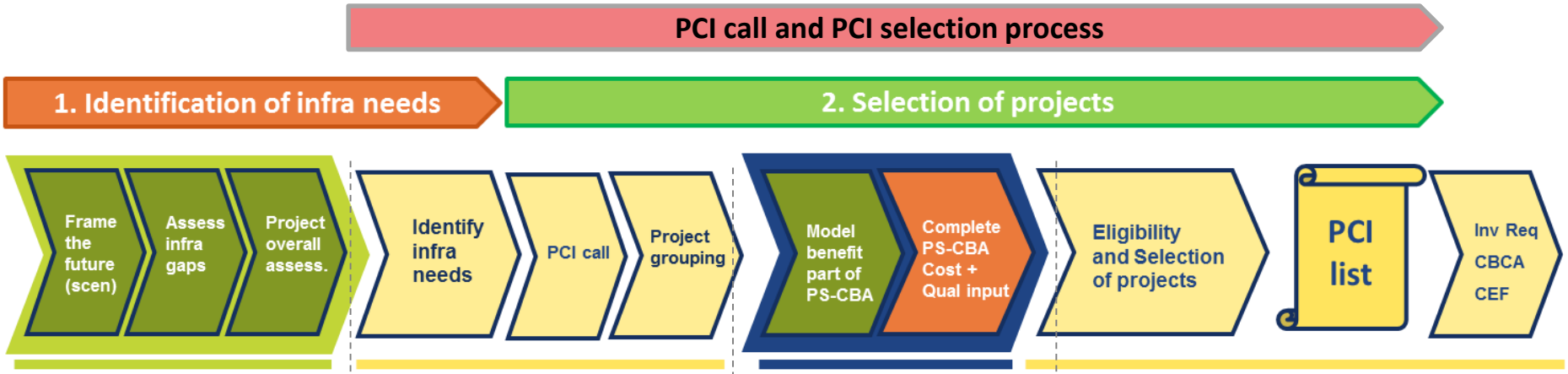
Outline of the current CBA methodology

Reflecting Reg. 347/2013 articles a 2-step CBA methodology consisting of:

- **TYNDP-STEP CBA**
  - to provide an overall assessment of the European gas system under different infrastructure levels
  - to assess the impact of the whole list of PCI projects from the previous approved "List"
  - to collect and define all data necessary for the implementation of CBA
  - to create a common dataset and the basis for the PS-CBA step to be carried by promoters
- **PROJECT-SPECIFIC CBA**
  - to provide an individual assessment of projects submitted for the TYNDP in order to show
    - if a project shows social benefits (incl. qualitative)
    - the financial sustainability of projects
  - based on data from TYNDP-Step + projects financial data (as per Reg. 347, Annex V.5)
  - to perform both economic and financial analysis (economic and financial template)

Current CBA methodology as a 2-step approach involving both ENTSOG and promoters

CBA methodology in the current process



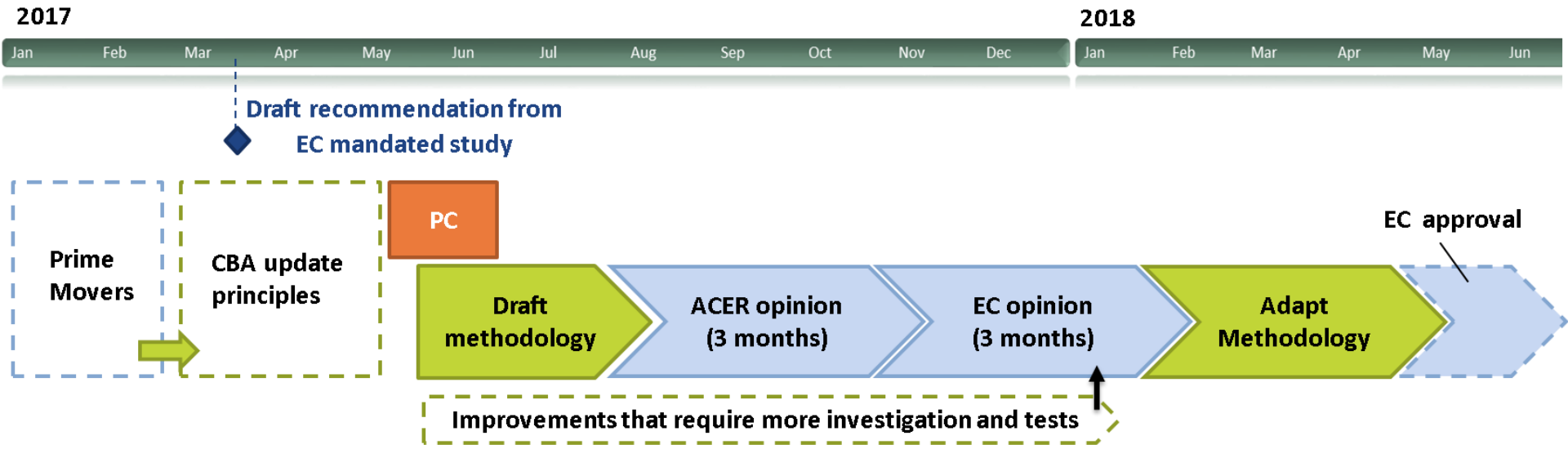
- ENTSOG to apply CBA methodology in TYNDP
- Promoters to submit information on projects

Based on information provided for TYNDP data collection:

- ENTSOG to support PCI candidates applying CBA methodology
- Promoters to complement the analysis

Timeline for updating

CBA methodology timeline



- Timeline based on Art. 11(1) to 11(5) of Reg. 347/2013
- Some improvements (requiring more investigation and testing) will only be ready for the Adapted Methodology
- Updated CBA methodology to be used for TYNDP 2018 will require that the Commission can approve it in accordance with TYNDP 2018 timeline

Public Consultation

Stakeholders input represents a key element for the CBA methodology update

What: public consultation on identified principles for possible improvements of CBA methodology

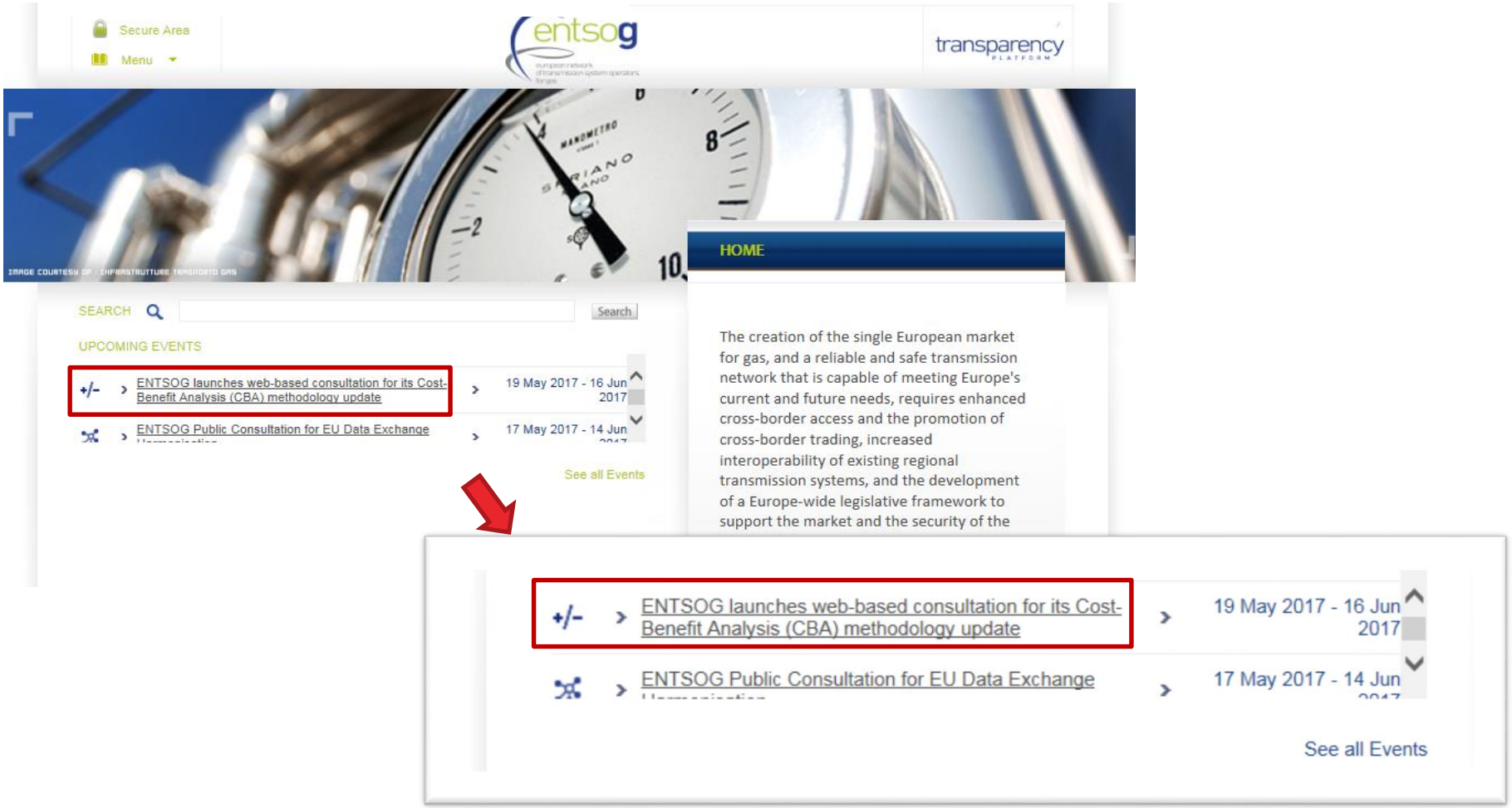
When: from 19th May to 16 June 2017

Where: online

Who: all stakeholders interested in gas infrastructure development

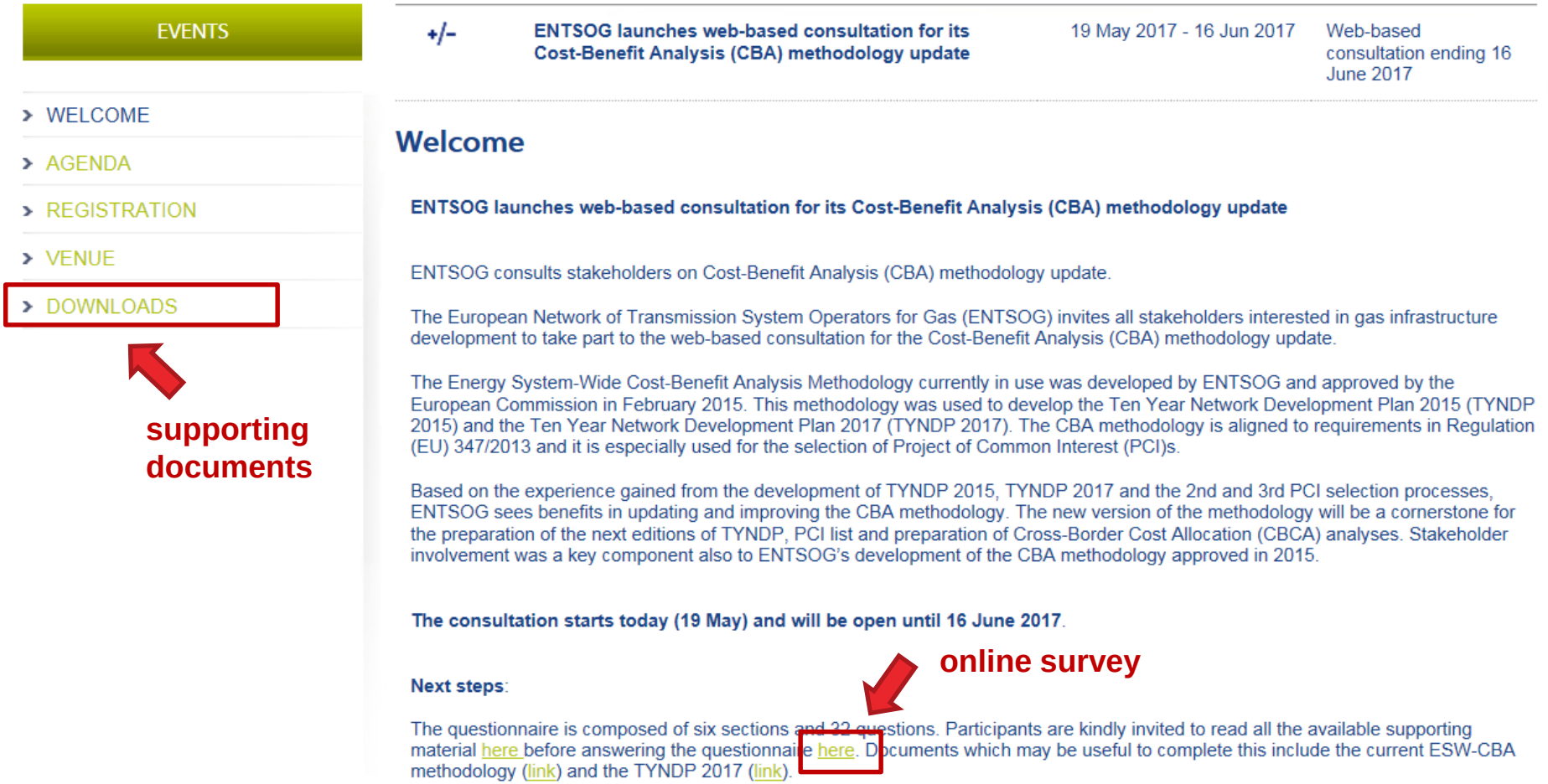
How to reply to the consultation (1)

ENTSOG main webpage



How to reply to the consultation (2)

Event page: CBA meth. update



Identified CBA update principles

Areas of possible improvement

1. Simplification

2. Mo

3. Mo

4. CB/

5. Oth

Objective:

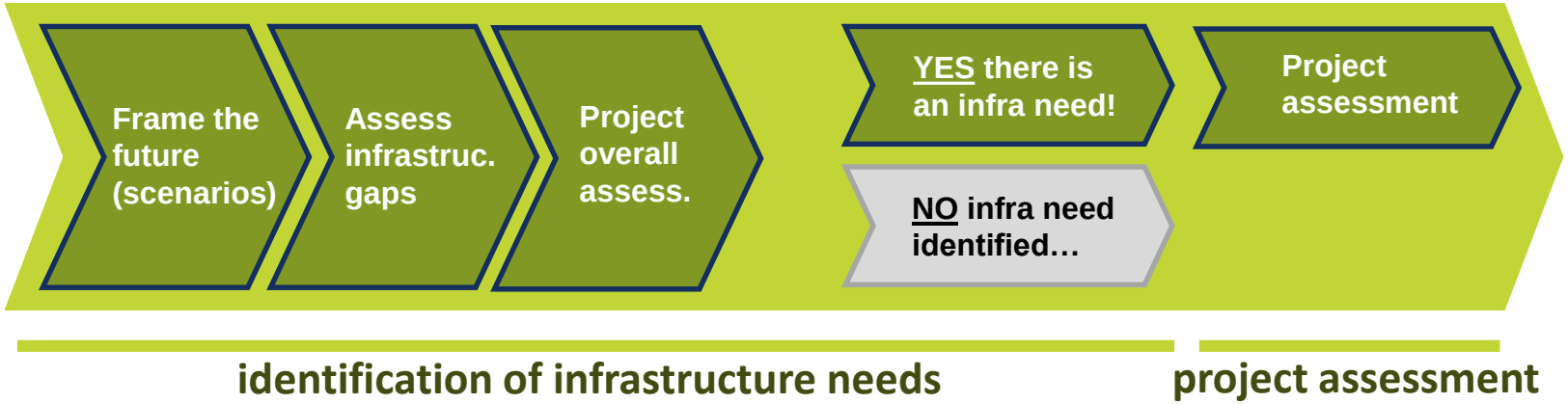
- Ensure readability and user-friendliness
- Emphasis on methodological aspects
- Focus on significant results

1.1 Simplification of the document

- Focus on methodological aspects
- Assumptions and input to be examined principle-wise
- … leaving actual scenario development process to TYNDP (in line with the provision of the interlinked model)
- Improvement of the terminology used
- CBA methodology to cover different fields of application

1.2. Infrastructure needs identification

TYNDP with a role in the identification of infrastructure gaps in areas where additional infrastructure may be needed



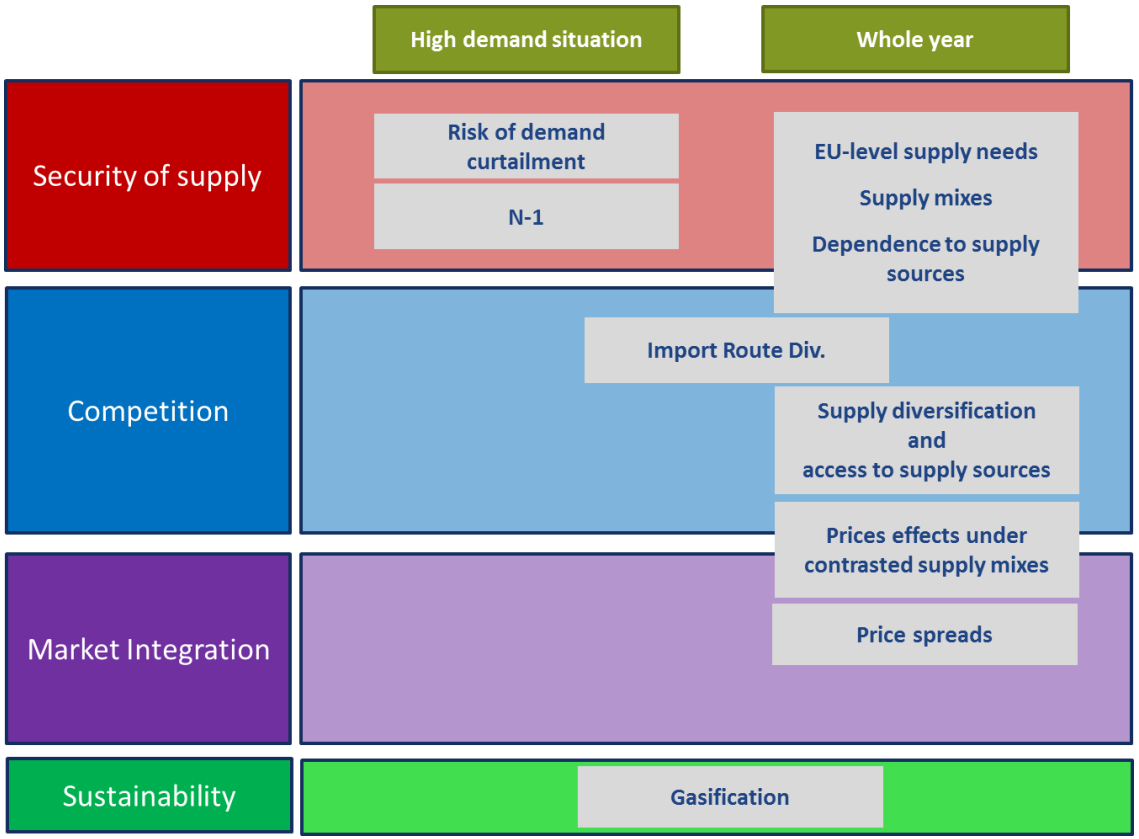
⇒ to focus assess projects against situation where further infrastructure is needed ⇐

TYNDP to set the frame for the project-specific assessment

- to ensure a focused project assessment
- while keeping a comparable basis for all projects
- to be always complemented by promoters qualitative assessment

TYNDP 2017 presentation here

1.3 Indicators

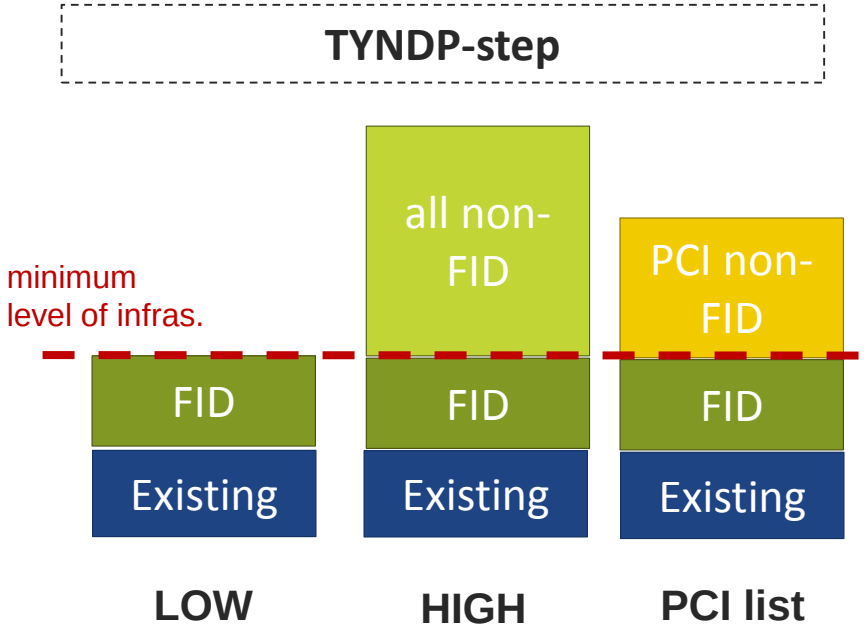


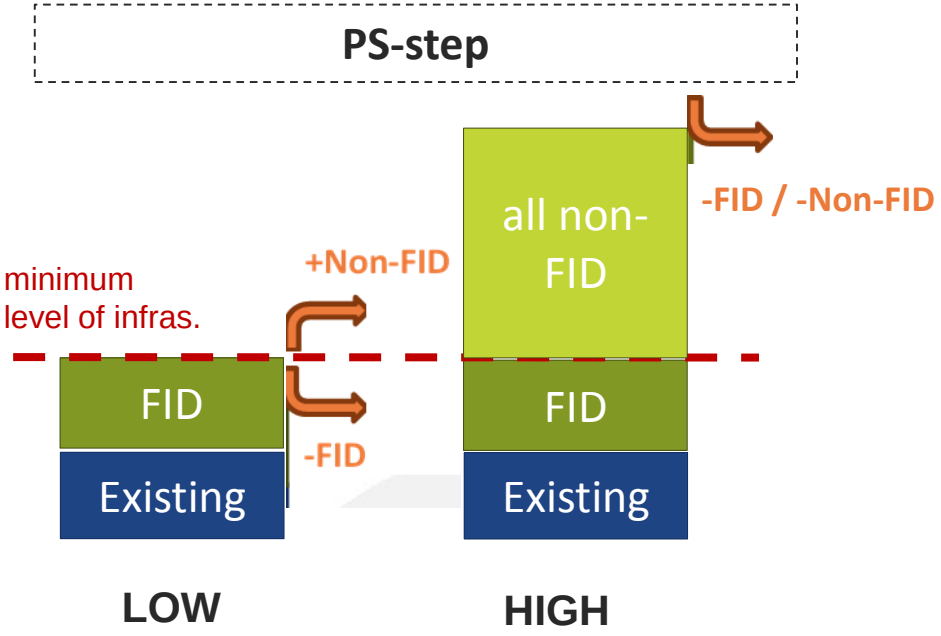
In the current methodology those indicators are split in two groups: capacity-based indicators and modelling-based indicators

CBA methodology to cover all specific criteria of the Regulation and to ensure comparability of project assessment

The incremental approach

The CBA methodology assesses the impact of an infrastructure calculating different indicators while using an <u>INCREMENTAL APPROACH</u>



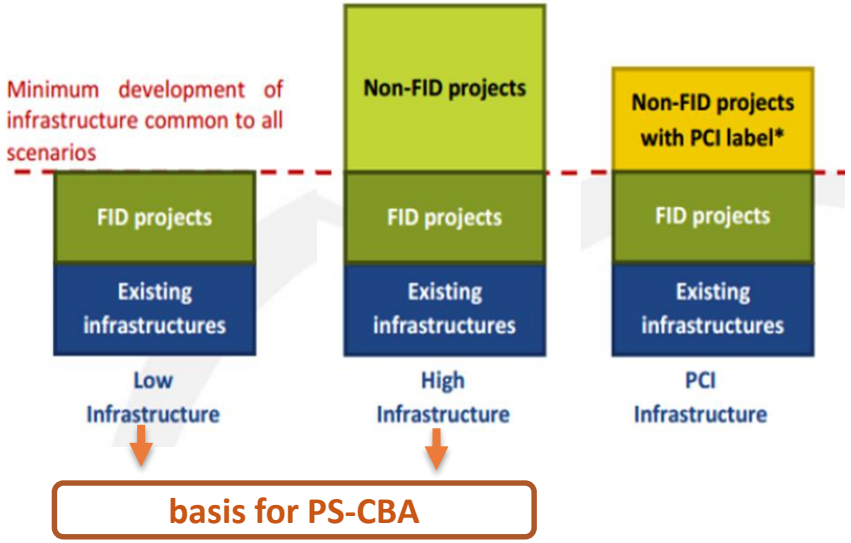


- Identification of <u>infrastructure gaps</u> in LOW
- different level of project interaction according to their maturity
- assessment of the gas system under the projects from the latest PCI List

- Based on its status an additional assessment is carried adding/removing each project from both infra level
- The difference between the two assessments measures the impact of the project from a quantitative and monetary point of view

1.4 Infrastructure levels (1)

Current CBA methodology

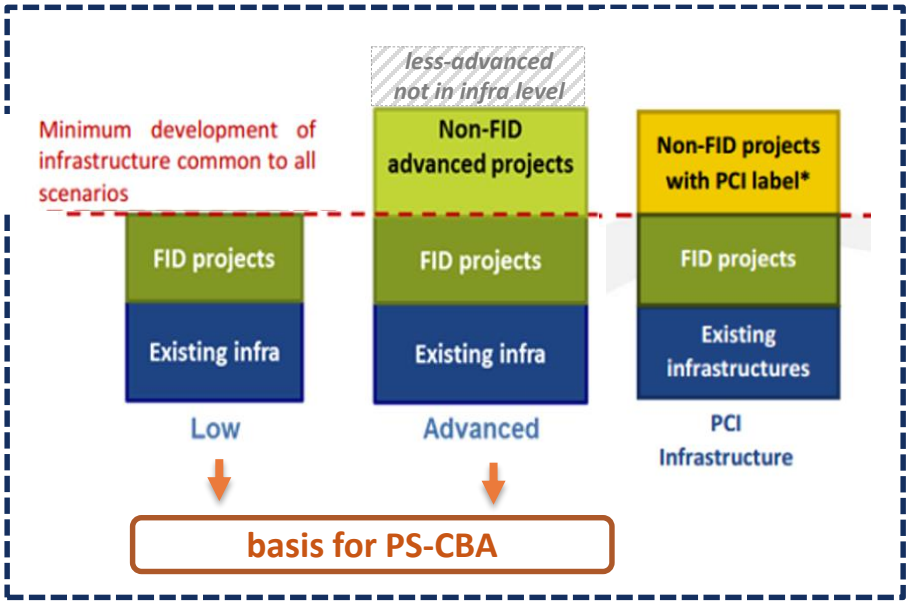


Infrastructure levels represent different potential levels of development of the European network system (based on project advancement status) and are used

- for the identification of infrastructure gaps
- as basis for the each project-specific assessment (adding/removing each project one by one)
- to evaluate the impact of the current approved PCI List

1.4 Infrastructure levels (2)

Proposed update for "New" CBA



ENTSOG proposes to:

- remove the HIGH infra level considered not realistic
- include the ADVANCED infra level to better reflect different project maturity when identifying infrastructure gaps

⇒ **This approach <u>does not prevent</u> less-advanced projects to be assessed against LOW and ADVANCED infra level** ⇐

- additionally ENTSOG consults on the relevance of the PCI infra level

Simplification

Current CBA methodology	Possible improvements
Very TYNDP-oriented	⇒ Focus on methodological aspects, to improve usability
Detailed description of assumptions and input that may instead change over time	⇒ More principle-wise and flexible methodology
Huge amount of results not always perceived as user-friendly	⇒ TYNDP to set the frame for the project-specific assessment ⇒ Focus on limited and significant results
HIGH infra level as basis for project assessment considered not realistic	⇒ Consider more realistic infra level, without preventing less-advanced projects from being assessed

Simplification should not decrease the capacity of the CBA methodology to analyze in depth the impact of a given project

Areas of possible improvement

1. Simplification

2. More focus on Project-specific CBA

3. Mo

4. CB/

5. Oth

Objective:

- Integrate project-specific assessment in TYNDP
- Ensure transparency towards all stakeholders
- Provide support to promoters intending to apply for PCI List and CBCA

2. More focus on Project-specific CBA

Three interconnected "steps" to be considered:

> Project grouping guidelines

> Definition of a project fiche template in the CBA methodology

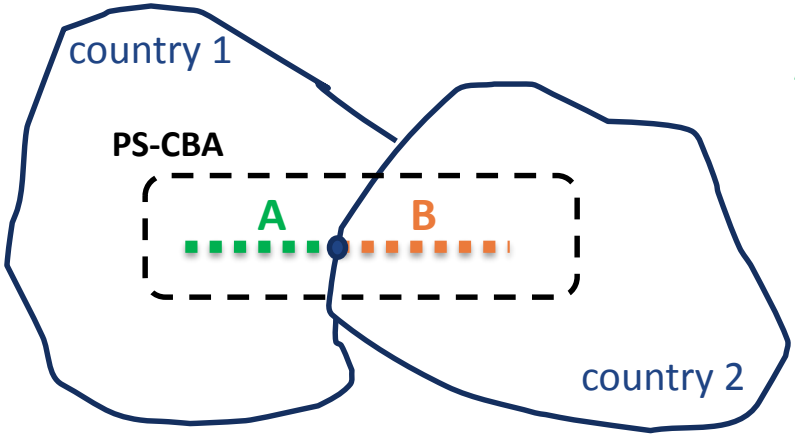
> Application of CBA methodology to TYNDP with inclusion of PS-CBA in TYNDP

2.1 Project grouping

Project grouping is a prerequisite of project-specific assessment

> TYNDP projects are submitted as “investment items”

> PS-CBA frequently requires functionality-related project items to be considered jointly in order to have impact



ENTSOG proposes that CBA methodology would include guidance for project grouping and consults on the possible criteria to be used

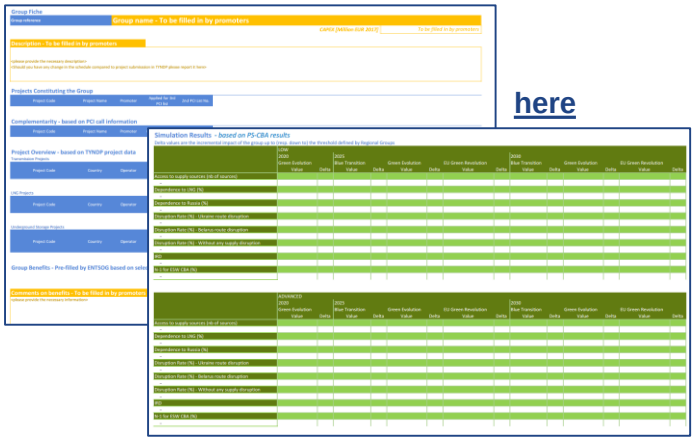
2.2 Project fiche

***Project fiche template** to provide a **standardized approach** to projects in delivering*

> projects information (as collected by promoters)

> results of the project-specific assessment

> other relevant information



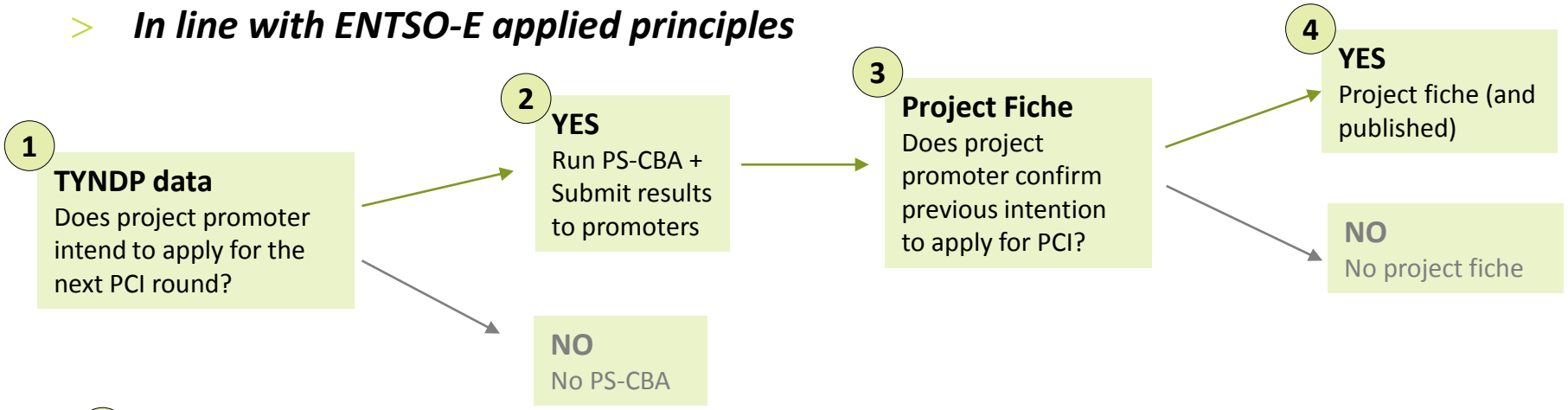
here

… and to simplify the assessment/valuation of projects

CBA methodology to include the principle for a Project Fiche template at project group level to be used for all PS-CBA purposes

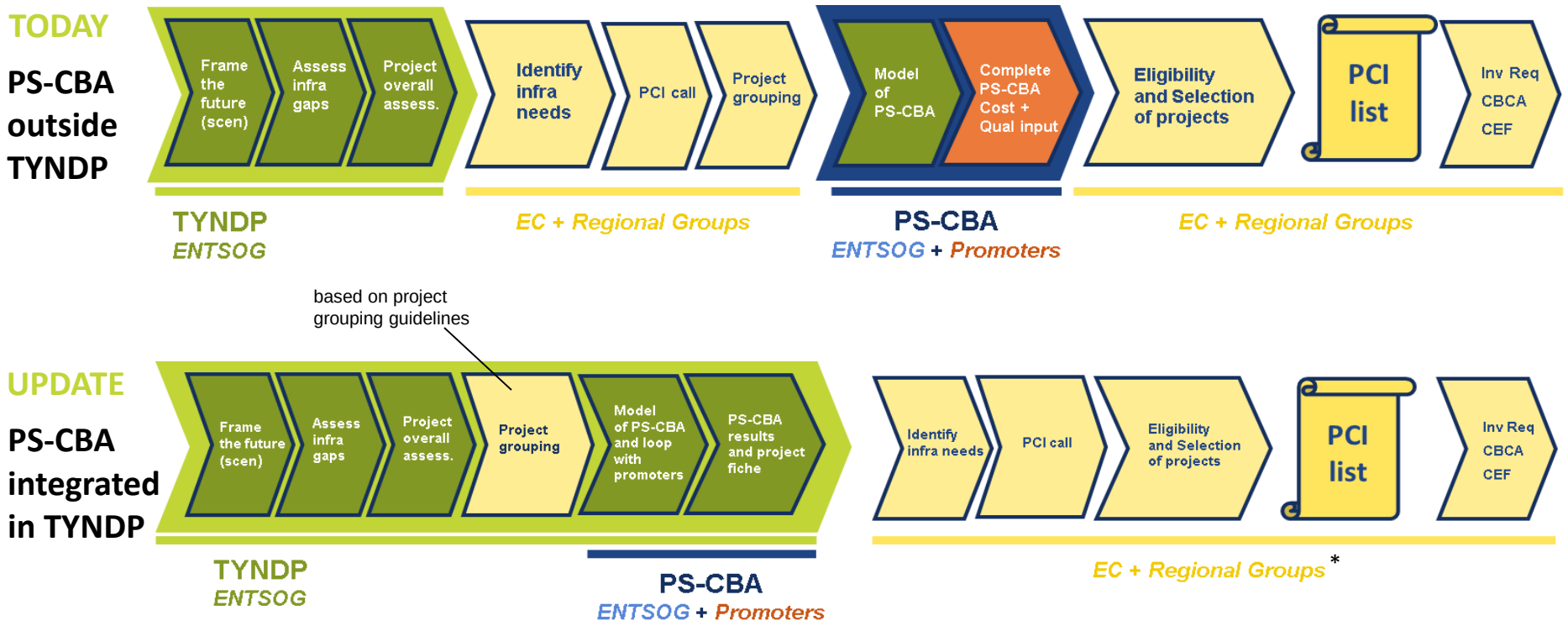
2.3 PS-CBA in TYNDP (1)

- ***A centralised process ensuring transparency, level-playing field and control over timeline***
- ***Transparent PS-CBAs providing a key input to PCI process and CBCA***
- ***In line with ENTSO-E applied principles***



1. Project scope: intention to apply as PCI (in TYNDP project collection)
2. Run PS-CBA on project groups + loop process with promoters (TYNDP development timeline to be extended accordingly)
3. Promoters' comment on PS-CBA / confirm intention to apply PCI
4. Project Fiche publication in TYNDP
   - Benefits
   - Costs – unless marked as confidential by promoters

2.3 PS-CBA in TYNDP (2)



Integrated TYNDP and PS-CBA assessment supporting promoters and providing transparent and comparable input to all stakeholders

** ENTSOG is not responsible for the process outside the TYNDP and this representation is purely indicative and based on the past observed PCI process. The representation aims only to show which elements of PS-CBA could be integrated in the TYNDP process as part of the CBA methodology update and in order to better support promoters, institutions and stakeholders.*

Focus on Project-specific CBA

Current CBA methodology	Possible improvements
Focus on two different steps: TYNDP-step and PS-CBA-step	⇒ Integration of PS-CBA in TYNDP ⇒ Project grouping as prerequisite ⇒ Definition of a standard Project Fiche template to present results for all CBA purposes and to ensure transparency to all stakeholders
Project-specific assessment not published with TYNDP	⇒ Publication of project fiche with main project information and assessment results
Today PS-CBA run only after PCI call	⇒ Results to be provided before PCI process and other uses to support all stakeholders

Integrated project-specific CBA assessment in TYNDP to support project promoters and ensure transparency towards all stakeholders

Areas of possible improvement

1. Simplification

2. More focus on Project-specific CBA

3. Monetisation and complementary benefits

4. CBA f

5. Othe

Objective:

- Improve ex-post monetization when possible and reasonable
- Overcome limitations in the monetization of benefits thanks to Multi-Criteria Analysis
- Further investigate how to improve the market approach

3. Benefits and monetisation

Some thoughts on monetisation

> **Comparing costs and benefits in EUR terms is appealing, but…**

- Monetisation depends on assumptions and inputs, and market behaviour
- Monetary benefits: uncertain and hard to capture while costs more certain
- Expressing project's impact in EUR terms may not be sufficient for a fully-informed decisional process
- Is monetisation always compatible with promoting "most needed" projects?
- Further monetisation potentially in conflict with expected simplification

3.1 Multi-Criteria Analysis (MCA)

CBA implies monetisation

However, sometimes impossible to give a monetary value to benefits

MCA

- 3 different types of benefits:
  - **quantified (non monetised) outcomes**
  - **ex-post monetisation of a quantified outcome of the modelling**
  - **direct monetised outcome of the modelling**
- ENTSOG's current CBA already combines **monetary and non-monetary aspects**
- Other institutions such as ENTSO-E and consultancy REKK for PECI selection do the same

Multi-Criteria Analysis (MCA) to allow the 3 types of benefits to co-exist and to ensure project comparison

3.2 Ex-post monetisation (1/4)

Some stakeholders pointed out need for improvement of the monetization of quantified outcomes of the modelling

3 directions to refine ex-post monetisation

- **Monetisation of avoided demand curtailment (Value of Lost Load)**
- **Monetisation of CO_2 emissions reduction**
- **Supply source diversification**

3.2 Ex-post monetisation (2/4)

Avoided demand curtailment and VoLL assessment

- This topic addresses Security of Supply (SoS). The current approach is based on the same value for VoLL across Europe, as a level-playing field

- ENTSOG approach ensures project comparison and level-playing field (prerequisite for processes like PCI)
- As an alternative, MS- or sector-specific VoLLs may be used reality, but to be considered carefully

ENTSOG welcomes suggestions for improvement of VoLL approach

3.2 Ex-post monetisation (3/4)

Avoided CO_2 emissions

Sustainability is key for project assessment, as per Reg. 347/2013

Development of renewable energy	Substitution for more polluting sources	Interlinkage with electricity
• Biomethane • Synth gases	• CCGT substituting for coal-powered plants • Gasification	• Power-to-gas (P2G)

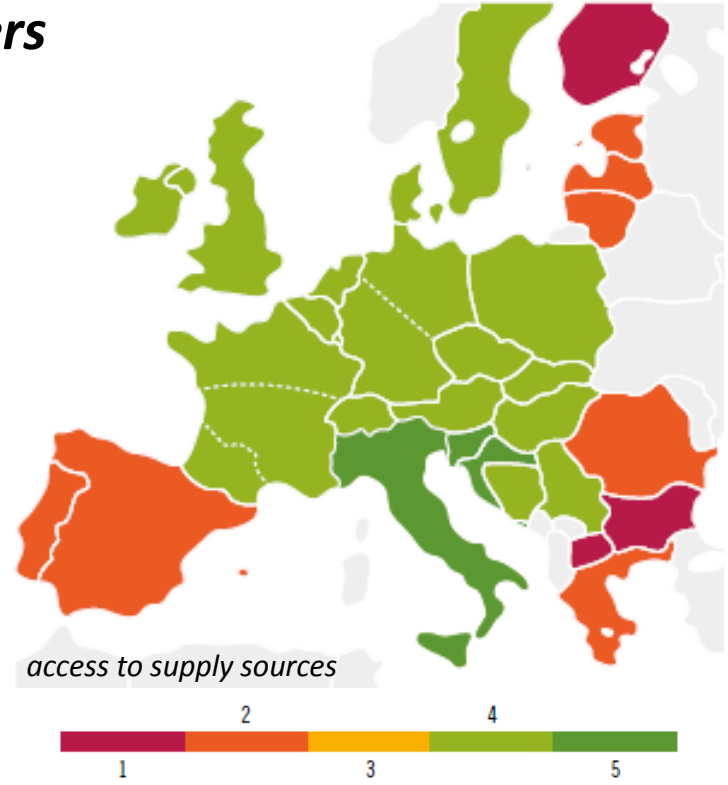
- TYNDP and CBA consider various scenarios and their impact on CO_2 reflecting the role of natural gas and renewables gas. The interlinked model already refers to P2G, as will TYNDP 2018
- Assessment of projects for mature gas markets is more difficult than in 'gasification' MSs
- Some stakeholders suggested use of Social Cost of Carbon (SCC) instead of CO_2 market prices, for full impact assessment of externalities

ENTSOG welcomes suggestions regarding how to factor CO_2 reduction in mature and non-mature gas markets and views on SCC

3.2 Ex-post monetisation (4/4)

Supply source diversification, and others

- Measuring the number of alternative gas sources for a given MS is a valuable information
- Other institutions refer to supply source diversification, such as EC for the 3rd PCI selection process
- Currently, this quantitative value is not monetised in TYNDP and CBA methodology



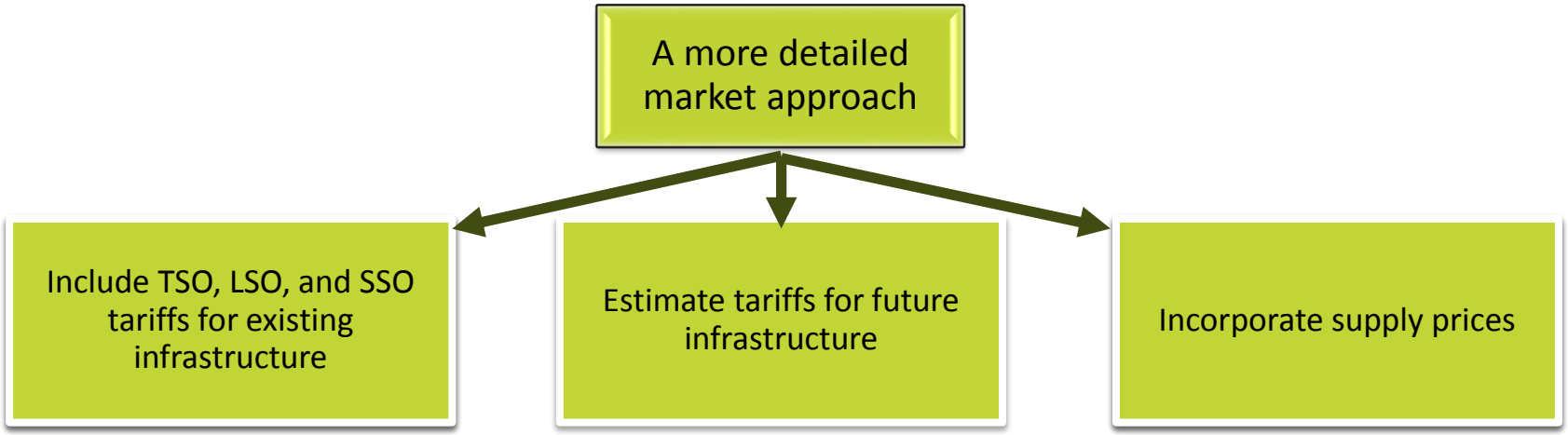
ENTSOG welcomes proposals regarding the monetisation of supply source diversification and monetisation of other indicators

3.3 Market layer & modelling assumptions (1/4)

Some stakeholders consider that market assumptions should be refined

> **Current TYNDP approach**

- **Networks** operating in an optimal way
- **Markets** operating under perfect competition and no commercial distortion (Network Codes fully applicable)
- Flows are modelled on the basis of the so-called **'weight of infrastructures'**
- Information source for prices is public (IEA WEO)



3.3 Market layer & modelling assumptions (2/4)

Redefine network and market assumptions?

Pros of infrastructure tariffs in TYNDP and CBA

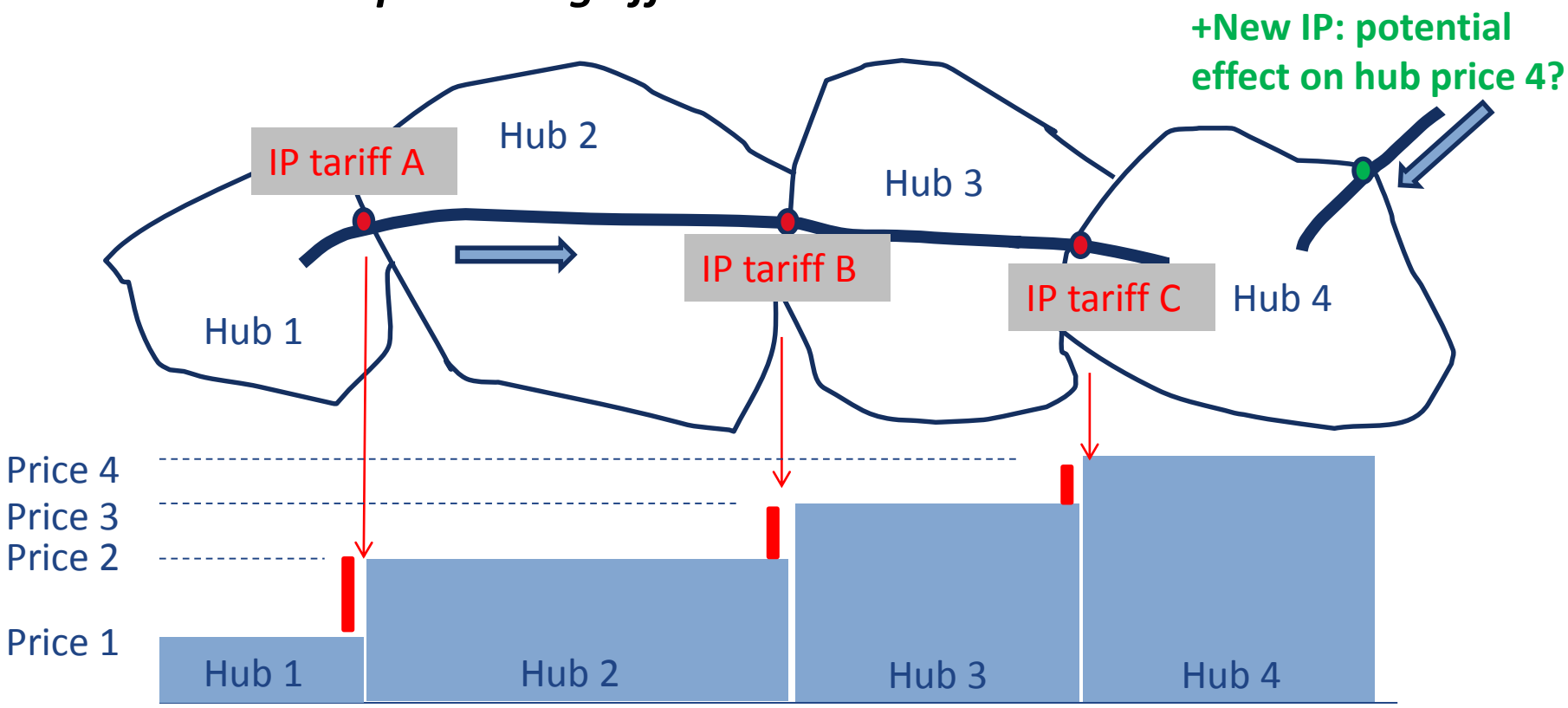
- More realism, since the pancaking effect plays on the cost of gas routes *(see next slide)*
- Better assessment of competition and complementarity of gas routes
- More comprehensive approach to EU gas market

Cons of infrastructure tariffs in TYNDP and CBA

- Tariffs may be adjusted for non-competitive reasons, introducing a bias in project assessment
- Mismatch between tariff validity and life of project
- Estimation of tariffs for new projects not trivial
- Data for negotiated TPA or exempted infrastructure
- Difficulty to assess external factors on tariffs (CBCA, Inter-TSO Compensation mechanisms, State aid, regulatory regimes)

3.3 Market layer & modelling assumptions (3/4)

Transit and the pancaking effect

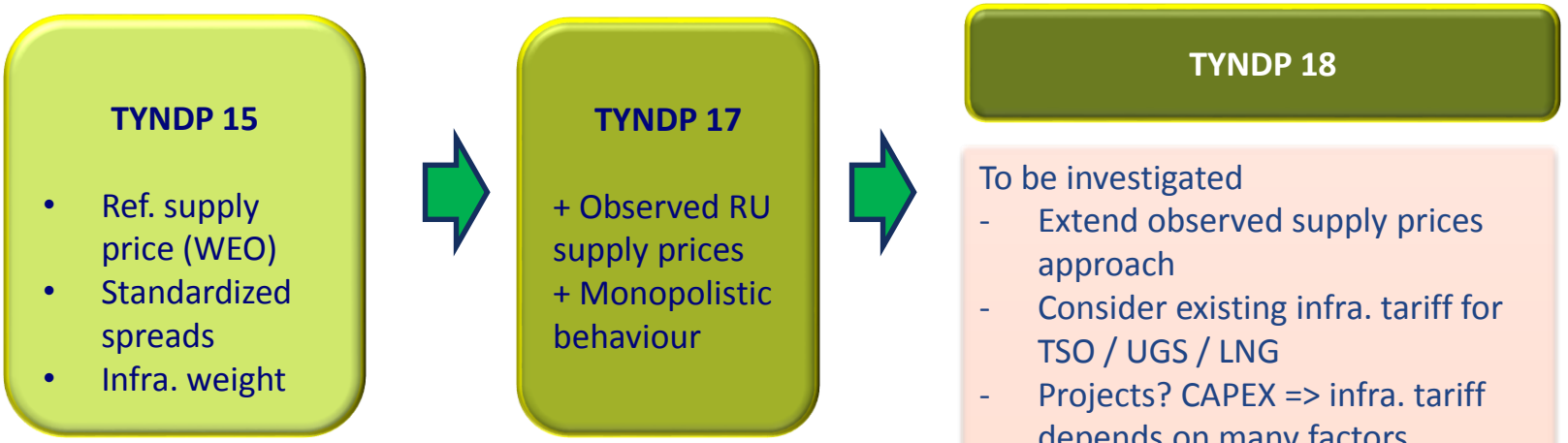


- Cumulative IP tariffs along gas routes are accounted for in hub prices
- The pancaking effect modifies hub prices and changes welfare analysis

3.3 Market layer & modelling assumptions (4/4)

Extend the market layer in the modelling

> Favour a **step-by-step approach**



ENTSOG deems it necessary to further investigate the market layer.

Clarity on possible way forward for this CBA update in "adapted" methodology

3.4 Specific market & model topics (1/3)

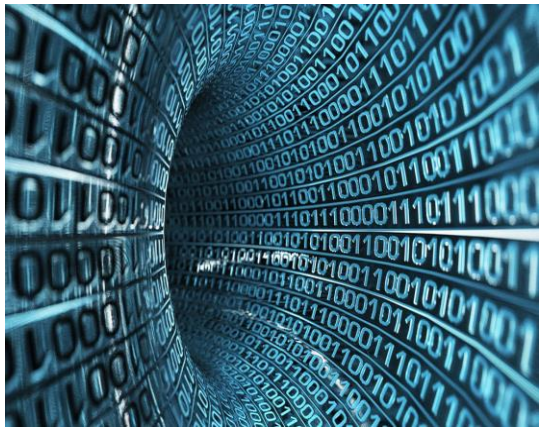
Import price spread configuration

Context	• TYNDP 2017 introduced import price spread configuration, as decided by ENTSOG and stakeholders • Goal was also to measure how infrastructures may mitigate monopoly pricing behavior, based on public information
Principle	• Confronted to a new alternative supplier, the incumbent is deemed to stick to its pricing strategy until it loses volumes to the newcomer at a certain level • Afterwards, the incumbent adjusts to the pricing strategy of the newcomer • This approach relies on several inputs and assumptions
Feedback	• ACER and stakeholders praised this import price spread configuration (respectively in ACER's Public opinion and responses to the TYNDP public consultation)

ENTSOG supports the further use of the import price spread configuration and welcomes proposals for input sources and improvement

3.4 Specific market & model topics (2/3)

Information sources for supply prices

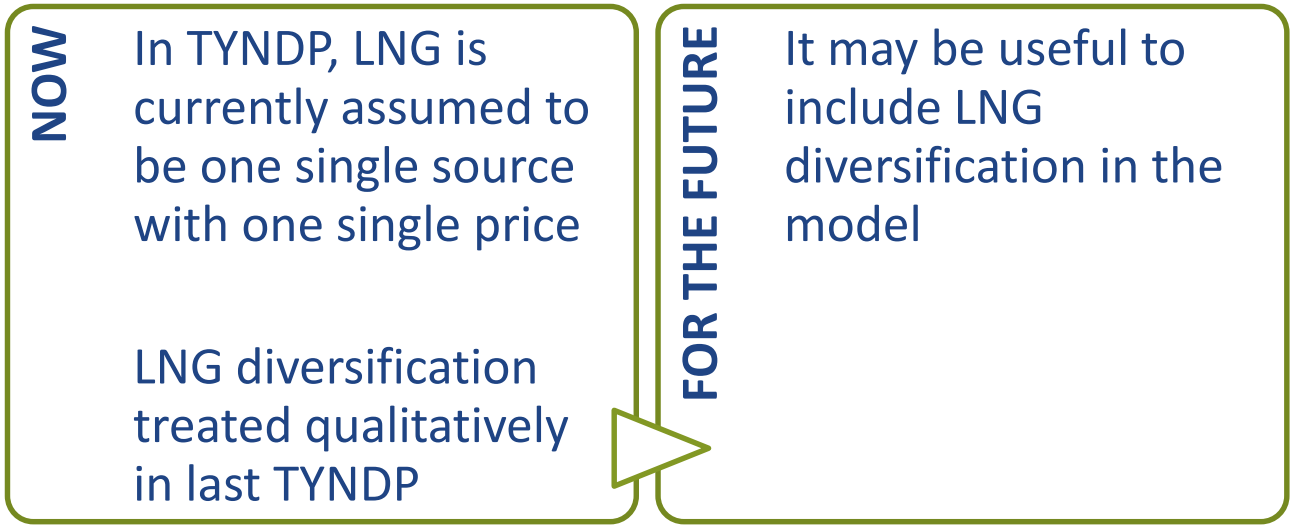


- Public information sources are key for ENTSOG's TYNDP
- IEA WEO is major reference in both ENTSOG and ENTSO-E TYNDPs
- Some stakeholders suggest that differentiating prices per supply sources would be an improvement in terms of realism
- This could also contribute to a better analysis of competitive behavior among gas suppliers
- Provisions from Reg. 347/2013 make it possible for ENTSOG to receive data from other institutions such as EC and ACER

ENTSOG sees benefits in considering different prices for sources. Difficulties lie in the availability of reliable information, especially for the full considered time horizons

3.4 Specific market and model topics (3/3)

LNG diversification



> LNG is a global market and affected by global price oscillations

> Specificity of LNG to contribute to supply source diversification was addressed and justifies further consideration

ENTSOG considers to explore the embedding of LNG diversification in the modelling assumptions and welcomes stakeholders' views

Monetisation & complementary benefits

Current CBA methodology	Possible improvements
Monetary and non-monetary assessment already used	⇒ Further develop the MCA approach
Ex-post monetization considered by some stakeholders “limited”	⇒ ENTSOG has identified some areas where ex-post monetisation can be reinforced or further developed (e.g. VoLL; supply source diversification)
Feedback from stakeholders that the market approach could be further developed	⇒ Comprehensive approach and reliable input required to avoid distorted analysis ⇒ ENTSOG to further investigate this element and its inclusion to be potentially considered in the phase of adaptation of the methodology
Import price spread configuration, prices non-differentiated per supply sources, and LNG considered as one single source	⇒ Refine import price spread configuration, differentiate prices per supply sources and refer to LNG as a multiplicity of sources

Refining monetization requires to solve trade-offs between realism and simplicity, and it needs further investigation and consensus on assumptions

Areas of possible improvement

1. Simplification
2. More focus on Project-specific CBA
3. Monetisation and complementary benefits
4. CBA for investment request and CBCA
5. Othe

Objective:

- To overall support CBA by promoters for CBCA

4.1 CBA for investment request and CBCA

- Art. 12 of Reg. 347/2013 states that project promoters whose PCI projects have reached sufficient maturity shall submit an investment request including a request for cross-border cost allocation (CBCA) alongside a PS-CBA consistent with the methodology developed by ENTSOG

CBA methodology to offer support to promoters when running PS-CBA for CBCA through:

- definition of common input required
- adequate country detailed outputs
- a standard Project Fiche template ensuring consistency in the presentation of results and improving their readability

- CBCA (cost allocation) part of investment request to remain a separate process from the PS-CBA

Areas of possible improvement

1. Simplification
2. More focus on Project-specific CBA
3. Monetisation and complementary benefits
4. CBA for investment request and CBCA
5. Others

Promoters are invited to provide any further input for CBA methodology update improvement

Conclusion

Identified possible improvements

Simplification

- Focus on methodological aspects
- More principle-wise and flexibility
- TYNDP to set the frame for PS-specific assessment, with focus on significant results
- More realistic basis for project-specific assessment without preventing assessment of less-advanced projects

More focus on Project-specific CBA

- Integration of PS-CBA in TYNDP, with project grouping, and definition of a standard Project Fiche template to present results for all CBA purposes and to ensure transparency to all stakeholders
- Publication of project fiche with main project information and assessment results
- Standard approach and results to support PCI process and other uses

Monetisation and complementary benefits

- MCA approach
- Reinforce ex-post monetisation
- Further investigate market layer
- Improve import price spread configuration, differentiated prices and LNG specificity

CBA for investment request and CBCA

- Definition of the common input required
- Adequate country detailed outputs
- A standard project fiche template ensuring consistency in the presentation of results

We look forward for your feedback!

Thank You for Your Attention

Stefano Astorri – Adviser System Development
Laurent Percebois – Adviser Market

ENTSOG -- European Network of Transmission System Operators for Gas
Avenue de Cortenbergh 100, B-1000 Brussels

EML: Stefano.Astorri@entsog.eu ; Laurent.Percebois@entsog.eu
WWW: www.entsog.eu