RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

COMMISSION
DE RÉGULATION
DE L'ÉNERGIE

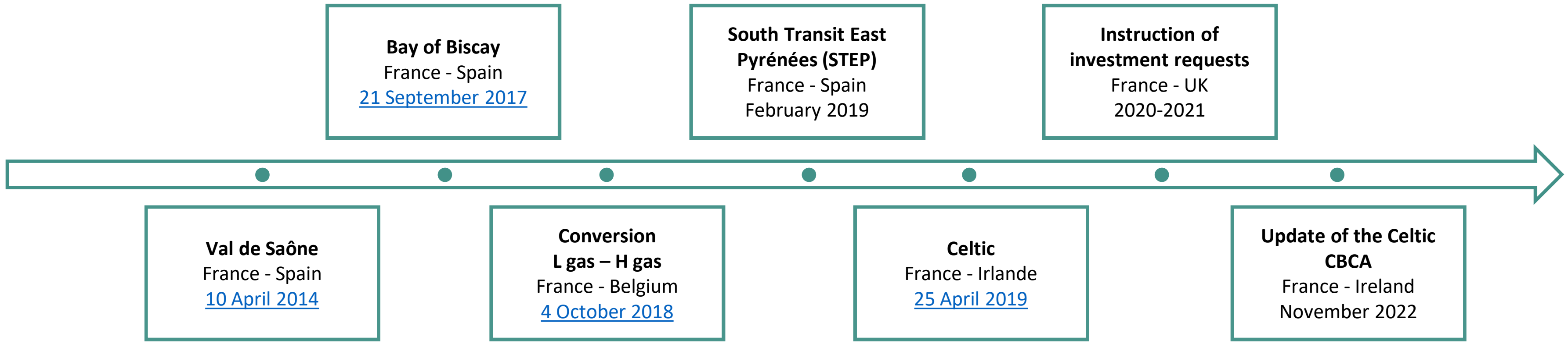
CBCA: some learnings from the experience of CRE

Benoît Esnault
Head of Interconnections and European Networks

ACER stakeholder workshop on CBCA experience
16/03/2023

CRE's experience in terms of CBCAs

- 4 CBCA decisions:
  - Val de Saône (gas pipeline reducing north-south congestions, CBCA with Spain)
  - L-H gas conversion process (with Belgium)
  - Biscay Gulf electricity interconnection (with Spain)
  - Celtic electricity interconnection (with Ireland)
- Rejection of a gas investment request due to a lack of maturity, STEP project (with Spain)
- Instruction of two investment requests with the UK (rejected because of the Brexit)
- Update of the CBCA for the Celtic project



CBCA, what are the issues from a regulator's perspective

PCIs result from a selection process where regulators do not really have a say (except expressing an opinion via ACER and in regional groups)

- Heavy process where CBAs are established on the basis of project fiches
- Project data are often very preliminary (especially regarding cost estimations
- Projects are supposed to bring a benefit (otherwise they would not be a PCI)

The PCI status should often be seen as a "presumption of positive benefit" deserving to be further investigated when comes the investment request

Investment requests, different situations leading to different challenges

- Balanced split of costs and benefits between host countries
- Imbalanced split of costs and benefits with high profitability
- Imbalanced split of costs and benefits with high uncertainty on several parameters

How to deal with uncertainty?

- A CBCA decision is never easy when comes a cross-border compensation
- The TEN-E guidelines work as if socio-economic benefits were a turnover but they're not
- CBAs are an indication of potential value viewed from an early perspective
- Subsidies help concluding a bilateral agreement when uncertainty is high

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

COMMISSION
DE RÉGULATION
DE L'ÉNERGIE

1. Role of scenarios in CBCA decisions

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

COMMISSION DE RÉGULATION DE L'ÉNERGIE

Issues with scenarios

Scenarios provide input data to CBAs

- They reflect certain visions of the future but do not pretend providing previsions
- In terms of CBAs, the question of their reliability is crucial: it is important to promote good projects
- Story lines are the basis of the description of future energy systems, there is a debate between depicting a desirable vs a likely future

The focus on describing a situation where policy objectives are met brings questions

- In terms of CBAs, that helps understanding the value of a project in a context of a successful policy…
- … But hardly to appreciate whether a project is necessary for achieving the objectives
- When policy goals change, scenarios change, leading to a lot of uncertainty in terms of project assessment

In the new TEN-E guidelines, the scenario used for the selection of projects should also be used for addressing the investment request

- Alternatives are possible but constrained (consultations…)
- A CBCA is a bilateral agreement, NRAs must have some liberty in discussing the relevant inputs for reaching a compromise

NRAs need contrasted scenarios to help understanding/capturing a "realistic value" for projects

The latest scenarios with disruptive technology developments (such as hydrogen) bring new challenges in terms of calculations and interpretations

RÉPUBLIQUE FRANÇAISE
Liberté Égalité Fraternité

COMMISSION DE RÉGULATION DE L'ÉNERGIE

Approach to scenarios for Bay of Biscay and Celtic projects

Several scenarios were analysed to test the effect of various variables on projects' value

Among the questions, what is the sensitivity to RES development, what would happen if the objectives are not met?...

In both cases, 4 scenarios were retained

- Bay of Biscay: the 4 2016 TYNDP scenarios, including the "behind the target" one
- Celtic: 2 2018 TYNDP scenarios, EUCO and a scenario chosen by NRAs to capture less favourable cases
- In both cases, CBAs were very different from a scenario to another, green scenarios generally delivered higher benefits

Contrasted outcomes from contrasted scenarios:

Bay of Biscay

2016 TYNDP Scenario	EU NPV (M€)
V1	-480
V2	-320
V3	-430
V4	660

Celtic

	Scenario (2018)	EU NPV (M€) under TSOs assumptions
entsoe	ST	350
entsoe	DG	220
European Commission	EuCo	-15
CRE / CRU	V1	-130

2. Role of CBAs and benefits allocation

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

COMMISSION DE RÉGULATION DE L'ÉNERGIE

CBAs consist in translating energy visions in economic parameters

The value of projects aggregates several dimensions

- Socio-economic welfare (SEW): generation cost reductions due to the new interconnection
- Environmental value: CO_2 savings
- Security of supply: complex to evaluate, from a simple approach like a substitution to a potential generation plant, to complex estimations base on non-supplied energy and VOLL

Assumptions on economic parameters play a structural role

- Cost of raw materials, fossil fuels (in particular gas and coal)
- Value of CO_2
- Financial parameters (discount rate, depreciation time, cost of capital...)

In sum, methodologies are key in terms of CBA outcomes

Both for Bay of Biscay and Celtic, SoS was important to make projects beneficial; outcomes were very different from a scenario to another

In terms of CBCA, need to calculate national values and address the potential specificities of countries

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

COMMISSION DE RÉGULATION DE L'ÉNERGIE

The example of Bay of Biscay

A few characteristics of Bay of Biscay project:

- Initial cost estimation: 1750 M€ (+/- 20%)
- Location of assets (and associated CAPEX): 70% in France, 30% in Spain

TSOs assumptions for calculating the net present value of the project

- 50/50 split of **CAPEX**
- 60/40 split of **OPEX between France and Spain respectively**
- 50/50 split of congestion rents
- 50/50 split of a "capacity value" (20 M€/y for each country) capturing security of supply

Scenario	NPV France (M€)	NPV Spain (M€)
V1	-320	420
V2	-630	1080
V3	-330	170
V4	250	1050
Average	-257	680

RÉPUBLIQUE FRANÇAISE
Liberté Égalité Fraternité

COMMISSION DE RÉGULATION DE L'ÉNERGIE

The example of Celtic

Celtic, a 930 M€ project between France and Ireland

The outcome of NPV calculations in the base case were very contrasted

NPV (M€ 2018), TSOs base case	Scenario	ST	DG	EuCo	V1	Average
France	NPV (without SoS)	-120	-160	-250	-220	-190
	NPV (with SoS)	70	15	-235	-180	-83
Ireland	NPV (without SoS)	245	100	10	-70	70
	NPV (with SoS)	420	260	215	145	260

Focus on key variables

Brent price (2015$/bbl)

- Average 2000-2015 : **$62/bbl**
- Assumptions of TYNDP for 2030 :

ST	DG	EuCo	V1	Average
111	111	104	88	103

CO_2 price (2015€/ton)

- Average 2011-2015 : **10€/ton**
- Assumptions of TYNDP for 2030 :

ST*	DG	EuCo*	V1	Moyenne
84	50	27	17	42

Electricity demand in France in 2030 (TWh)

- Projections RTE : **415-470 TWh**
- Assumptions of TYNDP for 2030 :

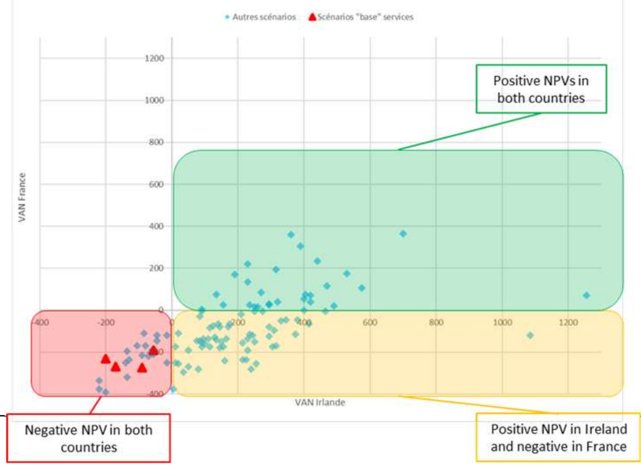
ST	DG	EuCo	V1	Average
470	478	509	447	476

Wind power capacity in Ireland(GW)

- On 31/12/2017 : **2,8 GW**
- Assumptions of TYNDP for 2030 :

ST	DG	EuCo	V1	Average
6,2	6,2	5,2	4,4	5,5

Sensivity analysis for national NPVs



RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

COMMISSION DE RÉGULATION DE L'ÉNERGIE

3. How to deal with uncertainties

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

COMMISSION DE RÉGULATION DE L'ÉNERGIE

Elements of uncertainty

Uncertainty relating to scenarios and methodologies

- Benefit calculations are strongly influenced by assumptions
- From a TYNDP to another, scenarios change a lot
- Monetised benefits can hardly be aggregated

Uncertainty relating to cost estimates

- Interconnection projects generally experience actual costs higher than initial estimations
- This is due to unexpected circumstances when investing
- Modifications in the economic context can have a strong influence: switch to high inflation

A CBCA is a "snapshot" allowing to decide to go ahead with a project at a point in time

It is necessary to include some elements of uncertainty management on decisions

In both Bay of Biscay and Celtic decisions, possible cost increases were included

- Definition of a reference cost
- Determination of a splitting strategy for additional costs
- CEF grants were part of the decisions, facilitating addressing cost increases

Approach chosen and recent developments

Uncertainty relating to benefit calculations is generally not included in CBCAs

- A CBCA needs to be stable, thus it is assumed that benefit calculations are frozen because depending on scenarios which are, by nature, discussable

Inclusion of uncertainty relating to cost estimates

- CBCAs for Bay of Biscay and Celtic included possible cost increases
- Bay of Biscay: no cap (as from a certain threshold, fixed splitting key between RTE and REE)
- Celtic: Beyond 20% of cost increase, the CBCA were to be reopened

Recent developments: CBCAs were reviewed because of the magnitude of cost increases

- Very strong inflation on cables and stations
- Cost estimates jumped by more than 50% compared to initial evaluations
- The reference costs had to be revised based on inflation
- Adjustment of cost splitting was possible within the framework of existing CBCAs

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

COMMISSION
DE RÉGULATION
DE L'ÉNERGIE

4. The compensation mechanism

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

COMMISSION DE RÉGULATION DE L'ÉNERGIE

Cost compensations, illustration from the 2017 Bay of Biscay CBCA

On 21 September 2017, CRE and CNMC adopted a cross border cost allocation agreement for the Bay of Biscay project

Distribution of project costs:

The agreement was conditional to the attribution of a CEF grant for works of (minimum) €350 million to be allocated to RTE to compensate for insufficient projected project benefits in France. The remaining subsidy (if any) would be allocated to REE.

Breakdown of the project's CAPEX (taking into account the attribution of a €578 million grant)

- costs are shared equally between TSOs up to €1,750m
- REE bears the full additional costs up to €1,978m (i.e. an amount of €228m equal to the entire Spanish subsidy, which therefore finances the first additional costs)
- 62.5% of the additional costs above €1,978 million are borne by REE and 37.5% by RTE.

This distribution means that 62.5% of the CAPEX net of subsidy is borne by REE. The net shares of the TSOs according to the total CAPEX are presented in the table below.

OPEX are borne 60% by RTE and 40% by REE (in relation with the geographical split of assets)

Total budget	1750 M€
Net share of RTE (M€)	525
Net share of REE (M€)	647

Lessons from the Bay of Biscay and Celtic CBCAs (and other CBCA decisions made by CRE)

1. **From a scenario to another, big differences in terms of the value of projects**
   - ENTOSs CBAs are not enough to capture the value of projects, in particular on aspoects relating to security pf supply and geographical split of benefits
   - Benefits are not « financial » but relate to a collective value
   - Negotiations are inevitable on scenarios and parameters of the CBAs
2. **Projects lack of maturity when the CBCA decision is made**
   - Cost evaluations are rough estimations since tenders have not been carried out
   - Some technical parameters still need to be determined
   - Lack of technical maturity is inevitable because requiring a formal launch of the investment process (detailed studies are expensive)
3. **Consequences**
   - Likely cost increases
   - It is necessary to include from the beginning how to address additional costs
   - A revision clause can be useful (no such clause in the Bay of Biscay CBCA but in Celtic)
4. **Grant requests are sometimes necessary to be included in CBCAs**
   - Addresses a potential missing money problem at the perimeter of host countries
   - Uncovered costs cannot be allocated to other countries
   - It could be seen as capturing a « European value » of PCIs

RÉPUBLIQUE
FRANÇAISE
Liberté
Égalité
Fraternité

COMMISSION
DE RÉGULATION
DE L'ÉNERGIE

Thank you