ENTSO-E Cost-Benefit analysis methodology for development Electricity projects

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Regional Group CCS Stakeholder Workshop

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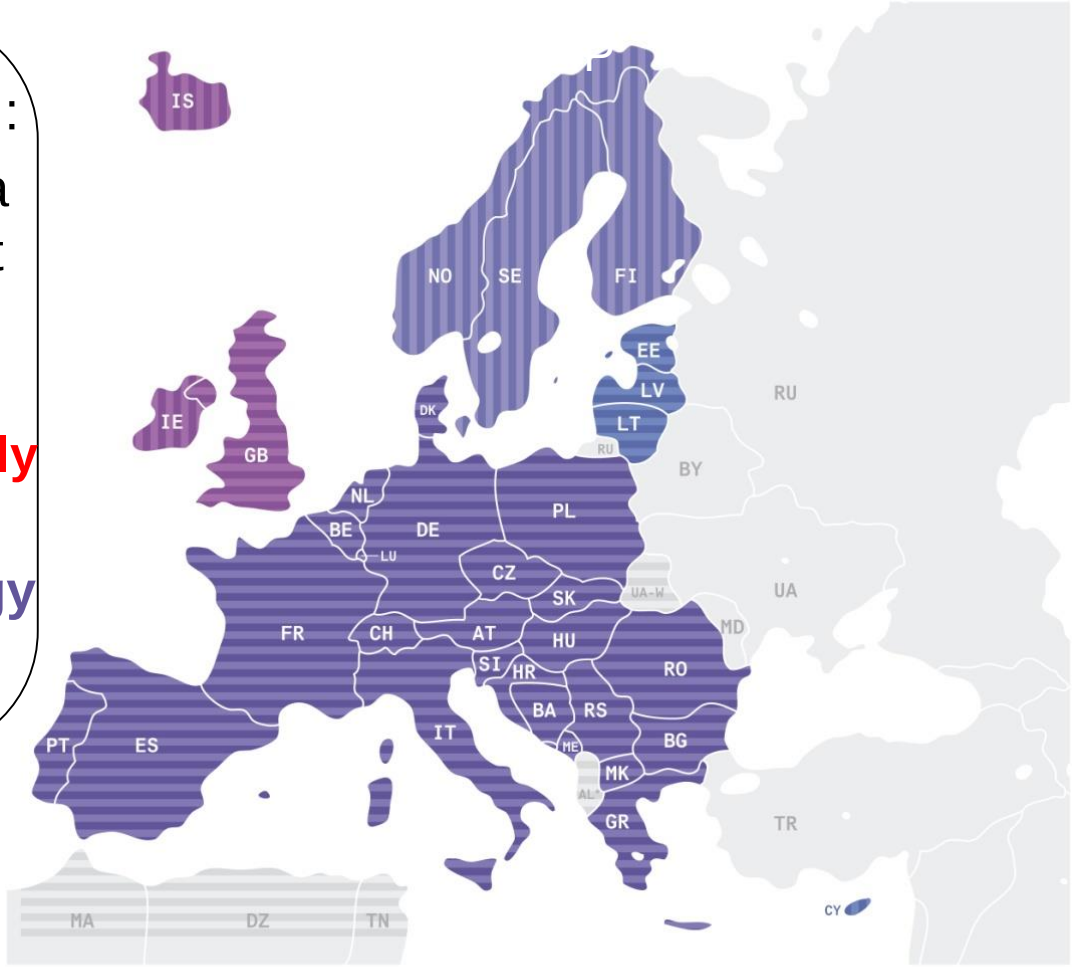
Reliable Sustainable Connected

European power system

Objectives of EU power networks :

- ensuring the development of a single European grid to permit the **20-20-20 objectives**
- guaranteeing **security of supply**
- completing the **internal energy market**



Regulatory Framework

Regulation 347/2013 mandates ENTSO-E to:

- Deliver a methodology for a **harmonised energy system-wide cost-benefit analysis at Union level** for projects of common interest, including on network and market modelling

- Make ENTSO-E **TYNDP sole basis** for selection of electricity projects of common interest (PCI)

- Deliver a consistent and interlinked **electricity and gas market and network models**, jointly with ENTSO-G, including both electricity and gas transmission infrastructures covering the energy infrastructure priority corridors

Mandatory from TYNDP 2016

Objectives of system wide CBA methodology

Giving Transparency on TYNDP projects assessment

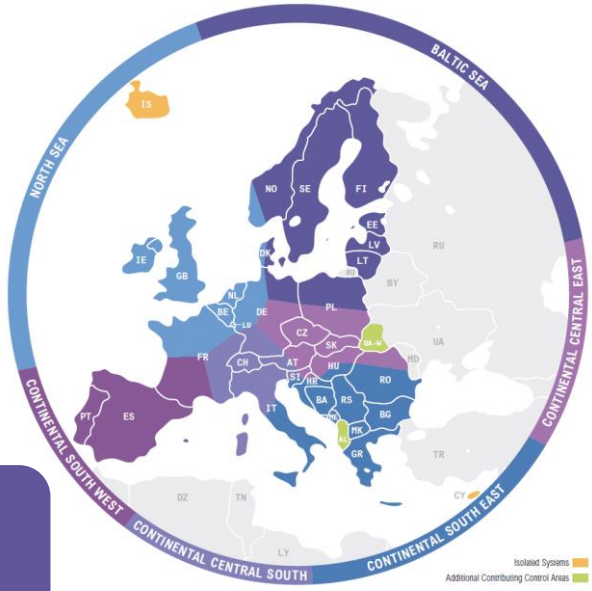
- Harmonized EU energy system-wide CBA
- Demonstrate overall costs and benefits from a Pan-European system perspective

Supporting Selection Projects of common interest (PCI

- PCI Selection process will take into account ENTSO-E CBA results in TYNDP

CBA as possible input to decision-making process

- CBA results as one of possible input for Cross Border Cost Allocation (CBCA)



Tool to assess all Pan-EU development projects

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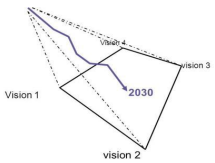
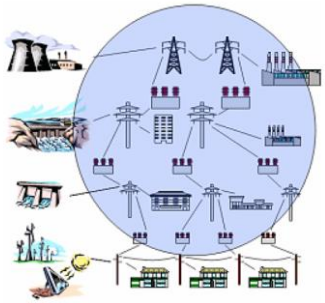
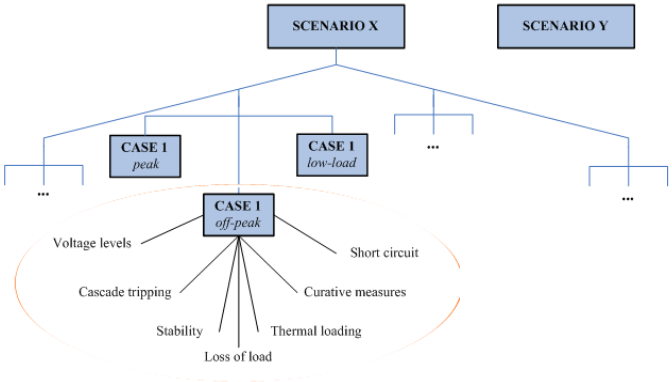
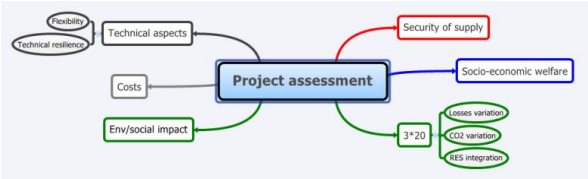
General approach to Cost Benefit Analysis



Scenarios building → **Analysis of different planning cases** → **Multi-Criteria Analysis of benefits and costs of Pan-EU transmission projects**







Project Assessment methodology

TOOT – Take Out One at a Time:

- Project assessment in most plausible future
- Conservative approach
- Reference network: «all-projects-in» considering needs on each border

Clustering: basic rules

- Project assessment in most plausible future
- Conservative approach

Maybe some needs for adaptations:

- In case of non-mature projects
- Accordance to Scenarios

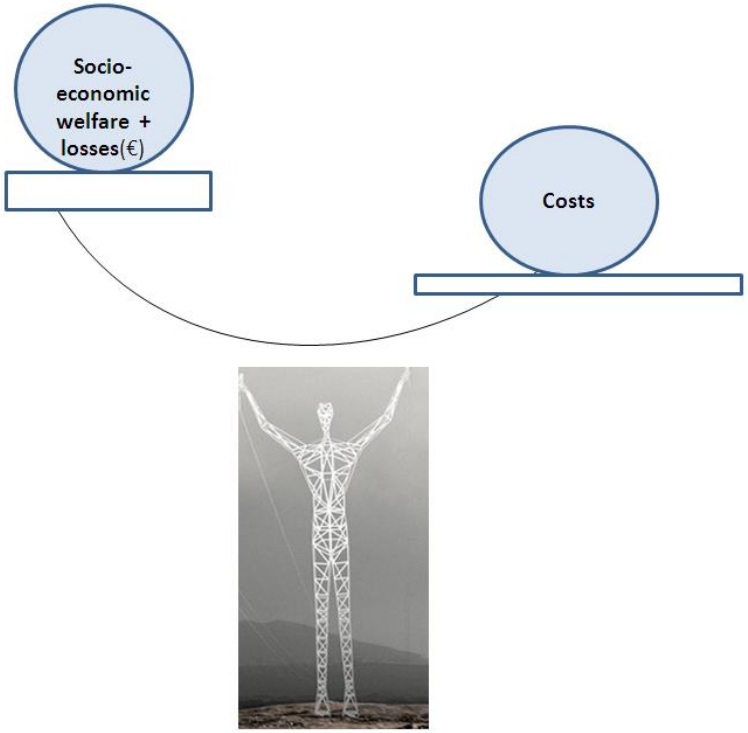
Full developed European Transmission grid

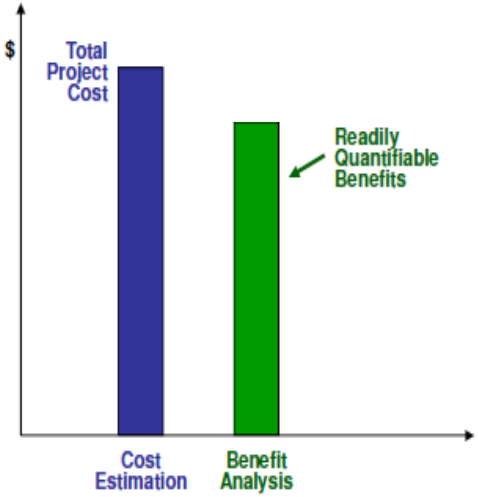
Equal treatment assured for both TSOs and third Party Projects

General approach to CBA: get the balance right

Project Assessment

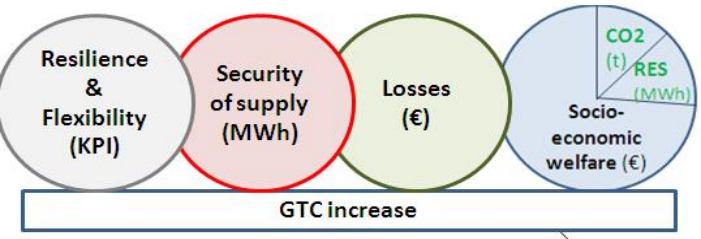
Balancing exercise

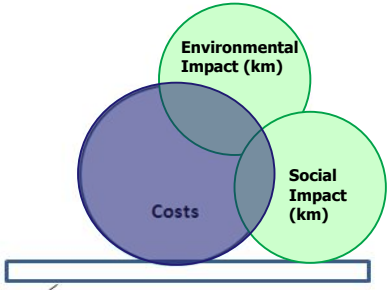


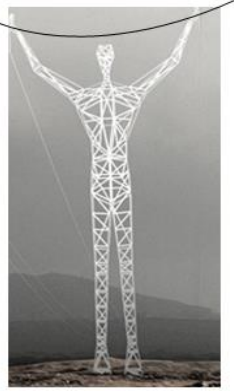


How to ensure that benefits outweigh costs ?

Benefits/Costs Computation

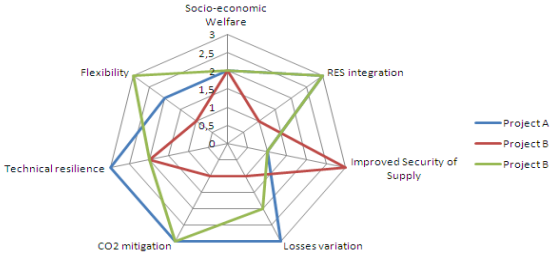






Results Presentation

Criteria	Grid Transfer Capability Increase	Socio-economic Welfare	RES integration	Improved Security of Supply	Losses variation	CO2 mitigation	Technical resilience	Flexibility	Social and environmental Impact	Project costs
	MW	M€/year	MWh/year	MWh/year	M€	Mt				M€
Project A	1000	90-150	500-550			0,5-0,6	+++	++		650-700
Project B	500	30-50		3000	20-30		++			25
Project C	800	225-30	3000-3500		10-20	1-1,5	++	+++		150



Best&most complete information for stakeholders and decision-makers

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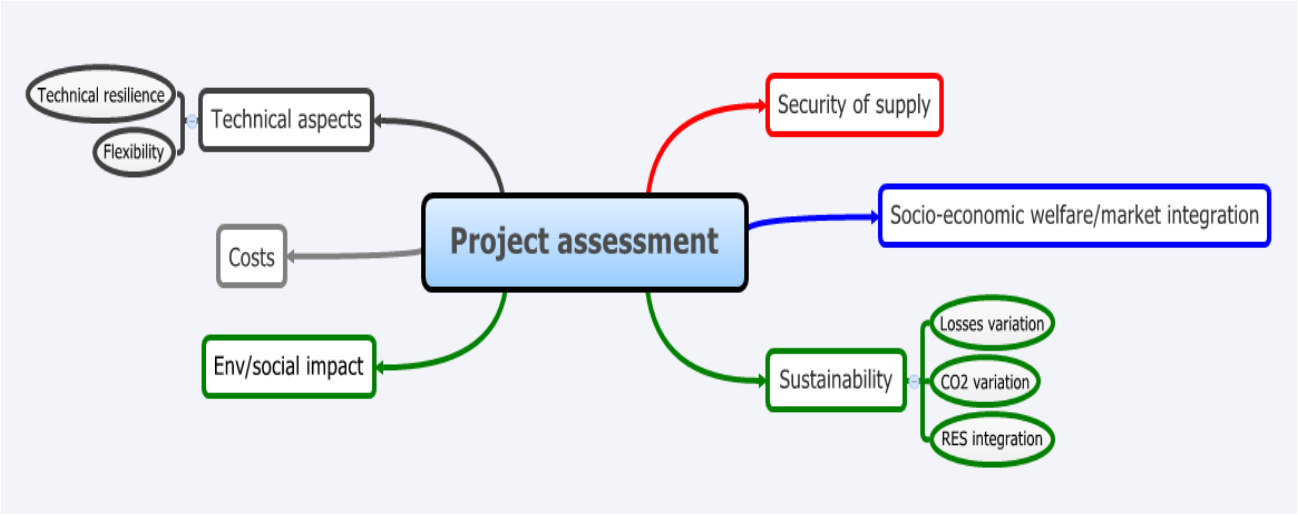
Benefits framework

Benefits framework



Stem from European Policies
+
Regulation 347/2013

Quantification of all indicators

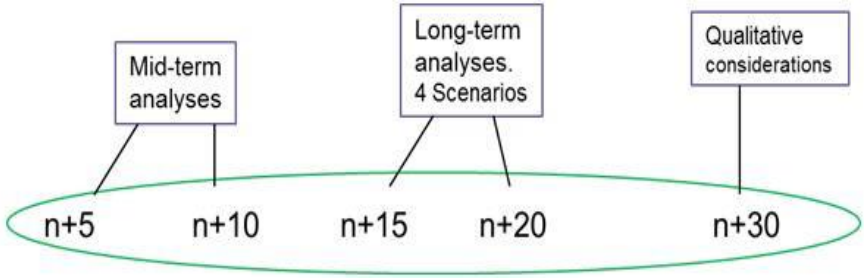
✓Geographical framework

-Pan-European database

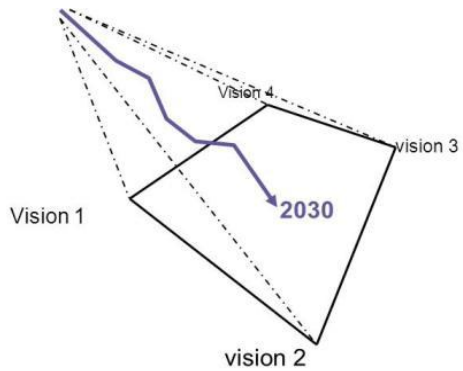
-Simulation ENTSO-E Regions + neighbours

How to address uncertainties: scenarios & time horizons

Time horizons



Scenarios



TYNDP 2014:
4 Scenarios for one time horizon

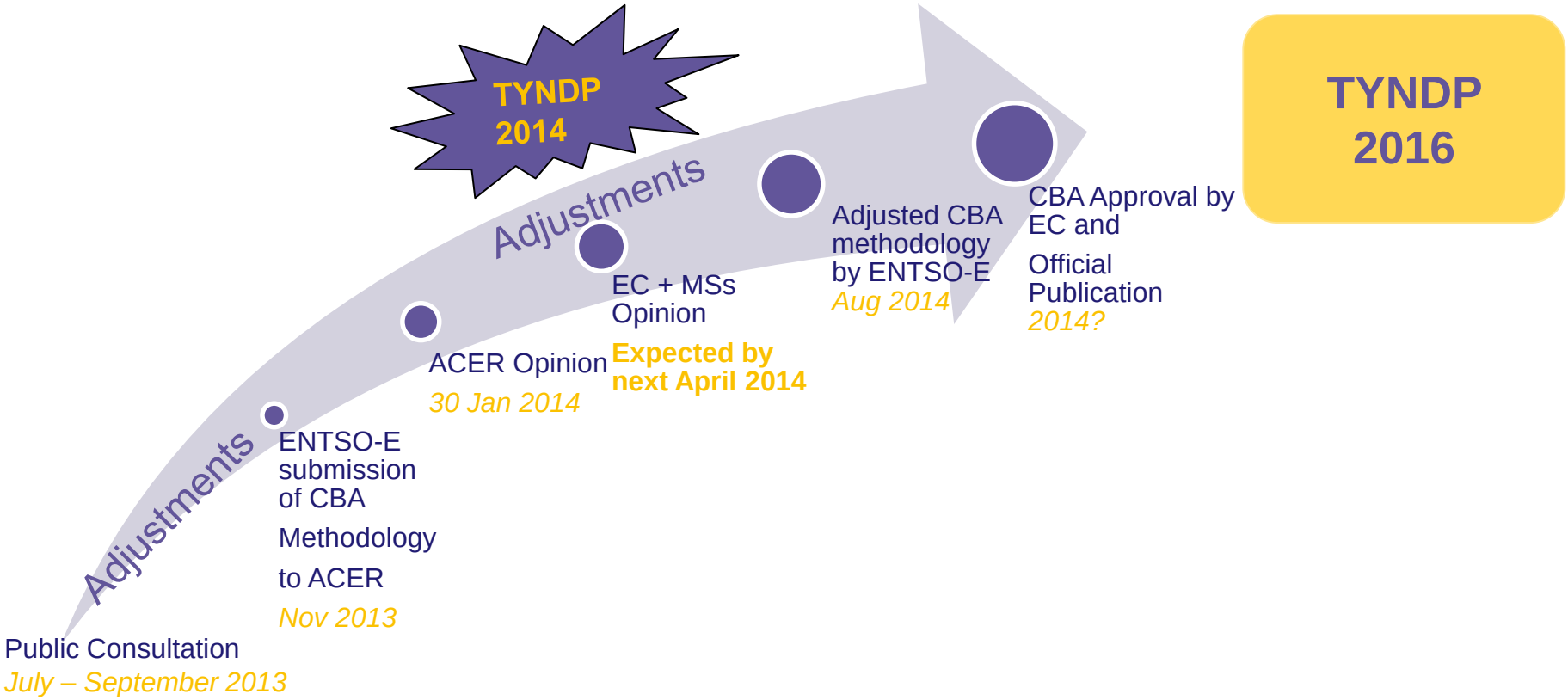
TYNDP 2016:
Scenarios and at least two time horizons

Sensitivity analysis
- Range of values

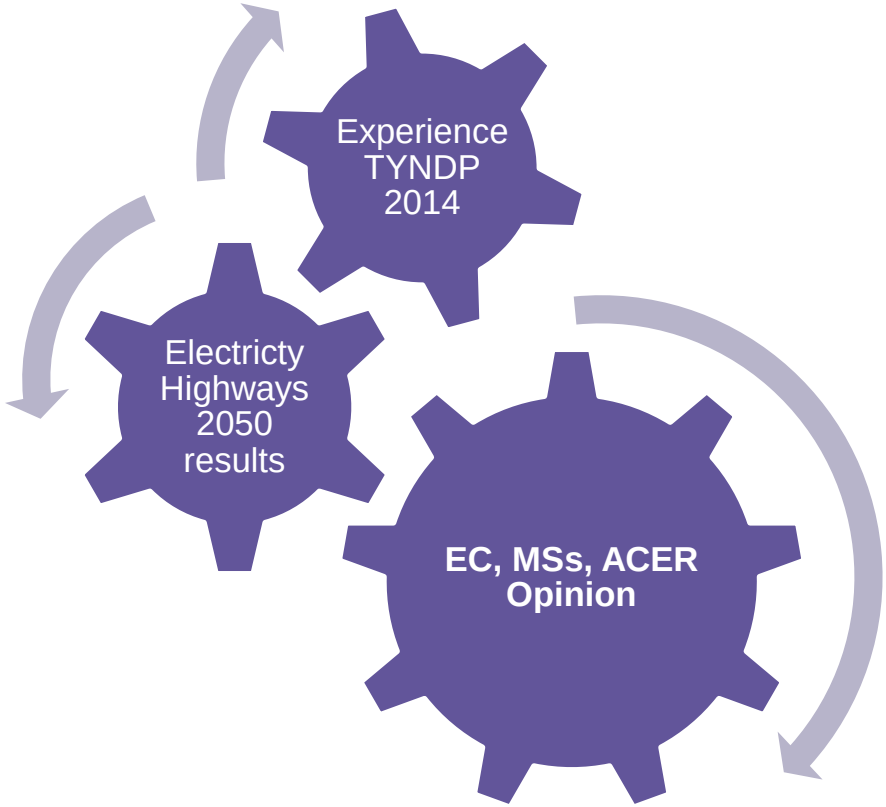
CBA quality depends mainly on quality of input assumptions !

Finalization of ENTSO-E CBA Methodology

- A continuous dialogue with stakeholders
- ENTSO-E submitted its CBA Methodology to Member States, the Commission and ACER for their relevant opinion on 15 November 2013



Future improvements needed on CBA Methodology



Further CBA Improvements

- ✓ Definition of a single discounting rate factor at Eu level
- ✓ Medium-term and Long-term Time horisons for Analysis
- ✓ Remark equal and fair traitment for all TYNDP Projects
- ✓ Implementing a detailed CBA part for Storage projects
- ✓ Including terms and definitions in an homogeneous way
- ✓ CBCA Guidance on CBA support

Conclusion

Why use ENTSO-E CBA Methodology:

- ✓ Have harmonised energy system-wide cost-benefit analysis at Union level for PCIs and TYNDP projects
- ✓ Tool to assess all Pan-EU development projects benefits
- ✓ Demonstrate overall costs and benefits from a Pan-European system perspective
- ✓ Transparency on projects assessment
- ✓ Enable decision-makers to evaluate all features of each development project
- ✓ Guarantee fair and equal treatment for TSOs and 3rd parties
- ✓ .....
- ✓ **We are pleasured to continue the list!!!!**