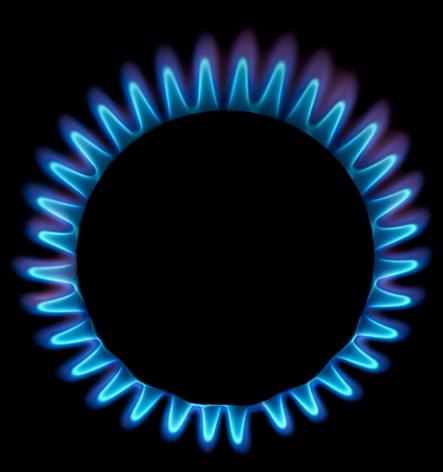
Deloitte.





FSR Webinar

Public Consultation on Recommendable Updates for Gas CBA 2.0 Friday 10 March 2017

The role of the ESW-CBA methodologies

Regulation 347/2013 \rightarrow The ESW-CBA methodologies should "enable a harmonized energysystem wide cost-benefit analysis at Union level of projects of common interest [...]" and should "be applied for the preparation of each TYNDP"

The CBA methodology should:

- Be used to prepare TYNDP \rightarrow assessment of infrastructure needs and aggregated CBA
- Enable the assessment of PCI candidates' eligibility according to the Regulation's criteria \rightarrow primary indicators needed
- Enable comparison of PCI candidates by Regional Groups and support the establishment of the regional lists → comparison based on costs and benefits, CBA, multi-criteria analysis (CBA)
- Provide necessary data to carry out CBCA and investment requests treatment

Reviewing the gas ESW-CBA Context and objectives

The Regulation plans for regular updates of the CBA methodologies

Current methodology rolled-out in 2015 \rightarrow used for TYNDP 2017 and 2nd & 3rd PCI selection process

2017 update to be finalized by end of 2017 and applied for TYNDP 2018 and 4th PCI list

The current gas CBA methodology characterized by shortcomings and overall complexity \rightarrow motivation for an in-depth study for DG-ENER

Overall objective \rightarrow propose recommendable updates or improvements to the gas ESW-CBA

Taking into account the best possible ways to conduct CBA, CBA and PCI selection from a theoretical perspective

Integrating the constraints and opportunities for ENTSOG to carry on the updates

Integrating the benefits for ESW-CBA users and stakeholders

Reviewing the gas ESW-CBA Context and objectives

The Regulation plans for regular updates of the CBA methodologies

Current methodology rolled-out in 2015 \rightarrow used for TYNDP 2017 and 2nd & 3rd PCI selection process

2017 update to be finalized by end of 2017 and applied for TYNDP 2018 and 4th PCI list

The current gas CBA methodology characterized by shortcomings and overall complexity \rightarrow motivation for an in-depth study for DG-ENER

Overall objective \rightarrow propose recommendable updates or improvements to the gas ESW-CBA

Taking into account the best possible ways to conduct CBA, CBA and PCI selection from a theoretical perspective

Integrating the constraints and opportunities for ENTSOG to carry on the updates

Integrating the benefits for ESW-CBA users and stakeholders

Objective of the survey

Reviewing the gas ESW-CBA

Theoretical principles of a cost-benefit analysis applied to gas infrastructure projects

Transparent, opposable and robust modelling tool producing realistic outcomes

Harmonised monetization of relevant impacts and outputs

Integration of uncertainty and risk in the evaluation

Standardised process to compare and rank projects

Arbitrage between realism and simplicity

Show of hands Any update of the CBA methodology...



The update of the CBA methodology should lay out clearly and explicitly the steps for project promoters to follow when doing the assessment



The update of the CBA methodology should offer the tools to do a better calculation of the costs and benefits

Note: there is no right or wrong answer, the icons/colours are just for the show of hands

Findings and recommendations

Key issues along 4 dimensions

1 – Monetisation of benefits

4 monetized indicators

One VOLL for all

2 – Capacity to interpret and use outputs

Tens of indicators and hundreds of scenarios Every case equally probable, or not?

3 - Alignment with PCI selection, CBCA, ...

No full disaggregation at Member State level for CBCA

4 – Modelling assumptions

Flow model with assumption of perfect competition

15 recommendations to address these issues

1 – Monetisation of benefits

- 1A: Monetisation roadmap
- 1B: Go toward monetisation of market power
- 1C: Improve monetisation of security of supply
- 1D: Improve monetisation of CO2 impacts

2 – Capacity to interpret and use outputs

- 2A: Reduce the number of indicators
- 2B: Highlight the relevant future cases

2C: Go toward aggregation of yearly results per indicator

3 – Alignment with PCI selection, CBCA, ...

- 3A: Standardised and practical project fiche
- 3B: Verification of PCI input data
- 3C: Enable the identification of clusters and competing projects
- 3D: (Monetised) indicators at MS level for CBCA

- 4A: More realistic demand assumptions
- 4B: Correct the impact of commercial constraints and transportation costs on flow setting
- 4C: Advance market modelling to include gaming
- 4D: Advance the use of common models

15 recommendations to address these issues

^{1A} These recommendations should be balanced regarding:

\rightarrow Rein 1. Feasibility and <u>complexity</u> of efforts vs. simplicity

15 recommendations to address these issues Complexity vs. simplicity

1 – Monetisation of benefits

- 1A: Monetisation roadmap
- 1B: Go toward monetisation of market power
- 1C: Improve monetisation of security of supply
- 1D: Improve monetisation of CO2 impacts

2 - Capacity to interpret and use outputs

- 2A: Reduce the number of indicators
- 2B: Highlight the relevant future cases

2C: Go toward aggregation of yearly results per indicator

3 – Alignment with PCI selection, CBCA, ...

- 3A: Standardised and practical project fiche
- 3B: Verification of PCI input data
- 3C: Enable the identification of clusters and competing projects
- 3D: (Monetised) indicators at MS level for CBCA

- 4A: More realistic demand assumptions
- 4B: Correct the impact of commercial constraints and transportation costs on flow setting
- 4C: Advance market modelling to include gaming
- 4D: Advance the use of common models

Show of hands

All improvements are equal, but some improvements are more equal than others...



If an improvement is conceivable, the improvement should be implemented



The improvements should focus on improved functionality of the CBA methodology considering its intended purposes

Note: there is no right or wrong answer, the icons/colours are just for the show of hands

15 recommendations to address these issues

1 - Monetisation of benefits

2 - Capacity to interpret and use outputs

- These recommendations should be balanced
- ^{1B: Go t}regarding:^{on of market power}
- 1C: Improve monetisation of security of supply

1D: Improve monetisation of CO2 impacts

- 1. Feasibility and complexity
- 2. Expected <u>benefits</u> (and costs)

3 - Alignment with PCI selection, CBCA, ...

- 3A: Standardised and practical project fiche
- 3B: Verification of PCI input data
- 3C: Enable the identification of clusters and competing projects
- 3D: (Monetised) indicators at MS level for CBCA

- 4A: More realistic demand assumptions
- 4B: Correct the impact of commercial constraints and transportation costs on flow setting
- 4C: Advance market modelling to include gaming
- 4D: Advance the use of common models

15 recommendations to address these issues Expected benefits and costs

1 – Monetisation of benefits	2 – Capacity to interpret and use outputs
1A: Monetisation roadmap	2A: Reduce the number of indicators
1B: Go toward monetisation of market power	2B: Highlight the relevant future cases
1C: Improve monetisation of security of supply	2C: Go toward aggregation of yearly results per
1D: Improve monetisation of CO2 impacts	indicator

3 – Alignment with PCI selection, CBCA,	4 -
24. Standardized and practical project fiche	44.

- 3A: Standardised and practical project fiche
- 3B: Verification of PCI input data
- 3C: Enable the identification of clusters and competing projects
- 3D: (Monetised) indicators at MS level for CBCA

- 4A: More realistic demand assumptions
- 4B: Correct the impact of commercial constraints and transportation costs on flow setting
- 4C: Advance market modelling to include gaming
- 4D: Advance the use of common models

15 recommendations to address these issues

1 – Monetisation of benefits

2 – Capacity to interpret and use outputs

- These recommendations should be balanced
- ^{1B: Go} tregarding:

2B: Highlight the relevant future cases

2C: Go toward aggregation of yearly results pe indicator

1D: Improve monetisation of CO2 impacts

- 1. Feasibility and complexity of efforts vs. simplicity
- 2. Expected benefits (and costs)
- 3. Timing: short vs. long term

3 - Alignment with PCI selection, CBCA, ..

- 3A: Standardised and practical project fiche
- 3B: Verification of PCI input data

3C: Enable the identification of clusters and competing projects

3D: (Monetised) indicators at MS level for CBCA

- 4A: More realistic demand assumptions
- 4B: Correct the impact of commercial constraints and transportation costs on flow setting
- 4C: Advance market modelling to include gaming
- 4D: Advance the use of common models

15 recommendations to address these issues Short vs. long term

1 – Monetisation of benefits

- 1A: Monetisation roadmap
- 1B: Go toward monetisation of market power
- 1C: Improve monetisation of security of supply
- 1D: Improve monetisation of CO2 impacts

2 - Capacity to interpret and use outputs

- 2A: Reduce the number of indicators
- 2B: Highlight the relevant future cases

2C: Go toward aggregation of yearly results per indicator

3 – Alignment with PCI selection, CBCA,	4 – Modelling assumptions
3A: Standardised and practical project fiche	4A: More realistic demand assumptions
3B: Verification of PCI input data	4B: Correct the impact of commercial constraints
3C: Enable the identification of clusters and	and transportation costs on flow setting
competing projects	4C: Advance market modelling to include gaming
3D: (Monetised) indicators at MS level for CBCA	4D: Advance the use of common models

16

15 recommendations to address these issues

1 – Monetisation of benefits

2 – Capacity to interpret and use outputs

- These recommendations should be balanced
- ^{1B: Go} tregarding:

2B: Highlight the relevant future cases

2C: Go toward aggregation of yearly results pe indicator

1D: Improve monetisation of CO2 impacts

- 1. Feasibility and complexity of efforts vs. simplicity
- 2. Expected benefits (and costs)
- 3. Timing

4. Interdependence

- 3A: Standardised and practical project fiche
- 3B: Verification of PCI input data

3C: Enable the identification of clusters and competing projects

3D: (Monetised) indicators at MS level for CBCA

- 4A: More realistic demand assumptions
- 4B: Correct the impact of commercial constraints and transportation costs on flow setting
- 4C: Advance market modelling to include gaming
- 4D: Advance the use of common models

15 recommendations to address these issues Interdependence

1 – Monetisation of benefits

- 1A: Monetisation roadmap
- 1B: Go toward monetisation of market power
- 1C: Improve monetisation of security of supply
- 1D: Improve monetisation of CO2 impacts

2 – Capacity to interpret and use outputs

- 2A: Reduce the number of indicators
- 2B: Highlight the relevant future cases

2C: Go toward aggregation of yearly results per indicator

3 – Alignment with PCI selection, CBCA, ...

- 3A: Standardised and practical project fiche
- 3B: Verification of PCI input data
- 3C: Enable the identification of clusters and competing projects
- 3D: (Monetised) indicators at MS level for CBCA

- 4A: More realistic demand assumptions
- 4B: Correct the impact of commercial constraints and transportation costs on flow setting
- 4C: Advance market modelling to include gaming
- 4D: Advance the use of common models

For each recommendation, the consultation report details

Why?

Issues identified with regard to economic theory on CBA

Perceptions on actual benefits of the recommendation for stakeholders

How?

Steps and timing

Alternative methods

Feasibility

Technical requirements Allocation of responsibilities

	Monitor Deloitte. Deloitte.		
St	Study on recommendable updates and improvements of the energy system-wide cost-benefit analysis for gas		
	Consultation document		
Wie.	encourage stakeholders to write comments directly in this consultation document through track		
cha	ges and send it via e-mail to <u>nico Revents@eulau.</u> consultation document can be downloaded here: <u>http://fsr.eul.eu/gas-cha-consultation/</u>		
Con	itents		
INT	00UCTION		
1	SCOPE AND CURRENT FEATURES OF THE GAS ESW-CBA METHODOLOGY		
1	RESULTORY DEPOSITIONS CONCERNING THE ESW-CBA VETHODOLOGY IS 646		
1	2 Discription of the 2015 Mitheodology		
2	REVIEW OF THE GAS ESW-CBA METHODOLOGY		
2	1 Scope of the Alarian		
2	1 Source the reverse		
2 2 3	Source the reside Source of a cost-design as the residence of a cost-design as the restores of a cost-design as the restore of a cost-design as th		
2 2 3 3	SOUPLOF THE PROVIDE SOUPLOF THE PROVIDED OF A COST - UNUEL AND VIS A PR. 32 TO GAS INFAULT UCTALLE MODILETS - 6 ECOMMENDATION TO INPROVE THE GAS ESV-CBA METHODOLOGIES SOUPLOSE OF A COST - UNUEL AND VISION OF A COST - UNUEL AND VISI		
2 2 3 3 3	Source the next Source the next Televence in weather on the Heav book of a cost-level of analysis are do to data weather Level to data weather Source and Source		
2 2 3 3 3 3 3	1 Score of the install 1 2 Telesentrial reservition the Haw these of a contra-bruik it ask, size ask, size to ask the termination in the installation. 1000000000000000000000000000000000000		
2 2 3 3 3 3 3	Scorr or Hill Novim		
2 2 3 3 3 3 3	Scorr or Hill Novim		
2 2 3 3 3 3 3	2 Televentors inselectory file Haw twolk of a cost+-link if a six-sis ark station as instant sectors. If RECOMMENDATIONS TO INPROVE THE GAS ESW-CBA METHODOLOGIES .10 1 Recommendations to Inversion and International and International Cost .10 2 Recommendations to Inversion and International and International Cost .10 3 Recommendations VE-Association and Homemon Cost .12 3 Recommendations VE-Association and Homemon Cost .12		
2 2 3 3 3 3 3	Scorr or Hill Novim		

Focus on specific recommendations

1 – Monetisation of benefits

- 1A: Monetisation roadmap
- 1B: Go toward monetisation of market power
- 1C: Improve monetisation of security of supply
- 1D: Improve monetisation of CO2 impacts
- \rightarrow Reinforce the monetization

2 - Capacity to interpret and use outputs

- 2A: Reduce the number of indicators
- 2B: Highlight the relevant future cases

2C: Go toward aggregation of yearly results per indicator

\rightarrow Simplify the outputs

3 – Alignment with PCI selection, CBCA, ...

- 3A: Standardised and practical project fiche
- 3B: Verification of PCI input data
- 3C: Enable the identification of clusters and competing projects
- 3D: (Monetised) indicators at MS level for CBCA

- 4A: More realistic demand assumptions
- 4B: Correct the impact of commercial constraints and transportation costs on flow setting
- 4C: Advance market modelling to include gaming
- 4D: Advance the use of common models

Recommendation 2B

Highlight the relevant future cases

Why?

How?

The current approach considers future scenarios concerning demand, supply, CO₂, price configurations, disruptions leading to **hundreds of simulation cases**

Challenging to filter and

interpret the resulting output indicators, especially with respect to the **uncertainty** of the cases

3 options

- Co-define a limited number of future cases that are of interest to the users of the CBA outputs
- Consider all future cases and discard information afterwards
- Automate the probability analysis of output values by Monte Carlo analysis

Feasibility?

Who should have the **final say** on the selected cases (preselection and discarding)?

In all the options data collection and validation remains a challenge Show of hands On relevant future cases (2B)



The methodology is indifferent to all possible futures and must offer as much information as possible to the CBA users



The CBA users are interested in a subset of futures; these cases have to be codefined with ENTSOG before performing the CBA

Note: there is no right or wrong answer, the icons/colours are just for the show of hands

Recommendation 4B

Correcting the impact of commercial constraints and transportation costs on flow setting

Why?

How?

Pipelines are modelled as a set of pipeline slices with increasing weight if a next slice is used to maximize spreading of flows.

Explicit modelling of the

market assumptions regarding demand, marginal cost of supply and marginal cost of using pipelines as perceived by grid users and contractual constraints

Feasibility?

The inclusion of detailed transmission costs based on hydraulic modelling or the inclusion of entry-exit tariffs is **non-trivial**. Show of hands On modelling gas flows (4B)



The methodology should focus on checking feasible flows independent of grid users; it provides sufficient information for CBA users



The methodology should have an assumption on how the grid and the grid users behave to model flows

Note: there is no right or wrong answer, the icons/colours are just for the show of hands



The remaining recommendations and the complete consultation report are available at:

http://fsr.eui.eu/gas-cba-consultation/

We welcome and thank you in advance for your feedback by March 24

Sébastien Douguet sdouguet@deloitte.fr Nico Keyaerts nico.keyaerts@eui.eu

Open discussion

Proposed starting point

Preliminary classification of recommendation

- Monetization
- Interpret and use results
- Alignment with PCI selection & CBCA
- Modelling assumptions

