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Embedding broader values in the regulatory model: An analysis of Ofgem's consumer value proposition for the natural gas distribution sector

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A B S T R A C T

Customer engagement processes introduced in energy network regulation in Britain have incentivised networks to think beyond economic efficiency. To this end, the regulator introduced a new incentive: the Consumer Value Proposition (CVP), allowing companies to use a monetised metric to gain a financial reward should their investments show additional social and environmental value for customers. Through a case study of the RIIO2 natural gas distribution price-control process, we construct a narrative history of the design and assessment of the CVP initiative. We discuss the challenges of implementing such an approach in practice and embedding it in the regulatory model.

1. Introduction

The British approach to utility regulation, first applied to British Telecoms in 1984, became a model for many countries. It emphasised regulating prices rather than profits to encourage efficiency, thereby protecting consumers from high prices and 'preventing the worst excesses of monopoly' (Littlechild, 1983, pp.7). The incentive to innovate was a core principle of the regulatory model, where innovation drove efficiencies, enabling regulated companies to benefit from cost reductions in the form of increased profits and leading to better customer outcomes. While the model has evolved significantly since its early application, this core incentive principle has remained intact. However, focus is now also being placed on meeting environmental and social outcomes at least cost by designing new incentive frameworks and methodologies built into the price control framework (e.g., Ofgem, 2010d, 2018c). RIIO, the name of the price control for energy in Great Britain (GB), where ***Revenue*** = ***Innovation*** + ***Incentives*** + ***Outputs***, is currently on its second iteration – RIIO2. RIIO allows companies to gain revenue by using innovative methods to reduce costs and benefit from incentives across various output categories.

For the RIIO2 energy price control period, Ofgem, the energy regulator, broadened the scope of the regulatory framework. Rather than only looking at financial and technical outcomes, i.e., maintaining system reliability at least cost to the consumer, it now includes environmental considerations to meet the government's net-zero target while also considering other social outcomes. To this end, Ofgem stated that RIIO2 would '*prepare the regulated network companies to deliver Net Zero at the lowest cost to consumers while maintaining world-class levels of system reliability and customer service, and ensuring no consumer is left behind*' (Ofgem, 2020d pp. 5). To support this, Ofgem has designed an incentive framework to promote innovative ways of pursuing this broader set of goals within the constraints of meeting the net-zero target at the least cost to the consumer.

In the context of this broadening of the scope of energy regulation to encompass environmental and social outcomes, Cave and Wright (2021) seek to understand how 'purpose', and hence 'public value', could be delivered by utility regulation[1] and propose that a broader set of values can be discovered through innovative customer engagement processes, some of which have become a more central part of Britain's regulatory processes over the last ten years (Poulter and Bolton, 2022).

Broader academic ideas have also influenced this discourse in utility regulation about public purpose and values. For example, Mayer (2018) argues that rather than the purpose of companies being to maximise their profits (e.g., Friedman, 1962), it should be to meet their objectives as defined in their company policy and principles; 'it is its success in the achievement of that purpose which is its measure of its performance' (Mayer, 2018 pp. 7). Also, over recent years there has been increasing interest in acknowledging the public purposes and values of sustainability in industry and business. The 2012 Public Services (Social Value) Act provides a framework for public investment in the UK based on

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Social Return on Investment (Nicholls et al., 2012). However, for private companies, recognition of value beyond the financial has tended to come from investors' concern with companies' environmental, social and governance (ESG) credentials (Henisz et al., 2019). With a large proportion of the UK's water and energy infrastructure financed by the private sector, the Institution of Civil Engineers (ICE) has recommended that standard guidelines for ESG reporting are used that allow 'investment options to be identified that deliver wider social and environmental benefits and better value for money for consumers' (Institution of Civil Engineers, 2020 pp.3).

While the benefits of valuing broader social and environmental outcomes are being recognised across these different domains, there is some level of scepticism about the agenda. For example, Costello argues that utility companies should not be regulated to deliver specific social outcomes, e.g., welfare provision for low-income utility customers, as this is the responsibility of governments, characterising this as companies being asked to address a 'government failure' (Costello, 2021 pp.3). He suggests that market-driven, bottom-up processes allow customers and investors to choose companies that have higher social and environmental credentials based on customer and investor preferences at that time, e.g., fair trade coffee, using ESG reporting to make these choices. However, leaving ESG reporting guidelines to companies has also been criticised as it would require them to show that they are acting in the best interests of stakeholders, something that companies cannot necessarily be trusted to do (Bebchuck et al., 2023).

Although there is recognition of the benefits of a social contract for utilities (e.g., Sustainability First, 2020), particularly in the water industry (WICS, 2017; Fletcher, 2019; Cave and Wright, 2021), this is a new area for utility regulation, with its effectiveness is yet to be proven. Therefore, detailed empirical studies which assess how the outcomes that customers value can be identified and captured during the regulatory review are needed. To this end, this present research focuses on an innovative and recently introduced element within Britain's energy network regulatory framework that attempts to include these broader values of network investment: the Consumer Value Proposition (CVP). The CVP allows companies to put forward investments that show additional value to network company customers using a monetised metric to gain a financial reward, with the value of the reward dependent on the net value of the propositions for customers (Ofgem, 2019c). This research examines how the CVP concept originated and was implemented in the regulatory process, covering the recent natural gas distribution network price-control review. The following section introduces our methodology, the gas distribution regulation framework, the new incentives for the RIIO2 gas distribution price control for 2021–2026 (RIIO GD2), and the evolving processes used to include social and environmental outcomes as part of the CVP initiative. We then assess the CVP as an incentive mechanism to encourage the network companies to think about the broader social and environmental outcomes that the RIIO2 framework is designed to deliver. In the final section we reflect on this process, discussing the challenges of implementing such an approach in practice and embedding it in the regulatory model.

2. Developing consumer value propositions

Through a case study of the RIIO2 gas distribution price control (RIIO GD2) and using process-tracing methods informed by expert interviews,[2] we constructed a narrative history of the CVP initiative (see event timeline in Table 1). We then investigated the approaches taken by the four regulated gas distribution companies to include a CVP in their business plans. The companies are Scottish and Southern Gas Networks Ltd. (SGN, 5.9 million customers), Northern Gas Networks (NGN, 2.7 million customers), Cadent Gas Ltd. (11 million customers) and Wales and West Utilities (WWU, 7.5 million customers) (see Fig. 1).

Table 1
Timeline of consultations and decisions for the RIIO GD2 framework and methodology.

03/ 2018	**RIIO2 Framework Consultation – first mention of changing to a Business Plan Incentive (BPI) option but no in-depth information on what this would be and how it would be assessed (Ofgem, 2018a)**
04/ 2018	RIIO2 Enhanced Stakeholder Engagement Guidance Version 1 (Ofgem, 2018b)
07/ 2018	RIIO2 Framework Decision (Ofgem, 2018c)
09/ 2018	First meeting of network companies' Customer Engagement Groups (CEGs)
12/ 2018	RIIO2 Business Plan Draft Guidance
05/ 2019	RIIO2 Sector-Specific Methodology Decision (BPI and CVPs introduced in Chapter 11) (Ofgem, 2019a)
06/ 2019	RIIO2 Business Plan Guidance Version 1 (included limited details of how Ofgem will assess CVPs) (Ofgem, 2019b)
07/ 2019	First draft of Business Plans submitted to the central Challenge Group (CG) and CEGs by the network companies
09/ 2019	Second draft Business Plans submitted to the CG and CEGs
09/ 2019	RIIO2 Business Plan Guidance (updated) (Includes updated details on methodologies for assessing consumer value and that these values must be monetised) (Ofgem, 2019c)
10/ 2019	RIIO2 Business Plan Guidance Version 2 (clean version) (Ofgem, 2019e)
11/ 2019	Enhanced Stakeholder Engagement Guidance Version 2 (Ofgem, 2019f)
12/ 2019	Final plans submitted to Ofgem
07/ 2020	Draft Determinations published (Ofgem, 2020a)
10/ 2020	Open Meetings (Ofgem, 2020c)
12/ 2020	Final Determinations published (Ofgem, 2020d)
04/ 2021	RIIO GD2 price-control period begins

2.1. Gas network regulation under RIIO

In 2010, Ofgem reviewed its regulatory approach to encourage gas and electricity network companies to change their approach to business planning and investments (Ofgem, 2010a). Ofgem reframed the price-control methodology to include financial and reputational incentives (Ofgem, 2010b), and in 2012 the RIIO framework was implemented, replacing the previous RPI-X price-control framework for the gas networks. RPI-X and RIIO approaches are similar in the sense that they are both based on the incentive regulation paradigm, with the aim of encouraging cost savings and innovation, but they differ with respect to their emphasis: RPI-X incentivised companies to be more efficient by allowing them to keep revenue gained by innovating and reducing costs, whereas with RIIO the emphasis is more on achieving prescribed outputs, enabling companies to earn extra rewards by meeting delivery incentives in a range of output categories.

For the price-control period, the regulated companies are expected to produce a business plan which includes cost projections . For RIIO1, the period was eight years but for RIIO2, which for gas and electricity transmission and gas distribution began in 2021, and for electricity distribution begins in 2023, the period was reduced to five years. Before the business plans are submitted, Ofgem consults on and produces the price control framework, which sets out what is expected to be reported in the business plans and how incentives and penalties for the upcoming price-control period will be designed and implemented. Companies then submit their business plans and request revenue to cover costs over the

[2] One Ofgem employee, one employee from an energy non-governmental organisation, one employee from each of the four companies and one representative from each of the company customer engagement groups, with the exception of Wales and West Utilities.

Fig. 1. Map of the gas distribution network companies in Britain (Source: Ofgem, 2018d).

period. After this, Ofgem determines and publishes its initial judgement on how much requested revenue the companies should receive (Draft Determinations). The companies are then given the opportunity to question Ofgem's decision before the regulator makes its Final Determinations on requested revenue. If the companies do not accept the Final Determinations, they can appeal to the Competition and Markets Authority.

In RIIO GD1 (the first gas distribution price control for RIIO, covering 2013 to 2021), there was a possible penalty/reward of ±6% of base revenue (the amount of revenue awarded to the company for the price-control period) linked to six output categories: (i) safety, (ii) environment, (iii) customer satisfaction, (iv) connections, (v) social obligations, and (vi) reliability and availability. Investments made by a company had to be associated with these categories, providing boundaries within which the companies were to operate. In RIIO GD2 (covering 2021 to 2026), the output categories were condensed into three: (i) meet the needs of consumers and network users, (ii) maintain a safe and resilient network, and (iii) deliver an environmentally sustainable network. These three new categories encompassed the original six but were broader in scope to allow for any emerging activities, such as energy market reforms or changes to energy policy (Ofgem, 2018c). Again, investments had to be associated with these categories.

As discussed in more detail in the next section, for RIIO2 begining in 2021 the incentives were changed, with a possible reward and penalty to be part of a new Business Plan Incentive (Ofgem, 2018c) and the output rewards were re-evaluated to ensure that 'the overall cost of such financial incentives will not exceed the value of service improvements to consumers' (Ofgem, 2018c pp.39).

2.2. Encouraging good quality business plans

For both RIIO GD1 (2013–2021) and GD2 (2021–2026), Ofgem introduced incentives designed to reward or penalise companies based on the quality of their business plans, customer engagement, and improvements made to customer services. In RIIO GD1, companies were incentivised via the Information Quality Incentive to produce high-quality business plans with well-justified costs, using a fast track incentive (± 2.5% of allowed base revenue) where high-quality business plans were given lighter-touch scrutiny by Ofgem and a higher sharing factor, allowing the companies to keep a larger share of any profits. Companies were also encouraged to focus more on their customers through the Broad Measure of Customer Satisfaction (± 1% of base revenue) (Ofgem, 2013), an incentive that included a customer satisfaction survey, a complaints metric and an annual stakeholder engagement incentive. For the gas network companies, the Stakeholder Engagement Incentive had a possible reward – but no penalty – of 0.5% of base revenue for companies that met a minimum standard of engagement (Ofgem, 2018d).

Annually, the companies were required to enter a ten-page submission, and if an internal Ofgem panel was satisfied that minimum requirements were met, the companies were invited to take part in a 40-min panel session for which a reward could be earned for 'high-quality activities or outcomes that go beyond Business As Usual' (Ofgem, 2018d pp.9). The panel marked the submission out of ten: anything below four received no reward, between four and nine a scaled reward, and those marked nine or 10 gained the maximum reward. It should be noted that in the most recent panel reports (Ofgem, 2020e, 2021), Ofgem recommended the increased use of social value metrics, such as Social Return On Investment, with those companies using social value frameworks achieving a higher reward. The panel noted that those stronger performing companies using Social Return On Investment analysis could 'assess benefits more widely than traditional cost-benefit analysis allows' (Ofgem, 2020e pp.10).

In the RIIO2 framework consultation (Ofgem, 2018a), Ofgem noted concern about the complexity and effectiveness of the quality incentive mechanisms in RIIO1. In response, Ofgem removed the Information Quality Incentive and the Broad Measure of Customer Satisfaction for RIIO2 and replaced this with the Business Plan Incentive (Ofgem, 2018c). In the final decision on the RIIO2 framework, Ofgem (2018c) noted that this would be one process with companies evaluated on the quality of their business plans and totex forecasts.

2.3. Introducing the CVP: Ofgem's Enhanced Stakeholder Engagement Strategy

In March 2018, Ofgem consulted on the new RIIO2 price-control framework and introduced a new Enhanced Stakeholder Engagement Strategy (Ofgem, 2018b). The purpose of this strategy was to refocus the companies' investments toward their customers by encouraging them to develop their business plans based on a high level of customer engagement. Those involved in the new process saw the incorporation of customer engagement into business plan decision-making as a positive step (Poulter and Bolton, 2022). As Ofgem later explained to us, companies were best placed to '*take account of what is needed at a local and regional level*' (Interview, Ofgem). In July 2018, the RIIO2 framework decision included changes to the incentives for business plan quality (Ofgem, 2018c), and some interviewees noted the expectation that the new engagement strategy would play a part.

The Framework Decision and Enhanced Engagement Strategy required the network companies to set up customer engagement groups (CEGs) to challenge the company approach and to ensure the business plans met customer and stakeholder expectations. Each CEG had an independent chair recruited by the company; CEG members were chosen by both the chair and the companies, with Ofgem providing high-level guidance on how the membership could challenge the companies on aspects of their future investments and links to the RIIO2 framework (see Ofgem, 2019f). Interviewees noted that at the outset of the price-control process, there was limited guidance around how the CEGs were to evaluate the business plans; initial meetings were generally focused on how the CEGs could add the most value for customers. As with the fast-track process in RIIO GD1, some interviewees assumed the emphasis would be on the quality of the business plan in this respect.

As well as the CEGs, Ofgem created a single, centrally-based Challenge Group. This group was again separate from the companies and the regulator but with a chair and members chosen by Ofgem who had 'expertise in relevant topics and who represented particular organisations' (Ofgem, 2019f pp.22). The purpose of the Challenge Group was to ensure that Ofgem acted in the best interest of customers and to provide another layer of challenge to the companies, particularly towards the end of the process when the Challenge Group could most effectively compare company business plans. The CEGs and the Challenge Group were each to produce a report prior to Draft Determinations on the quality of the business plans, including their acceptance (or not) of the companies' CVP.

Company and CEG interviewees noted that they understood the business plans needed to show how investments were based on the companies' customer engagement, and at this point they assumed that any reward would be based on the *overall* consumer value of the plan. As the Stakeholder Engagement Incentive in RIIO1 had recommended the use of Social Return on Investment, it was understandable that the network companies assumed the assessment of the CVP would follow a similar path, particularly as Ofgem had not released any details of how the CVP would be assessed. During this early period, companies employed independent consultants to help create Social Return on Investment frameworks to assess their investments.

In May 2019, Ofgem issued its sector-specific methodology decision, and in Chapter 11 of the document the initial assessment methodology for the Business Plan Incentive and the CVP was introduced (Ofgem, 2019a). The methodology was a four-stage process (Fig. 2). Stages 1 and 2 were qualitative assessments of the business plan, and Stages 3 and 4 were quantitative assessments of projected costs. Similar to the previous Stakeholder Engagement Incentive under RIIO1, where companies did not gain a reward if specific standards were not met, for the new Business Plan Incentive, companies could only gain a reward in the subsequent stages if minimum standards were reached in Stage 1. The business plan guidance stated that to qualify for an incentive, the companies must pass Stage 1 by meeting a minimum standard of evidenced consumer expectations, delivery plans, and ambition and show that the enhanced engagement process informed all the decisions within the plan. In assessing the minimum requirement, Ofgem relied on the CEGs and Challenge Group reports. Those companies that met the required minimum criteria were eligible for a reward based on their CVP. Although the CVP had been introduced, precisely what it was and how it would be assessed was not yet clear, and as previously stated, the companies expected that the CVP would measure the overall value of the business plan to customers.

While the CVP component lacked definition at this point in the process, there was clarity on the possible rewards based on Stages 3 and 4 of the Business Plan Incentive. The guidance stated that Stages 3 and 4 were dependent on Ofgem's confidence in the cost allocations within the business plan (Ofgem, 2019a), with 'high confidence' costs being those that could be benchmarked against Ofgem's figures and less reliant on company figures than 'low confidence' costs. Any low confidence costs needed to be robustly justified or would incur a penalty. Stages 3 and 4 were designed to encourage companies not to give '*wildly inaccurate*' engineering costs that they could easily outperform and thus gain revenue at the customers' expense (Interview, Ofgem).

It later became apparent that there were differences between the companies in their initial approach to the Business Plan Incentive, partly due to the limited information available at that time regarding how the CVP would be assessed. Despite a consensus that passing Stage 1 was necessary, because of the possible penalty the importance placed upon Stage 2 varied, with some interviewees viewing the CVP as a small add-on (Interview, network company), and others viewing it as the centrepiece of a larger overall business plan assessment package (Interview, CEG).

2.4. Business plan guidance: how to assess 'consumer value'?

In June 2019, a month after the release of the sector-specific methodology decision, Ofgem issued the initial business plan guidance (Ofgem, 2019c). The guidance stated that the CEGs would advise if the companies' CVP showed genuine benefits to consumers and that the business plans should set out ways that a company would go beyond minimum requirements; however, there were only limited details on how Ofgem would assess the CVP. Ofgem gave some examples of possible proposals that could count towards a CVP, but there was no

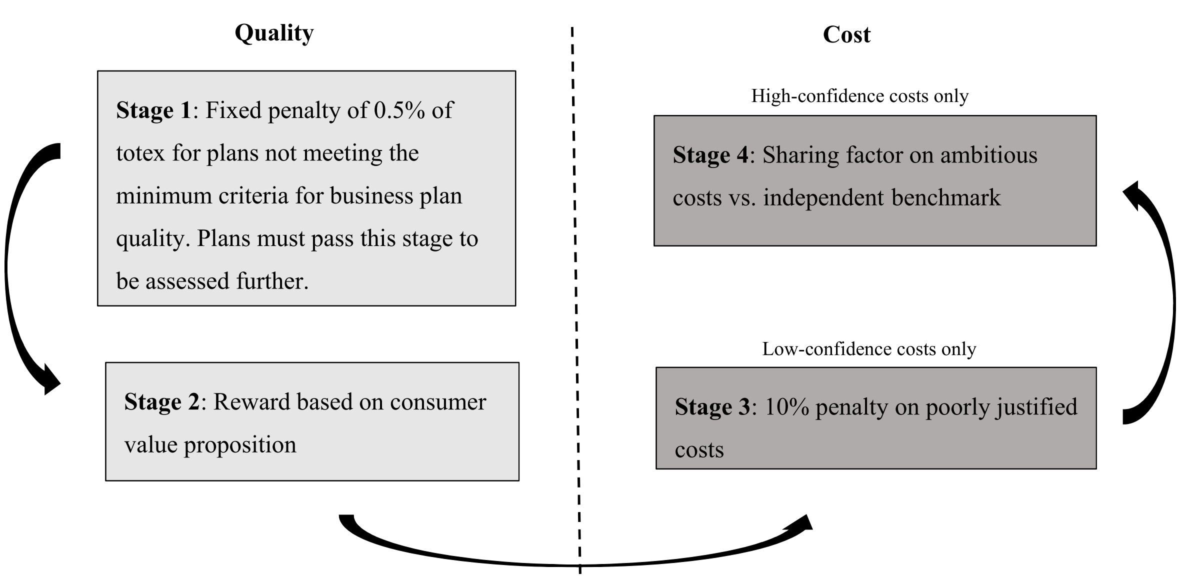

Fig. 2. Four-stage process of the Business Plan Incentive. All rewards and penalties are capped at a ± 2% of allowed totex (Ofgem, 2019a).

indication of how the reward would be assessed. One interviewee recalled this initial framework being penalty-focused with limited scope for financial rewards.

For the Business Plan Incentive, unlike the Stakeholder Engagement Incentive under the earlier RIIO1 framework, consumer value was now expected to be monetised (Ofgem, 2019e). In the guidance, Ofgem indicated that there was no need to use a common methodology and that as long as there was robust justification for the method used, it would be acceptable, with the premise being, as later explained, '*that the companies should give the evidence rather than expecting Ofgem to come up with values*' (Interview, Ofgem) and that '*Ofgem was careful in the use of language and did not want to discard any particular methodology*' (Interview, Ofgem). Despite the ambiguities around the proposals, interviewees from the network companies later reflected that, at this stage, there was general enthusiasm for Ofgem's approach and thinking about alternative values: '*if we could show how our investments generated value for customers and society, it was quite helpful*' (Interview, network company) and '*having that requirement* [the CVP] *did make them* [the network companies] *think about things that they wouldn't have*' and '*it resulted in some good things out there in the world*' (Interview, network company). For example, a social value assessment allowed the companies to include qualitative metrics not included in conventional cost-benefit analysis, which increased overall customer value. Interviewees cited the increased value to customers of reducing the disruption of collaborative street works and measures such as carbon monoxide awareness campaigns.

In September 2019, Ofgem released its updated business plan guidance (Ofgem, 2019c). In the guidance, Ofgem clarified the role of the CEGs and Challenge Group. There was a commitment from Ofgem that the CEG and Challenge Group views would be considered when deciding on the network companies' requested revenue.

The updated guidance also included detail on how the CVP would be assessed. The guidance clarified that rather than an overall assessment of the positive consumer value of the entire plan, the CVP reward would be based on the additional financial value to the consumer of *individual* propositions that went above and beyond what would be considered business-as-usual. Ofgem expected each company to utilise a monetisation methodology to justify expenditure and identify the beneficiaries. In the updated guidance, Ofgem referred to the CVP as consisting of 'something incremental to the minimum requirement' and outlined that it would consider 'the extent to which the proposal includes evidence that shows how it incorporates consumer expectations/priorities and value (which may include willingness to pay)' (Ofgem, 2019c pp.38). In general, three methods were used to assess the CVPs by the companies in their business plans: Social Return on Investment (SROI), Cost Benefit Analysis (CBA), or Willingness to Pay (WTP) (see Table 2). WTP uses quantifiable benefits to the person, while CBA also assesses quantifiable costs and benefits to the wider society. SROI also asseses broader impacts but rather than only looking at quantifiable costs and benefits, it uses a qualitative assessment metric to assess if an investment has a positive or negative social outcome.

The company and CEG interviewees later agreed that the updated guidance had been given too late and that there was still little clarity on what was expected, with one company suggesting that '*it felt like they* [Ofgem] *were going to see what went in before they decided what they wanted*' (Interview, network company).

Company representatives later noted that there were problems with this approach as Ofgem was '*unclear about what an enhanced level of service was*', with a lack of clarity about what baseline would be used to evaluate this (Interview, network company); also that '*as customer value had been so poorly defined there was ambiguity between what the company and Ofgem thought was customer value*' (Interview, network company). One CEG representative also suggested that there was '*limited understanding within Ofgem in what "good" looked like*' (Interview, CEG). There was further criticism made by one CEG interviewee about the use of the CVP as a quality incentive: '*it has ceased to be a BPI* [Business Plan Incentive] *anymore because it is not about your business plan, it is a way of* funding *some additional initiatives that give some social and other benefits that do different things other than their core role, rather than doing their core role well*' (Interview, CEG). Thus, rather than basing the expected reward on the overall consumer value of the business plan, the updated guidance based the reward on individual business plan elements, which altered how the companies approached their CVP proposals.

Table 2
Comparison of value metrics used for the Stakeholder Engagement Incentive in GD1 and the Business Plan Incentive in GD2. The methodologies have been taken from the industry standards used for gas distribution. Metrics for assessing alternative sectors may differ (Health and Safety Executive, no date; Ofgem, 2019d; sources: HM Treasury, 2020).

Value methodology	Social Return on Investment (SROI)	Cost Benefit Analysis (CBA)	Willingness-to-pay (WTP)
Usage	Personal impacts and impacts on wider society	Personal impacts and impacts on wider society	Benefits to personal utility
Metric calculation	Uses financial proxies to account for qualitative social values combined with traditional CBA to give an overall SROI	Quantifiable costs and benefits of social, environmental and financial impacts (sometimes including WTP results)	Inferred economic valuation from research and analysis into customer and stakeholder preferences
Guidance	HM Treasury Green Book Cabinet Office SROI	HM Treasury Green Book Health and Safety Executive (HSE) Economic Analysis Unit (EAU) appraisal values Ofgem CBA reporting templates	Preferred 'best practice' tends toward a stated preference model or conjoint analysis (e.g., Ben-Akiva et al., 2019). Consultancy firms utilised in some cases for WTP research.

2.5. CVPs and valuation methodologies

To illustrate the challenges of using a *monetised* social value metric as a benchmarking tool and an incentive mechanism, we have taken a common, although not identical, CVP for community development. This particular CVP was chosen as it was the only common CVP across every company . Table 3 illustrates the valuation methodologies used and the differences between the customer values per pound invested.

Justifying the expenditure in their business plans, Cadent and SGN recognised that there might be a different social value than initially estimated but used the amount of money invested as the value to customers (Cadent, 2019; SGN, 2019). The cost to customers in Table 3 is zero as the money invested is taken from shareholder funds. In their CVP appendix, Cadent explained that they had given a conservative estimate of social value and expected a minimum of a 2:1 ratio of benefits delivered, but this would be dependent on the community projects funded. The actual social value figures would be available in an annual evaluation (Cadent, 2019). Both NGN and WWU included costs and used a social value metric – a ratio based upon figures from government guidance (see Table 2) – to provide the multiplier for social value and included this in their business plans (Northern Gas Networks, 2019; Wales and West, 2019).

All companies show a positive social benefit which would be considered valuable to consumers, but the financial value to customers differ due to (i) the varying methodologies, (ii) the type of project assessed, and (iii) a multiplier dependent on the population demographics of each company's customer base. Comparing these CVP proposals using monetised value suggests that one type of community benefit is better than the other; however, this is not representative of the

Table 3
A comparison of company CVPs submitted to Draft Determinations. Each company included a community fund CVP, although the methods for assessing customer value varied (Source: Cadent, 2019; Northern Gas Networks, 2019; SGN, 2019; Wales and West, 2019).

Company	CVP	Value methodology	Cost to customers (£m)	Cost to investors (£m)	Value to customers (£m)	Value to customers per pound investment (£)
Cadent	Community Fund	Willingness-To-Pay	0	27.2	27.2	27.2
SGN	Community Action Projects	Cost Benefit Analysis	0	2.5	2.5	2.5
NGN	Community Partnering Fund	NGN social framework	0.25	0	0.47	1.88
WWU	Community Project Fund	Cost Benefit Analysis	0.89	0	3.06	3.44

qualitative view of social value. Social value shows that investments have a positive outcome based on a particular criterion rather than financial gain (e.g., HM Government, 2020). There was consensus amongst the company and CEG interviewees that the CVP should highlight the investments that customers value based on quality customer engagement that also shows a positive social return, rather than an arbitrary monetary gain, with financial value possibly skewed by the interpretation of inputs.

2.6. Draft and Final Determinations

As the updated guidance was released only three months before the

Table 4
Number and value of CVPs following the updated guidance issued by Ofgem. (Cadent, 2019; Northern Gas Networks, 2019; SGN, 2019; Wales and West, 2019).

	Ofgem Output Categories					
Network Company	**maintain a safe and resilient network**	**Value to customers (£m)**	**Meet the needs of consumers and network users**	**Value to customers (£m)**	**deliver an environmentally sustainable network**	**Value to customers (£m)**
Cadent	CO awareness and safety plan	22.5	Fuel poverty plan	61.3	Carbon neutrality	−36.3
	Theft of gas	1.3	Going beyond the meter	15	Our people's emissions	4.1
			PSR awareness	0.6		
			Off-grid communities	4.4		
			Community Fund	27.2		
			Time-bound appointments	*109.1*		
			Personalising welfare facilities	***120.8***		
			Entry capacity enablement	51.9		
			Delivering efficiencies	155		
Cadent Total		**23.8**		**545.3**		**4.1**
SGN	Aligning allowances with workload	96	Increased productivity	217	EAP initiatives	56
	Bespoke safety and reliability outputs	50	Absorbed weather risk	7		
	Innovation Funding	31	*Additional info and granularity of CBA*	*3*		
	Open data	3	New services for vulnerable households - financial benefits	40		
	Gas Safety (Management) Regulation standards	101	New services for vulnerable households - social benefits	81		
	Hydrogen standards	26	Community Action projects	3		
			Supporting decision making	5		
SGN total		**307**		**356**		**56**
NGN	Enhanced repair for gas escapes	8.42	Fuel poor connections	21.76	Company cars	1.43
	Gas restoration to appliances	2.6	Hardship Fund	13.7	Tree planting	0.95
	Reinstatement of supply	6.16	Community Partnering fund	0.47		
			Consumer Vulnerability Competency Framework	0.13		
			Appointments for restoration of gas to repair time	25.44		
			Complaint resolution	6.43		
			Citizen's Jury	1.87		
NGN total		**17.18**		**69.8**		**2.38**
WWU	CO awareness and provision of monitors	0.28	Enhanced GSoPs and voluntary payments	0.32	EAP	3.23
	Theft of gas	1.59	Interruptions compensation	0.45	Whole systems data	28.2
			Volunteering in the community	0.2		
			Fuel poverty	7.32		
			Community Project Fund	2.7		
			PSR and data sharing	60.04		
			NIA vulnerable customers	0.4		
			0.5% efficiency saving	17.6		
WWU total		**1.87**		**89.03**		**31.43**
Total value to customers (£m)		**349.85**		**1060.13**		**93.91**

business plans were to be submitted, the companies had limited time to reassess their propositions and, as mentioned in Section 2.4, there was a lack of clarity from Ofgem around what would be accepted as a CVP proposal. The guidance had stated that the proposals should 'consist of something incremental to the minimum requirements' (Ofgem, 2019c pp. 33), but with little detail on what was meant by 'incremental' or 'minimum requirement'. There were also no limits on the number of proposals that could be submitted. As such, the approach taken to decide what would constitute a CVP proposal was quite different, with some companies taking a '*scattergun approach*' while others '*bust a gut*' to detail values (Interview, network company).

Using data taken from the CVP annexes (Cadent, 2019; Northern Gas Networks, 2019; SGN, 2019; Wales and West, 2019) and the CEG reports (Cadent, 2019; NGN, 2019; SGN, 2019; WWU, 2019), Table 4 illustrates the CVP proposals in the companies' final business plans. When the final business plans were submitted for draft determinations, the companies had proposed 52 CVPs, with a possible value to the consumer of £1440.47 m (Table 4). Most CVP proposals were in the 'Meet the needs of consumers and network users' output category. CVPs tended to be designed to meet customer vulnerability requirements, perhaps as this category showed the most customer value or was easier to quantify (See Table 4 and section 2.6). Those CVPs accepted by both the CEG and the Challenge Group are in italic (Cadent and SGN). Those CVP proposals accepted by Ofgem at Draft Determinations have been underlined (NGN only), and Ofgem accepted those in bold at Final Determinations (Cadent).

In December 2019, the final business plans were submitted to Ofgem with the CEG reports following two weeks later. The company CEG reports contained a dedicated CVP section, indicating outline support for or opposition to the proposals. The Challenge Group report was then submitted in January 2020. One of the roles of the Challenge Group was to compare and contrast the CVPs in all company business plans and to highlight those they thought should be granted a reward. However, in Ofgem's Draft Determinations, none of the CVPs supported by a CEG and the Challenge Group received a reward. As illustrated in Table 5, although all companies passed Stage 1 of the Business Plan Incentive to meet a minimum standard of customer engagement in order to qualify for any further reward, for the Stage 2 CVP reward, only NGN gained a reward at Draft Determinations, although this had previously been rejected by the Challenge Group. SGN and Cadent received a penalty, and WWU neither a penalty nor a reward. Confusion ensued as to the value of the recommendations made by the CEGs and Ofgem's Challenge Group.

After this point, companies could send responses to the Draft Determinations to Ofgem and attend open meetings in October 2020. At these meetings, the companies and their CEGs could question initial judgments made in the Draft Determinations on any aspect of the business plan. Although Ofgem later recognised a '*need to explain when a different view is taken, why they have taken this decision*' (Interview, Ofgem), there was frustration expressed by one of the interviewees who reflected on the process that there was '*no recognition from Ofgem of customer engagement or if the business plan rationale was good or not* (Interview, CEG). It was also suggested that there was too much focus on costs as '*no supplementary questions were asked, only on total costs and nothing on how it was valued*' (Interview, network company). Some company and CEG interviewees questioned the validity of the process due to the way the proposals were appraised, although there was praise for the CVP concept and recognition that the effort required to think more broadly about values was helpful. One company representative noted that as a result, the company was '*making better business decisions to drive better value for the communities that we serve*' (Interview, network company).

CEG and company interviewees suggested a contributory factor to CVPs approved by both the CEGs and Challenge Group not being awarded may have been a perception in Ofgem that the CEGs had been 'captured' by the companies. They also suggested that Ofgem had become somewhat sceptical of the CEGs' view of customer value at these final stages. The companies agreed that this perception may have been due to how the CEGs and the companies came together at the final stages. As interviewees noted, the initial focus of the CEGs had been on challenging management (Interview, CEG) and ensuring the companies were '*running to the tune of the CEGs*' (Interview, NGO), leaving the management '*perhaps feeling a bit battered and bruised*' (Interview, CEG). At Draft and Final Determinations, the CEGs shifted somewhat as the '*CEG came together with the company against Ofgem*' (Interview, NGO), which '*looked like capture but it wasn't as the companies were challenged and then the CEG concerns were reasonably addressed*' (Interview, CEG). Throughout the price-control process, challenge logs were made available to Ofgem which charted each of the CEGs' challenges and the companies' responses to these (e.g., Cadent, 2019b provides an Excel spreadsheet of challenges). Although Ofgem had created processes through Enhanced Stakeholder Engagement (Ofgem, 2019f) involving the CEGs, Challenge Groups, and challenge logs, in the end Ofgem had limited trust in the processes they had put in place to reduce the possibility of capture.

Ofgem issued the Final Determinations in December 2020 and, as can be seen in Table 6, there were significant changes from Draft Determinations, with now only Cadent receiving a CVP reward. The original CVP reward for NGN for an enhanced repair service (see Table 4) was challenged by the other companies in their Draft Determination responses as they had already achieved this as business-as-usual expenditure, so Ofgem removed it at Final Determinations (Ofgem, 2020b). After Cadent argued its case in its response to the Draft Determinations (Ofgem, 2020b) and during the open meetings (Ofgem, 2020c), Ofgem accepted Cadent's previously rejected CVP proposal for enhanced welfare provision (see Table 4). The biggest reward overall was a Stage 4 reward for high confidence costs (see Section 2.3) which went to NGN, suggesting that as Stage 4 was concerned with the traditional cost criteria, greater rewards could be achieved by concentrating on the stages related to costs and their justification rather than social elements of the business plan.

In general, the company and engagement group interviewees agreed that CVP had little importance in the overall business planning process as the rewards available were minor compared to what could be achieved through traditional cost justification measures. This sentiment was also evident in the open meetings where, although there had been complaints about the lack of CVP rewards in the written responses, most of the time, the meetings were focused on arguing for higher allowances. Interviewees agreed that it would be difficult in the future to argue at the company board level for funding for such a rigorous process,

Table 5
Business Plan Incentive rewards for the gas distribution companies in Draft Determinations (Source: Ofgem, 2020a).

Company	**Stage 1**	**Stage 2 (£m)**	**Stage 3 (£m)**	**Stage 4 (£m)**	**DD Total reward/ penalty (£m)**
Cadent	Pass	0	−0.1	0	**−0.1**
SGN	Pass	0	−1.1	0	**−1.1**
NGN	Pass	1.6	0	0	**1.6**
WWU	Pass	0	0	0	**0**

Table 6
Business Plan Incentive rewards for the gas distribution companies in Final Determinations (source: Ofgem, 2020d).

Company	Stage 1	Stage 2 (£m)	Stage 3 (£m)	Stage 4 (£m)	FD Total reward/ penalty (£m)
Cadent	Pass	0.7	−0.1	0	**0.6**
SGN	Pa	0	0	0	**0**
NGN	Pass	0	−3	5.1	**2.1**
WWU	Pass	0	0	0	**0**

particularly in light of what was considered a harsh revenue determination by Ofgem, which saw all four distribution companies appealing to the Competition and Markets Authority.

In the main, the appeals concerned the reduction in the assumed cost of equity and cuts made to the requested revenue. As a CEG interviewee explained, '*all companies' resources went on taking cost efficiencies disagreements to the CMA*' then '*in comparison to the efficiency, it's not worth arguing over the CVP*'. The companies were prioritising where their time and money would be best spent.

Some interviewees further suggested that there was too much focus on cost, '*rather than acknowledging the other values they* [Ofgem] *said they were originally looking for*' (Interview, network company). It was also suggested that Ofgem lacked '*specialist knowledge*' (Interview, CEG) and '*things other than economics are not in the expertise within Ofgem*' (Interview, network company). Network company interviewees were also concerned that a strict financial settlement may limit the delivery incentive for some of the investments promised as '*decisions will be focused on the more "important aspects" of the investments – hard to justify the money spent on customer engagement and other activities*' (Interview, network company). The company and CEG interviewees agreed that, while the CVP had been a worthwhile exercise, the initial positivity generated from using methodologies that incorporated broader values had perhaps now been lost and that they would be wary of incorporating these in the future.

3. Discussion and conclusions

Since the regulatory reform of RPI-X@20 in 2010 (Ofgem, 2010c), Ofgem has increasingly designed incentives to steer regulated network companies to include their customers in decision-making and to consider the broader purposes of their investments. This present research has focused on the consumer value incentive of the business plan process and examined the experience of introducing a consumer value proposition in the regulation of gas network companies in Britain, a new area of study in energy network regulation.

Overall, the interviewees saw incorporating broader consumer value into the regulatory framework as a positive development. New approaches to valuing investments, spurred by the CVP incentive, required the companies to think innovatively about what constituted 'value' in their investment decisions. In some cases, this enabled companies to include investments in their business plans that were important to customers but were unlikely to qualify under the previous evaluation regime, such as collaborative street works and carbon monoxide awareness schemes.

There were also positive developments related to Ofgem's enhanced stakeholder engagement framework. As Cave and Wright (2021) observe, information asymmetry, where companies' knowledge of their costs is greater than that of the customer or the regulator, could create scepticism about the claimed consumer value of investment proposals. However, the 'double layer' of challenge provided by the CEGs and the Challenge Group was designed to mitigate this, with the CEGs in particular being instrumental in the early phase of the process by refocusing the companies and pushing them to think broadly and innovatively about the value of potential investments.

Some interviewees suggested that Ofgem's Draft and Final Determinations were too focused on quantitative evaluation and increasingly framed the CVP incentive as a minor addition to a traditional business plan evaluation, as opposed to a transformation of how a network company assessed its investments. Some interviewees complained that the investments recommended for a CVP reward by the CEGs and the Challenge Group had been overlooked, leading them to observe a lack of clarity around what constituted a CVP. A tension appears to exist between using the CVP to reward what customers value, as interpreted by the network companies' customer engagement, and Ofgem's interpretation of customer values, in its role as a customer proxy.

For the electricity distribution price control, which runs from 2023 to 2028, Ofgem offered further clarification of the purpose of the CVP. In this context, the mechanism rewards the customer value of proposals that exceed minimum requirements in categories considered important for government policy. Ofgem also created boundaries by limiting CVPs to ten per company and stating that proposals must show a consumer value above £3 m (Ofgem, 2020f). Clarifying the boundaries within which the CVP reward can operate is an improvement from GD2, but using a financial measurement may discourage some potentially valuable projects as there are challenges associated with using a monetised social value assessment (e.g., Nicholls et al., 2012; Yates and Marra, 2017). As summarised by Yates and Marra, 'placing a dollar (or pound or euro or renminbi) sign in front of a number imbues that number with not only more importance than it may deserve, but more apparent reliability and validity than it may be due' (Yates and Marra, 2017 pp. 139).

There may be potential to incentivise change should a social value metric be used that assesses the overall positive or negative customer outcomes of the business plan, which was the initial expectation of some of our interviewees and had been welcomed at the time. The regulator needs to find an approach incorporating the qualitative values that come from social and environmental outcomes but also to recognise that there will be difficulties if trying to use monetised qualitative values for benchmarking purposes. If Ofgem wishes to include social and environmental outcomes in investment decisions, then further investigation is needed into the future role of Ofgem and the extent of its expertise in valuation methodologies.

The subsequent price control runs from 2026 to 2031 for gas networks (transmission and distribution) and electricity transmission and 2028–2033 for electricity distribution, years which will be pivotal for ensuring that Britain reaches its net-zero target. The Final Determinations for the electricity distribution price control were scheduled for the end of 2022. After this point, Ofgem will begin consulting on the frameworks and methodologies for future regulatory frameworks and will need to decide on the emphasis it wishes to place on public purpose and the consumer value of investments. Therefore, should the future of utility regulation in Britain advance a public purpose agenda, as suggested by Cave and Wright (2021), then finding a method for embedding the assessment of positive consumer outcomes into companies' core business decision-making processes should be a priority. Including a consumer value assessment should be welcomed as a progressive step in this direction.

Customer engagement was introduced in RIIO1, but it has a more central role in RIIO2, as to qualify for any type of reward in the Business Plan Incentive a minimum customer engagement standard must be achieved. Therefore, we suggest embedding customer value in a similar way that customer engagement has become a central part of the business planning process. Rather than a reward based on the monetary value of CVP proposals, companies could be required to not only show a minimum standard of customer engagement but also to show that the business plan's overall consumer value is positive. Rather than asking the CEGs and the Challenge Group to veto which CVP proposals should be given a reward based on a monetised social value assessment, the remit of the CEGs and Challenge Group could be to decide whether the company business plan has shown a positive customer value as a minimum standard, as it currently does for the customer engagement assessment. This approach would enable the regulator to access a wider pool of expertise in understanding and assessing the qualitative values associated with social and environmental outcomes.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

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