

1st SJWS on CBA methodology

General concept

Adela Comanita, Adam Balogh,

Advisers

Olivier Lebois

Senior Adviser

Brussels -- 6 June 2013



Structure of SJWSs

Structuring the work during SJWSs

SJWS
6 June 2013

1. Clarifications regarding the feedback received
2. ENTSOG's concept for CBA methodology
3. PS-CBA
 - The synergy of a combined methodology
 - Structure and alternative approaches
 - Area of analysis and significantly impacted countries
 - Saved cost approach
4. ESW-CBA
 - Synergy between the TYNDP and ESW- CBA
 - The role of new infrastructure **clusters** reflecting the impact of PCIs over the energy gas system

SJWS
2 July 2013

1. How to implement the concept in the PS-CBA
2. How to improve the synergy of the concept

Cluster: *A general approach of grouping infrastructure projects based on certain parameters; As defined in ENTSOG TYNDP:*

With regards to infrastructure, the clusters represent different gas infrastructure configurations which always cover the existing infrastructure and the planned infrastructure projects in accordance with their FID status.



Feed-back from CBA Informal public consultation

Stakeholder response

ENTSOG received 7 responses

- > Stakeholders have identified themselves as:
 - Prime movers (1)
 - Active SJWS participants (1)
 - Consultant respondents (5)

Responses to Questionnaire (I)

- > **Approach taken by ENTSOG for the development of CBA methodology**
 - CBA methodology should be based only on economic benefits, qualitative criteria should be explicitly monetized
 - It is important to understand current gas market integration not only at regional level but also in each country involved in cost benefit analysis:
 - Criteria to prove cross-border impact could be complemented with additional country specific criteria as gas market model (connections, market maturity, effect of neighbouring markets), gas market size, regulation framework, gas in power generation
 - Project financing, implementation, regulatory environment, incentives should be included in CBA Methodology
- > **Assumptions on Sustainability criterion**
 - Country specific sustainability targets, CO2 emissions levels, 'steering' effects as subsidies/taxation for different energy forms, role of biogas could be reflected
- > **Selection of discount rate**
 - Single discount rate should be used for all projects
 - Different discount rates for different type of investments (replacement, new capacity, new cross border capacity, gas storage investments) could be applied

Responses to Questionnaire (II)

- > **Transparency** on input data, processes and hypothesis to ensure consistency btw. ESW and PS CBA and to ensure consistency and non-discriminatory results btw. the different PS CBAs; Guidance on methodology to ensure applicability for all locations and projects
- > Methodology to analyze **cross-border impact** by assessing interaction with other cross-border projects, capacity allocation rules (LT vs ST), interoperability with existing infrastructure, market liquidity improvement; N-1 at Regional level should be proposed by ENTSOG based on TYNDP data
- > The major aims of **PS CBA** are to assess the need for cross-border cost allocation and to externalities to identify project promoters that require further incentives
- > *Cost of avoided emission* can be assessed for **sustainability** and *cost of emergency measures* for **SoS**
- > For **LNG** and **UGS** projects, their contribution to short term flexibility to ensure liquid market should be considered
- > For **sensitivity analysis** the main parameters should be: *gas demand* and *commodity prices* and different scenarios for RES. Energy development, transition to gas in transit etc.
- > *Quantitative* and *qualitative* aspects to capture *non-monetizable* areas; **Indicators** can have effect across numerous criteria

Responses to Questionnaire (III)

- > In addition to TYNDP, **ESW CBA** should also be based on 3rd party **data** from the market, to ensure realistic economical situation and supply and demand scenarios
- > Quality of **data** is more important than the number of scenarios analyzed; GLE and GSE should be consulted
- > For **sustainability** the infrastructure's capability to contribute to intermittent generation shall be analyzed
- > Common-sense test of results is crucial
- > **Unique attributes** of **LNG** and **UGS** shall be recognized by the methodology, such as: *diversification of routes, sources and counterparts; flexibility capabilities for intermittency; avoiding other investments; facilitation of market; fine-tuning of methodology necessary to avoid bias for pipelines*
- > *Market based investment* approach shall prevail; identifying **externalities** should be conducted with care
- > The definition of **HHI** on capacity level is not understood; confusion between shippers and infrastructure operators.
- > **Cross-border impact** can be shown by increasing or decreasing cross-border flows

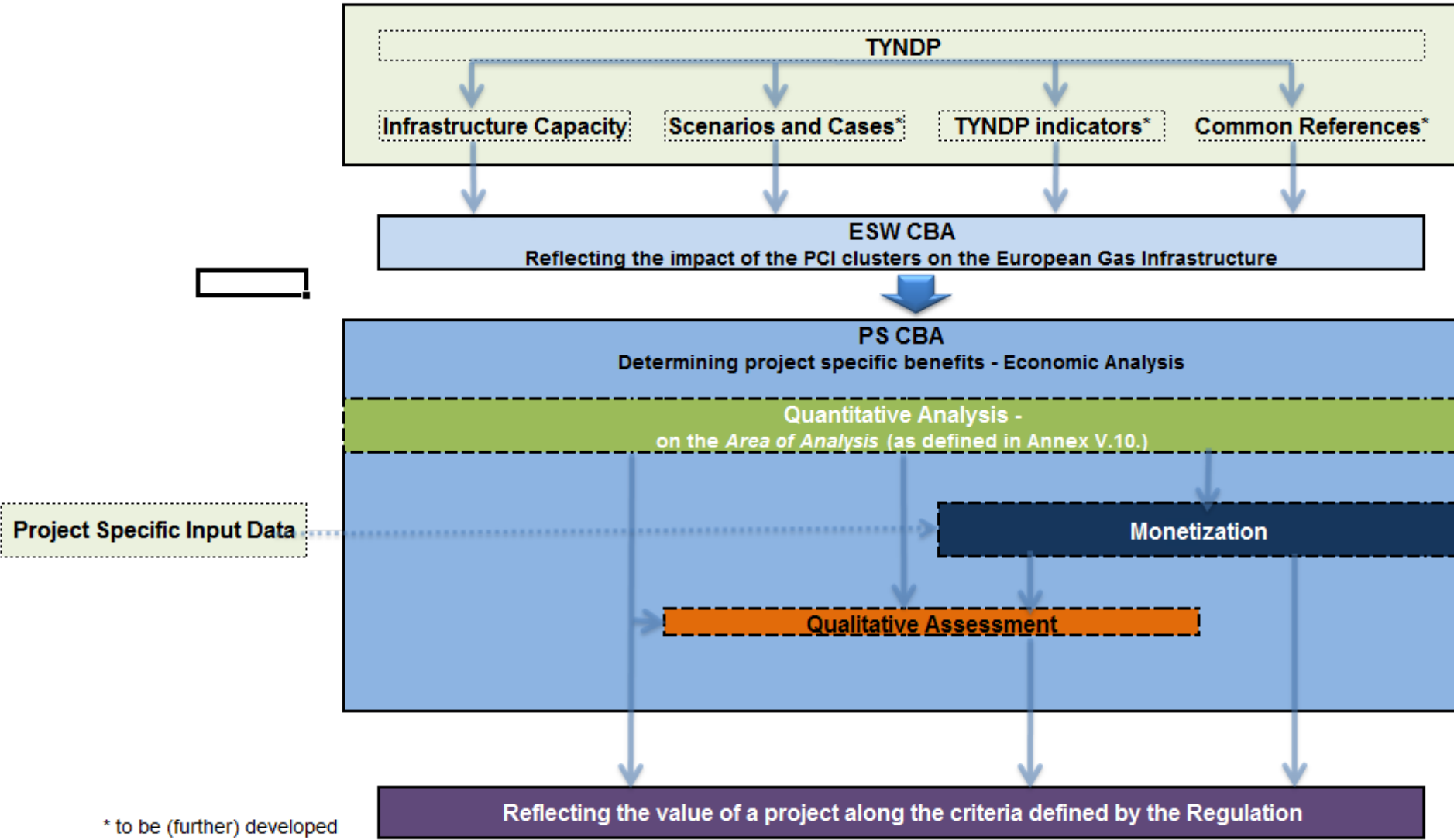
Responses to Questionnaire (IV)

- > **Approach** taken by ENTSOG is exhaustive and complete
- > Regulators and Institutions should provide input for determining **Region of Impact**
- > For **ESW**, demand scenario, including demand growth in transport, should be examined
- > Possible technical features of **LNGs** could be considered for **sustainability**, e.g. bunkering to provide additional flexibility
- > For **SoS**, the projects contribution to disruption scenarios should be assessed
- > **UGS** and **LNG** have indirect impact – reducing import need, SoS and diversification, so their **cross-border** impact shall not be evaluated; different methodology might be better for UGS and LNG, as for pipelines
- > Benchmark values should be developed for projects, to ease comparing results



CBA methodology structure

CBA methodology structure



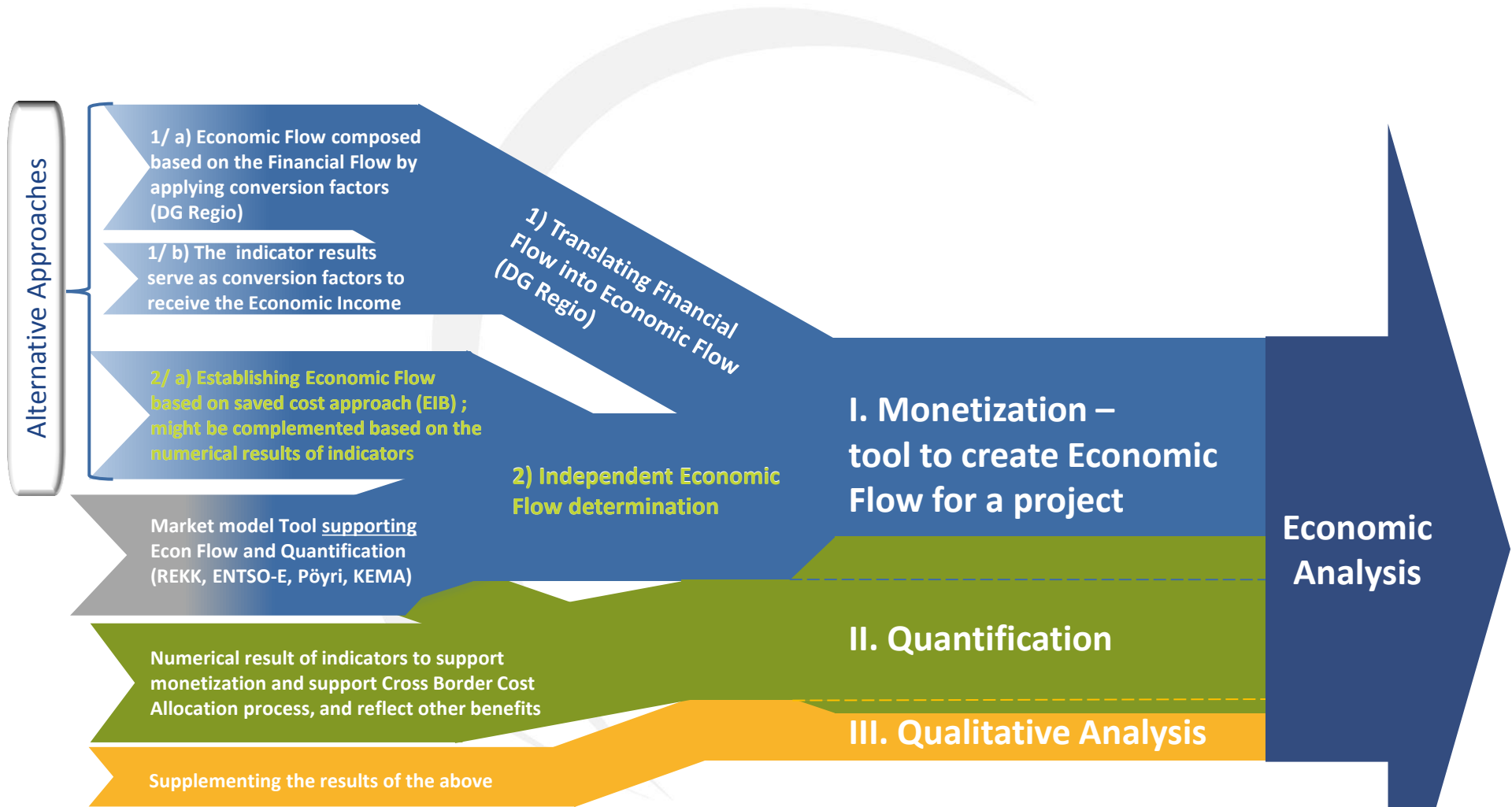


Economic flow within the PS-CBA

--

Alternative approaches

Alternative approaches



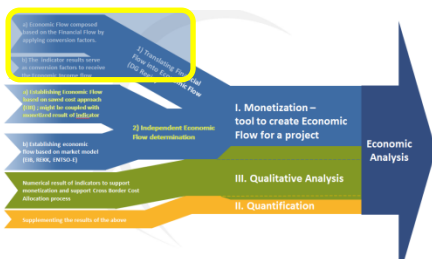
Financial Flow into Economic Flow

Pros for Approach I/1/a) & b): Conversion Factors Approach

- > Already applied based on the DG REGIO methodology

Cons for Approach I/1/a) & b): Conversion Factors Approach

- > Applicability for gas projects questionable
- > Generally the Financial Flow is based on regulated tariffs + Conversion factors are country specific and are not defined
- > In b), the result of the indicator translated (as conversion factor) into the Economic Flow does not necessarily reflect the value of the project for the society
- > In a) - Conversion value is assumption
- > In b) - Conversion value is based on the numerical result of an indicator
- > "differential" approach
- > Complex methodology
- > Many assumptions necessary – in a), for determining conversion factors





Saved cost approach

Saved cost approach (I)

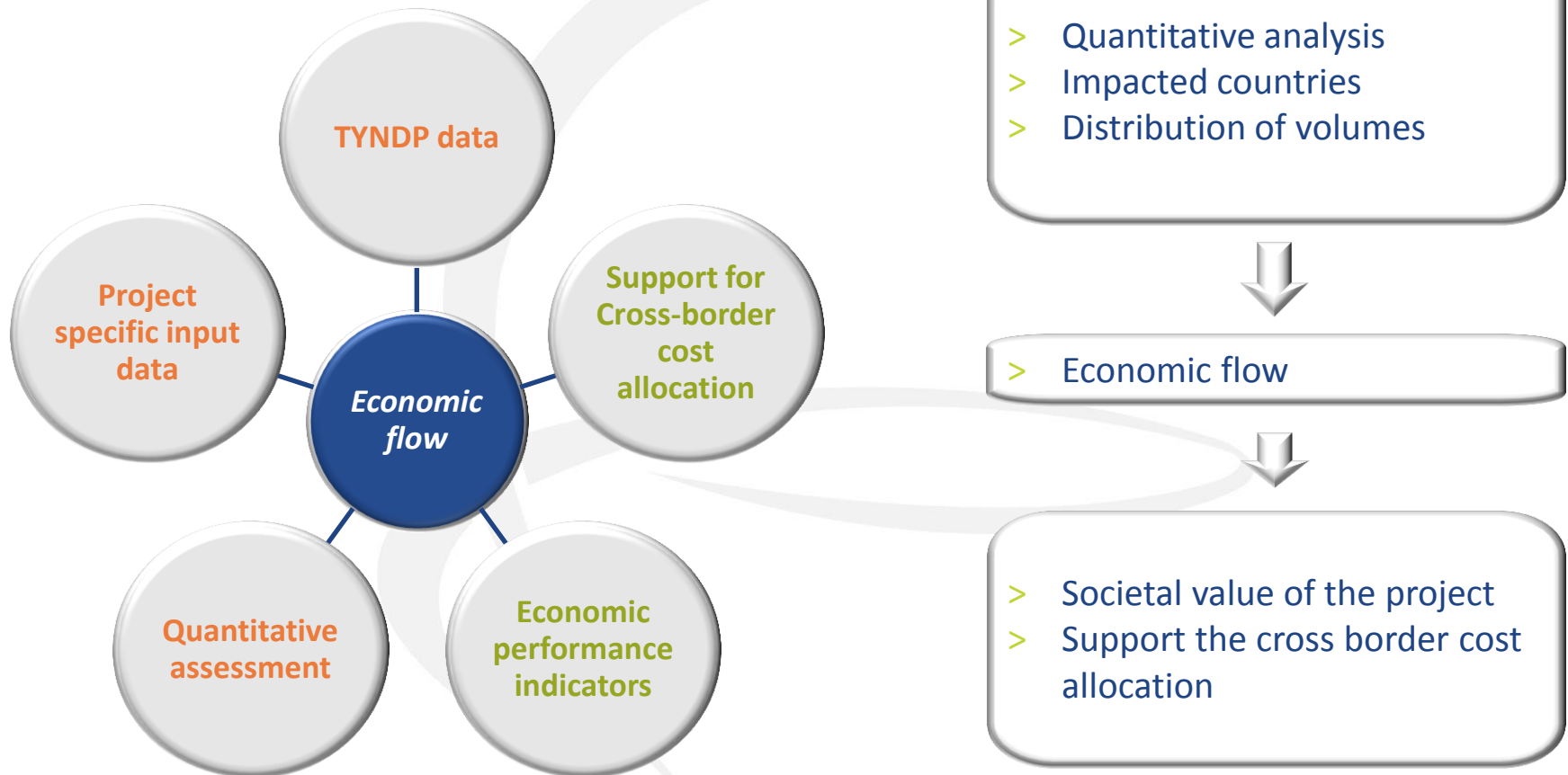
Assumptions

- > A new infrastructure has the potential to bring benefits:
 - Saved CO2 (and other) emissions costs
 - Differences in fuel cost
 - Saved cost in efficiency (coal fire plants are less efficient than gas-fired plants)
 - Saved costs based on O&M costs (coal-fired plants have higher O&M costs than gas-fired plants)
 - Saved costs of gas price due to enhanced competition
 - Diversifying the source of supply and the routes
 - Avoided costs of a shortfall in supply
 - Price arbitrage between two different delivery periods (swing value for UGS)

Further developments are needed in order to reflect the criteria requested by the Regulation along the impacted countries

Saved cost approach (II)

Input and output information



Structure of the economic flow

Saved cost approach- Structure of the economic flow

No	Explanation	Source of information	Time horizon							
			n	n+1	n+2	n+3	n+4	...	n+20	
A	Input data									
I	Total costs									
1	Investment costs	Financial analysis	-	-	-	-				
2	Operating costs						-	-	-	
3	Other costs (decommissioning)								-	
4	Residual value									+
II	Total Economic benefits									
1	Saved costs in country A	Quantitative analysis					+	+	+	
2	Saved costs in country B	Country specific data					+	+	+	
3	Saved costs in country C						+	+	+	
III	Social discount rate (SDR)									
B	Output data									
(IV = II-I)	Net economic benefits (if \sumEconomic benefits > \sumCosts)		-	-	-	-	+	+	+	
V	Performance economic indicators									
1	ENPV (>0)									
2	EIRR (>SDR)									
3	B/C (>1)									

SWOT analysis for the saved cost approach

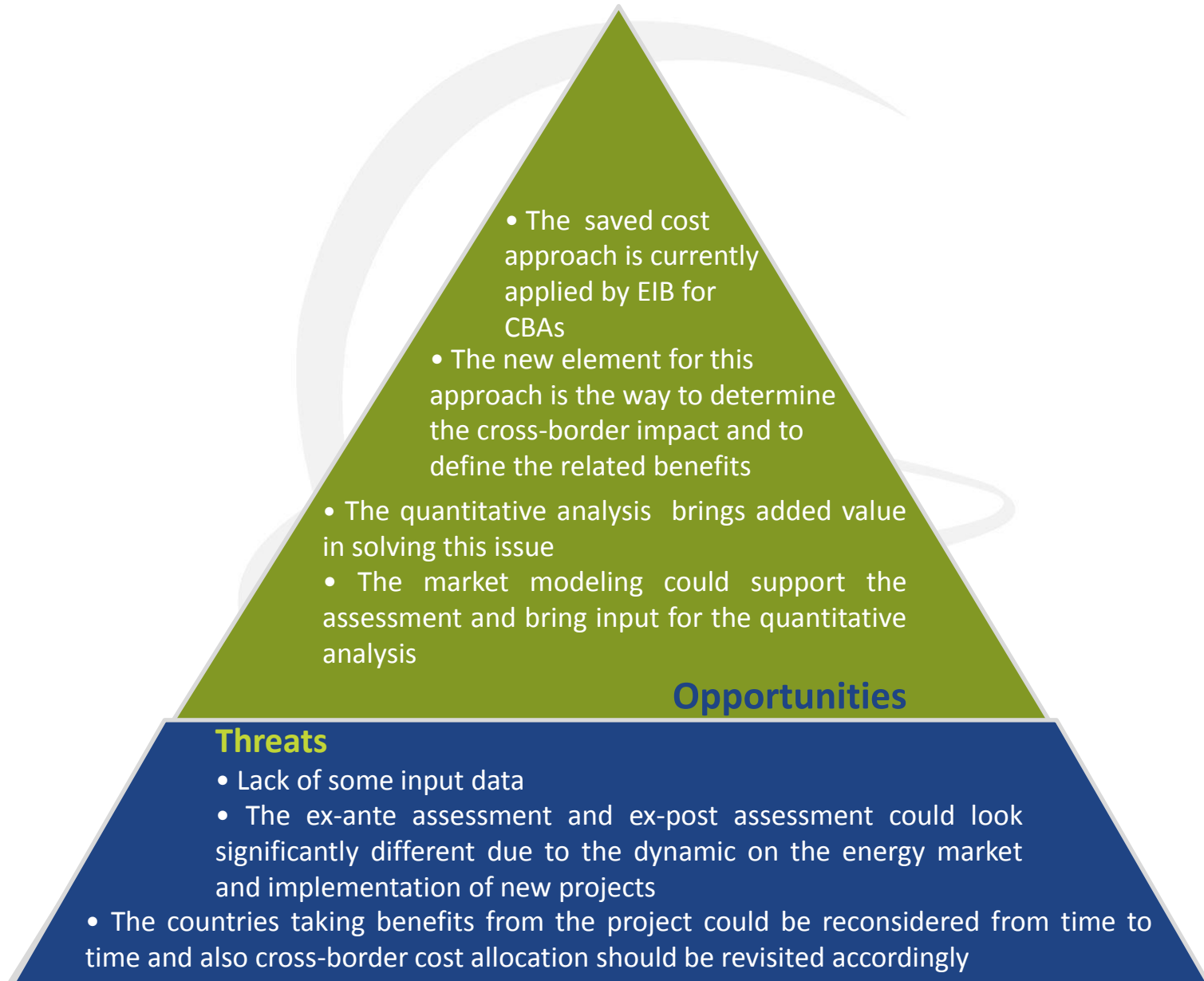
Strengths

- Generally, available input data to support the saved cost calculation/country
- Common reference data and input data based on TYNDP could avoid any bias in the assessment of different type of projects
- The quantitative analysis could give important information regarding the potential volumes distribution in each impacted country
- The approach could support the cross-border cost allocation, based on the benefits calculated /impacted country
- The input data (flow pattern, distribution of volumes) could be supported and enhanced by the modelling tool

Weaknesses

- The long time horizon could bring uncertainty in assessment
- Lack of some necessary input data (cost of disruption, etc)

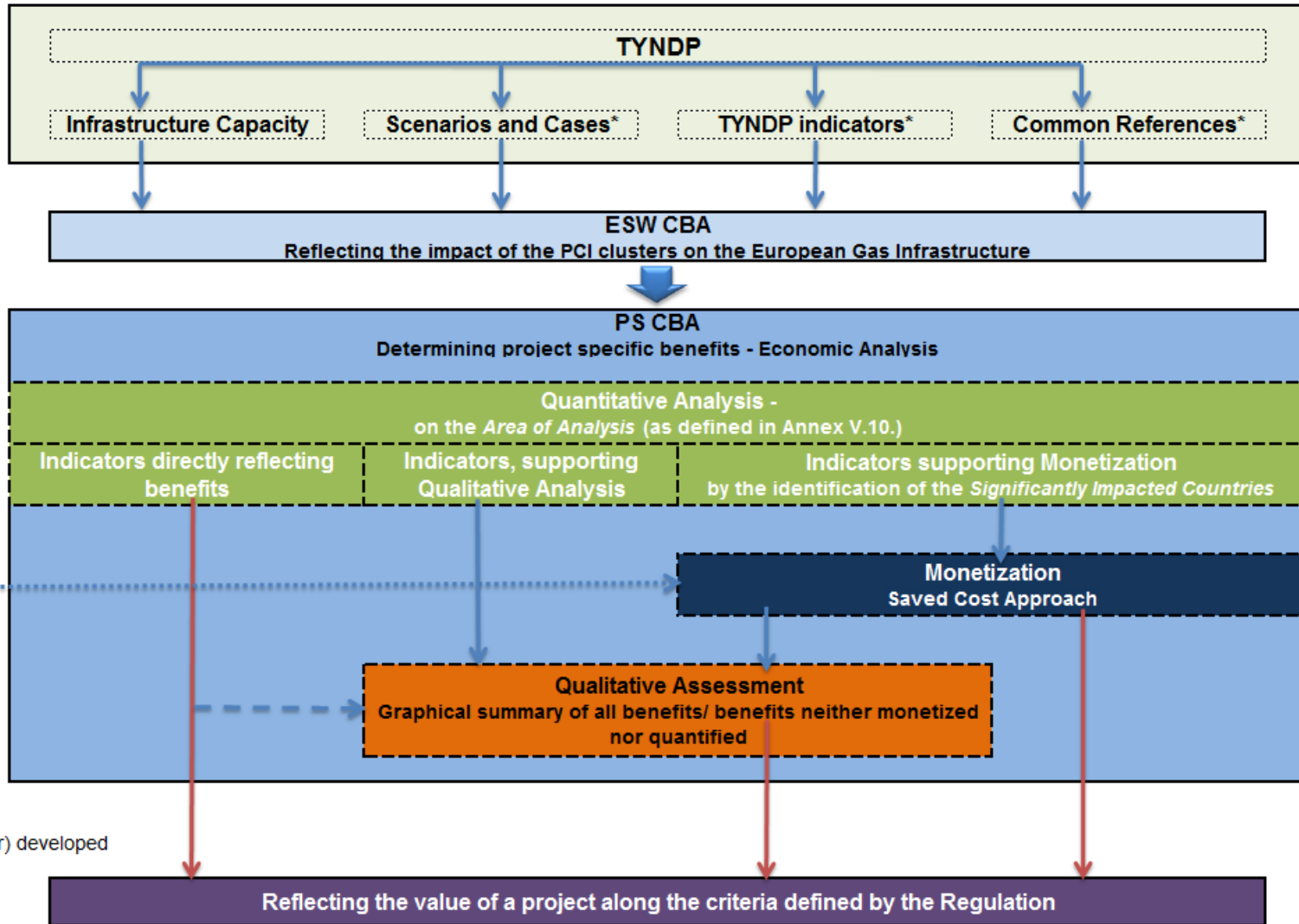
SWOT analysis for the saved cost approach





Synergies of PS-CBA methodology

Synergies of PS-CBA methodology



Region of Impact

Regulation stipulates the following (Annex V. 10.):

- > *"The **area for the analysis** of an individual project shall cover all Member States and third countries, on whose territory the project shall be built, all directly neighbouring Member States and all other Member States **significantly impacted** by the project."*
- > According to ENTSOG's understanding on the above sentence, the **Area of Analysis** should cover at least:
 - All countries where the project is built (MSs + 3rd Countries)
 - Directly neighbouring (*connected*) MSs
 - All other Member States significantly impacted
- > The aim of the analysis is to determine the significantly impacted countries which could be:
 - Any directly or indirectly interconnected Member States
- > **Area of Analysis** is larger than the **Area of Significant Impact**

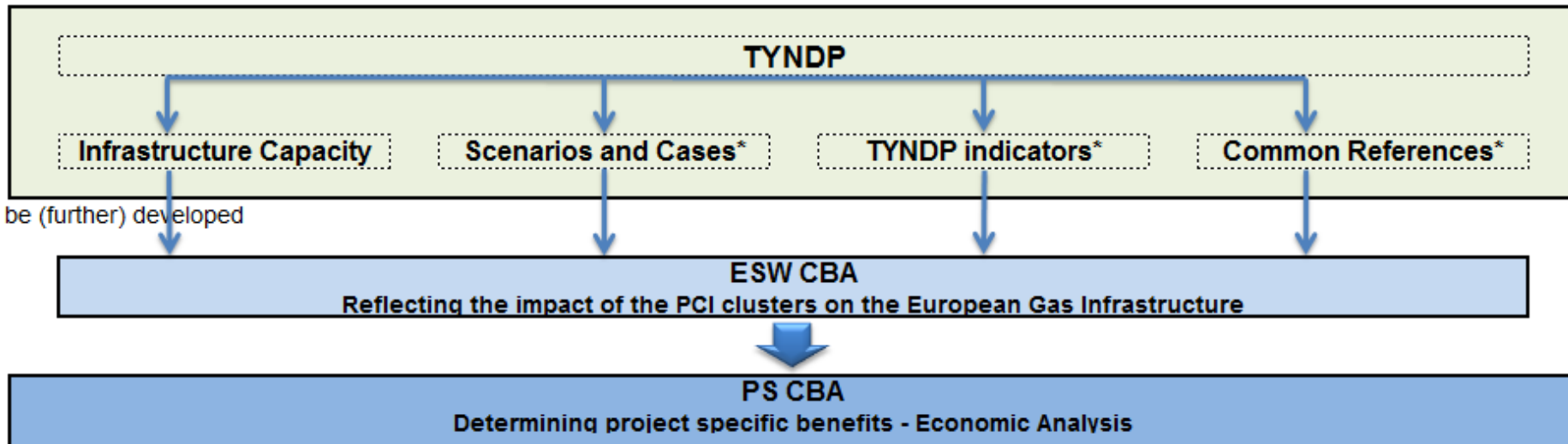
*ENTSOG's approach is to prove, within **the Area of Analysis**, the **significantly impacted countries (Area of Significant Impact)***. The Quantitative Analysis could be the best tool to reflect it as an output.*



Synergies between TYNDP and ESW-CBA

Energy System-Wide Cost Benefit Analysis

Synergy between TYNDP and the ESW CBA



TYNDP to serve as basis for ESW CBA. Scenarios & cases, incl. the respective data, used within ESW will be used with PS CBA to ensure consistency and comperability

The Energy System-Wide Cost Benefit Analysis

Enhancement of the TYNDP is necessary in the following areas

- > **Common Reference Data section** to be developed which will serve as input for the ESW and PS CBA -- prices (gas, CO₂, energy mix policy scenarios etc...)
- > **New indicators** to the currently available ones might be used within TYNDP to support ESW Analysis
- > Development of **new infrastructure clusters** is necessary, in order to be able to show the incremental effects of the PCI (candidate) projects

Non-PCI Non-FID	PCI Non-FID
Non-PCI FID	PCI FID
Existing Infrastructure	

- > **Sustainability Section** of TYNDP shall be enhanced in order to comply with the requirements of the Regulation

Questions for the 1st SJWS

The questions reflect the topics of the agenda and aim to clarify some controversial views reflected within the feedback

- > *Do you consider that the combined approach could address in a robust and transparent way the requirements of the Regulation?*
- > *Does the synergy of the methodology support the project promoter to reflect logical and reliable results?*
- > *Do you agree with ENTSOG's understanding of the area of analysis and the significantly impacted countries:*
 - *Area of analysis as an input for the quantitative and qualitative analysis*
 - *Significantly impacted countries as output of quantitative analysis and input for monetization?*
- > *Do you agree that the saved cost approach is the most appropriate solution to compose the economic flow?*
- > *Do you agree that new infrastructure clusters are needed in ESW to reflect the impact of PCIs?*



Conclusions and next steps

--

To be discussed at the 1st SJWS

Thank You for Your Attention

Adela Comanita, Adam Balogh
Advisers
Olivier Lebois
Senior Adviser

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

EML: Adela.comanita@entsog.eu
WWW: www.entsog.eu Adam.Balogh@entsog.eu
Olivier.Lebois@entsog.eu