

Gas
Transmission

RIIO-2 Cost Assessment Working Group

National Grid current thinking
22nd October 2018

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Gas
Transmission

01

Cost Assessment

Review of RIIO-1
approach

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RIO-1 cost assessment and drivers

Key; Most suitable Suitable Partially suitable

| Cost area | Cost Category | Ranged T1 Spend (£m, 09/10) | Cost determination method | | | | | Uncertainty Mechanism | | CBA required | Cost driver | Sensitivity to FES scenario | T2 Change |
|----------------------------------|------------------------------|-----------------------------|---------------------------|---------------|-----------|--------------------|-----------|-----------------------|--------|-----------------------|--|-----------------------------|-----------|
| | | | Historic | Bespoke quote | Benchmark | Independent review | Unit cost | Revenue driver | Review | | | | |
| TO Capex - Load related | Entry | 10-20 | | | | | | | | Customer commitment | Customer demand for storage or entry capacity | Volume but not funding | → |
| | Exit | <10 | | | | | | | | Customer commitment | Customer demand for storage or exit capacity | Volume but not funding | → |
| | Flexibility | 10-20 | | | | | | | | | 1 - in -20 compliance, customer demand for increased flow variability | Medium - Longer Term | ↑ |
| | Offtakes | 10-20 | | | | | | | | Customer commitment | Customer demand for connection to the NTS | Volume but not funding | ↑ |
| TO Capex - Non load related | Asset health | 400-750 | | | | | | | | Monetised risk | Condition of assets, stakeholder requirements for availability and reliability of network, total and locational supply and demand patterns | Medium - Longer Term | ↑ |
| | Emission Reduction | 200-400 | | | | | | | | | Emission legislation and need for capability provided | Medium - Medium Term | → |
| | Diversions | 50-100 | | | | | | | | Customer commitment | Customer activity e.g. highways /rail | N/A | → |
| | Physical security | 100-200 | | | | | | | | Mandated | Government policy | Medium - Longer Term | ↓ |
| | Decommissioning | <10 | | | | | | | | Some customer driven | Customer disconnections and changing supply /demand patterns | Medium - Longer Term | ↑ |
| TO Capex - Non operational capex | IT | 50-100 | | | | | | | | For large investments | Asset management strategy, regulatory reporting, corporate policy inc. cyber, controls. Number and location of employees. | Low | → |
| | Buildings / Plant / Fixtures | 10-20 | | | | | | | | N/A | Number and location of employees, changing working practices e.g. flexible arrangements | Low | → |
| | Vehicles | <10 | | | | | | | | N/A | Number and location of employees, changing working practices e.g. flexible arrangements | Low | → |

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|--------------|-----------------------------------|-----------------------------|---|---|---|---|---|---|---|---|---|---|-----------|---|
| | | | Historic | Bespoke quote | Benchmark | Independent review | Unit cost | Revenue driver | Review | CBA required | | | | |
| TO Opex | Business support | 200-400 | | | | | | | | | N/A | Number and location of employees, regulatory requirements, corporate policy | Low | ➔ |
| | Closely associated indirects | 100-200 | | | | | | | | | N/A | Asset management strategy, engineering policy, regulatory reporting, corporate policy inc. controls. Work volume. | Low | ➔ |
| | Faults | 20-50 | | | | | | | | | N/A | Condition of assets, stakeholder requirements for availability and reliability of network, engineering policy, compressor operation | Low | ➔ |
| | Planned Inspections & Maintenance | 100-200 | | | | | | | | | N/A | Condition of assets, stakeholder requirements for availability and reliability of network, engineering policy, compressor operation | Low | ➔ |
| | Other direct costs | 20-50 | | | | | | | | | N/A | Condition of assets, stakeholder requirements for availability and reliability of network, engineering policy, compressor operation | Low | ➔ |
| | Quarry & Loss | 20-50 | | | | | | | | | For larger investments | Weather, farming practices, third party development, new gas infrastructure | Low | ➔ |
| | Physical security | 20-50 | | | | | | | | | N/A | Government policy, engineering policy, number of sites to be protected | Low | ➔ |
| SO Capex | IS | 100-200 | | | | | | | | For larger discretionary investments | EU and UK market change, customer requirements, IS policy | Low | ➔ | |
| | Agency (xoserve) | 20-50 | | | | | | | | For larger discretionary investments | EU and UK market change, customer requirements, IS policy | Low | ➔ | |
| | Cyber (enhanced security) | 50-100 | | | | | | | | For larger investments | EU Directives, UK law, changing threat vectors, technology developments | Low | ➔ | |
| SO Opex | Business support | 100-200 | | | | | | | | | N/A | Number and location of employees, legislative requirements, corporate policy | Low | ➔ |
| | Direct opex | 200-400 | | | | | | | | | N/A | Stakeholder requirements for availability and reliability of network, products and services e.g. capacity auctions, information provision, market change, charging developments | Low | ➔ |
| Total | | ca. £2.5bn | | | | | | | | | | | | |

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02

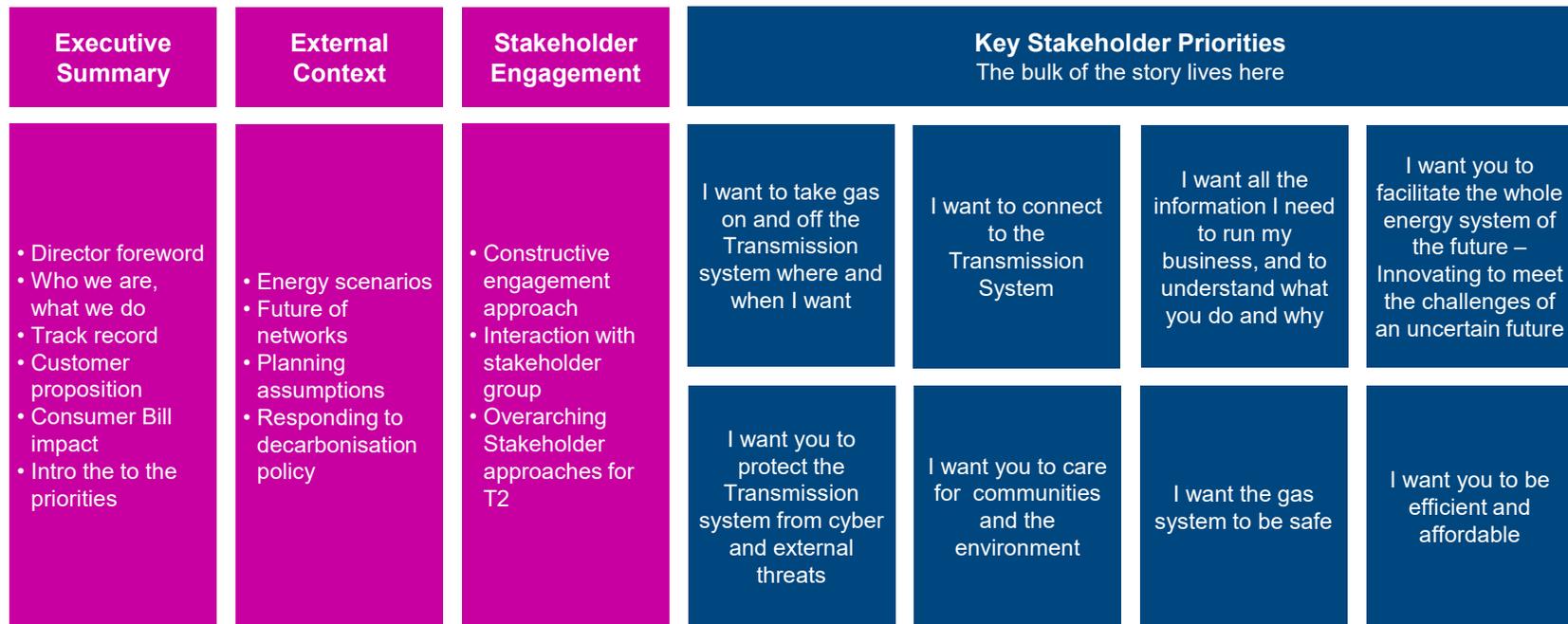
Cost
Definitions

Initial thoughts

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Core Business Plan Structure



Structuring our thinking

Stakeholder influence

- Capturing clearly how stakeholders have influenced our business plan
- How do we want to further engage stakeholders

Outputs

- What could be the specific outputs that we will deliver in RIIO-2 for this priority

Cost

- Our emerging view of cost to deliver our activities based on current forecasts

Regulatory treatment

- Our view of how we will fit with the three output categories for this priority

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03

Cost Benefit Analysis

Initial thoughts

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CBA Success Factors

A successful outcome would be;

A common methodology across gas and electricity which provides a consistent approach to non-monetised impacts (e.g. environmental and social impacts) using recognised quantification techniques

Clear criteria for defining which regulatory decisions are subject to a CBA, agreed in a timely manner with Ofgem

Consistency of inputs and assumptions facilitates transparent results which can be easily shared and understood by stakeholders, both in the submission build and for the duration of the price control

Provides stakeholders the data they need to evaluate and ratify our investment decisions

For and against an ‘ED1’ style approach

| For | Against |
|---|---|
| Consistent with preferred Ofgem approach, with the potential for greater consistency across TOs | Current template may not support risk based / condition based asset replacement (as per CEPA assessment of ED1) |
| Simple Excel template that is easily navigated and understood by all stakeholders | Simplistic model doesn’t adequately take into account whole system impacts |
| Provides a consistent approach with the UK Government’s Green Book on investment appraisal | Lack of clarity around how the model links to the needs case and existing processes such as NOA |
| The model is available today and can be used in our stakeholder engagement now | No agreed criteria for demonstrating completeness of long and short lists of engineering options |
| Removes the time and capacity required to develop a new approach | No consensus on how sensitivity analysis should be performed |
| The benefits and limitations are well known (and recognised by Ofgem?) given independent CEPA review of ED1 process | |
| Provides consistency with ED1 and there is some opportunity to exploit knowledge/learnings from ED contacts | |

Discussion topics:

- 1. Clarifying the linkage between needs case and CBA**
- 2. Establishing selection criteria for which investments should be subject to a CBA:**

Legislative (e.g. safety) or confidential (e.g. cyber security) requirement

Funded through a different mechanism (e.g. Incentive)

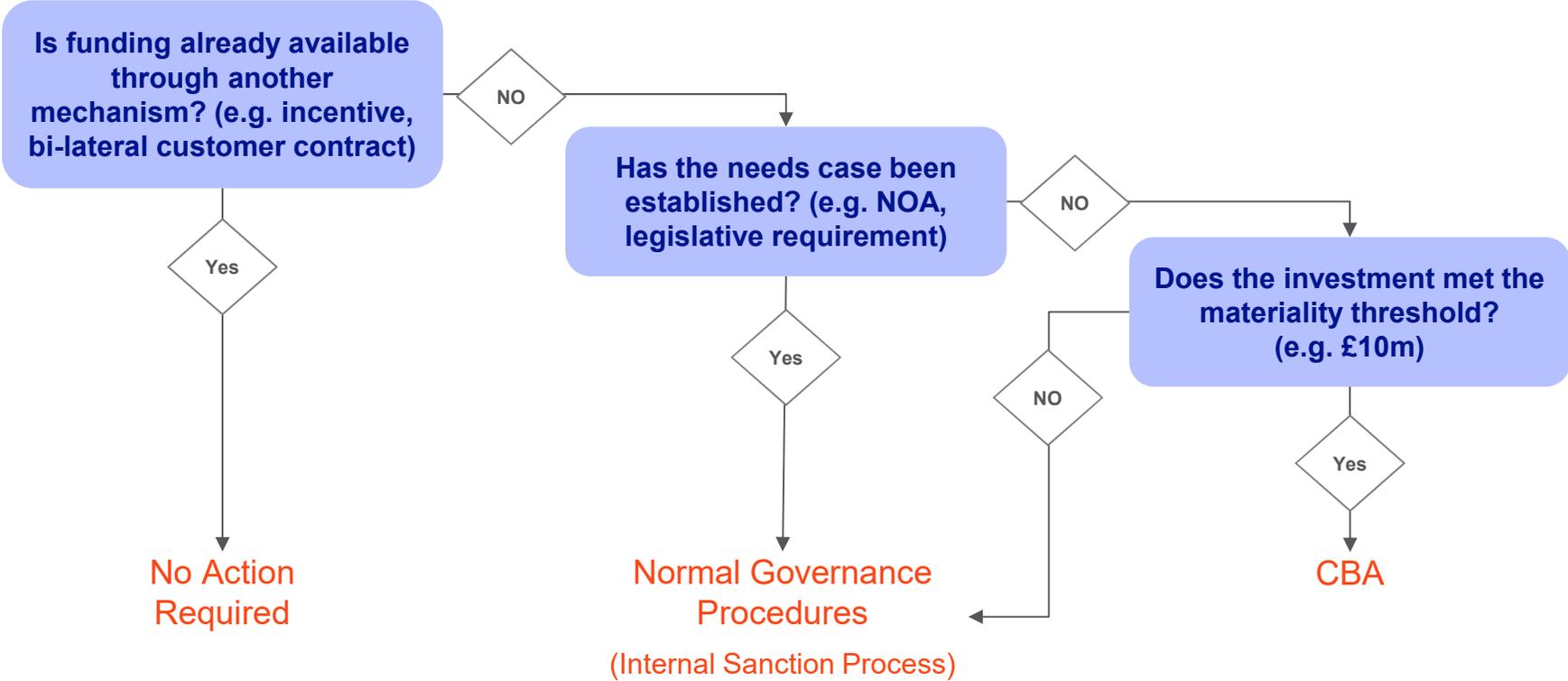
Materiality threshold

- 3. Agreeing approach to demonstrate all possible options have been identified and appropriately evaluated**

Long list vs short list

- 4. Defining methodology for applying probability to outcomes**

Use of CBA in RIIO-2 Business Plans



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