



GD23 - Gas Distribution Price Control 2023-2028

Draft Determination Annex E
Frontier shift
March 2022



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To protect the short- and long-term interests of consumers of electricity, gas and water.



Our vision

To ensure value and sustainability in energy and water.



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Abstract

We determine frontier shift, or the amount of the addition to or subtraction from the amounts determined, for the NI Gas Distribution Networks' (GDNs') operational and capital expenditure (opex and capex). Our calculations are based on the projected rate of gas industry input costs compared to our assumptions for CPIH and productivity growth.

Audience

Industry, consumers and statutory bodies

Consumer impact

The overall impact of our determined frontier shift across GD23, including the two prior years from base year, helps reduce NI Gas Distribution Networks' (GDNs') operational and capital expenditure (opex and capex) compared to what would otherwise have been the case absent of frontier shift. This is due in large part to our assumed 1pp growth in productivity across both opex and capex.



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Executive Summary

The purpose of this report is to determine the amount of the addition to or subtraction from the amounts determined for the NI Gas Distribution Networks' (GDNs') operational and capital expenditure (opex and capex) to account for frontier shift.

This calculation is based on the projected rate of gas industry input costs compared to general inflation movements, as measured by CPIH (Consumer Prices Index, including owner occupiers housing costs), and the projected rate of productivity growth. The sum of these components can be a positive or a negative difference.

$$\begin{aligned} \text{Frontier shift in real terms} &= \text{input price increase minus} \\ &\quad \text{forecast CPIH (measured inflation) minus} \\ &\quad \text{productivity increase} \end{aligned}$$

(NB: Taken together, nominal input costs compared to general inflation are referred to as 'real price effects' (RPEs).)

Within this report, we have adopted the methodology we first introduced at PC13 for NI Water, which aligns closely with the Competition Commission (CC) determination for Northern Ireland Electricity at RP5 and more recent Competition and Markets Authority (CMA) decisions.

The forecast for each of the components and the resulting frontier shift to be applied to GD23 opex and capex targets are given in the tables below.

Figures in %	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
Weighted nominal input prices	4.4	3.8	2.9	2.3	2.8	3.3	3.3	3.3
CPIH	(2.9)	(4.0)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)
Productivity	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)
Frontier shift	CPIH + 0.4	CPIH -1.2	CPIH -0.2	CPIH -0.8	CPIH -0.3	CPIH +0.1	CPIH +0.1	CPIH +0.1
Cumulative frontier shift	0.4	-0.8	-1.0	-1.9	-2.2	-2.0	-1.9	-1.8

Note 1. Figures may not sum due to rounding.

Table A: GD23 Opex frontier shift calculations



Figures in %	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
Weighted nominal input prices	4.4	3.8	2.9	2.3	2.8	3.3	3.3	3.3
CPIH	(2.9)	(4.0)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)
Productivity	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)
Frontier shift	CPIH + 0.4	CPIH -1.2	CPIH -0.2	CPIH -0.8	CPIH -0.3	CPIH +0.1	CPIH +0.1	CPIH +0.1
Cumulative frontier shift	0.4	-0.8	-1.0	-1.9	-2.2	-2.0	-1.9	-1.8

Note 1. Figures may not sum due to rounding.

Table B: GD23 Capex frontier shift calculations

Further detail on the make-up of the frontier shift is contained in the following sections.

1. Introduction

- 1.1 This annex gives further detail of our analysis and considerations around frontier shift assumptions for GD23.
- 1.2 Taken together, RPEs and productivity (or ongoing efficiency) when adjusted for general inflation give frontier shift. This can be represented as follows:

$$\begin{aligned} \text{Frontier shift in real terms} &= \text{input price increase minus} \\ &\quad \text{forecast CPIH (measured inflation) minus} \\ &\quad \text{productivity increase} \end{aligned}$$

The various components of the calculations are assessed in turn in the following sections, before drawing to draft determination conclusions at the end of the paper.

2. Real Price Effects

- 2.1 The cost of a company's inputs may vary over time. Price controls have usually been indexed by a measure of general inflation to account for broad changes in prices. Historically, the measure used has been the Retail Price Index (RPI). More recently this has been moving to newer measures such as the Consumer Prices Index (CPI) or Consumer Prices Index including owner occupiers housing costs (CPIH).
- 2.2 However, with any measure of general inflation, not all types of cost changes experienced by a network business will be reflected in the basket of prices used to calculate the general inflation measure. To account for this it is common practice to calculate and make adjustments for the difference, either positive or negative, between particular input price changes for a company or industry and the general measure of inflation. This difference is described as real price effects (RPEs).

Company business plan submissions

- 2.3 All the GDNs provided supplementary papers to address real price effects within their business plan submissions.
- 2.4 Firmus Energy (FE), within their benchmarking and efficiency supplementary paper, focused on the assumptions that Ofgem made in its RIIO-GD2 price control, as the most recent regulatory decision available at the time it prepared its business plan. The information considered led FE to propose the use of the RIIO-GD2 RPE 2021 - 2026 forecasts for GD23, as set out in Ofgem's Final Determination, Core Document, as applied to labour and materials inputs¹.
- 2.5 FE's resulting allowance for RPEs for labour costs average was around 1.8% per year above CPIH. For materials cost increases an average of around 2.2% per year above CPIH was included.
- 2.6 The Phoenix Natural Gas Ltd (PNGL) supplementary paper on frontier shift in their business plan submission was produced by NERA Economic Consulting. This contained suggested RPEs and productivity figures for GD23, taken from a review of various information sources carried out by NERA. PNGL proposed using the frontier shift parameters by NERA in their business plan submission, applying the same forecasts to opex and capex.
- 2.7 For labour costs PNGL sub-divided the category into general and specialist. The submission proposed RPEs of an average of 1.0% and 1.1% per year

¹ https://www.ofgem.gov.uk/sites/default/files/docs/2020/12/final_determinations_-_core_document.pdf#page=68

above CPIH for general and specialist labour respectively. For materials costs, RPEs of 1.5% on average per year above CPIH were proposed. Equipment/plant RPEs were predicted to sit on average, if with some initial variability, around the level of CPIH for GD23. There was also an additional input cost category of 'transport', which is assumed to move with general inflation, i.e. no RPE is applicable.

- 2.8 SGN also provided papers that set out the information considered for various cost input categories respective RPEs for GD23. As a result, the RPEs proposed by SGN apply to labour and materials input costs. The RPE for labour was estimated at 1.6% above CPIH, with materials 3.5% above CPIH.

GDN business plans - real price effects proposals	2021	2022	2023	2024	2025	2026	2027	2028	Average
FE	-0.6%	-1.1%	1.6%	1.9%	1.8%	1.8%	1.8%	1.8%	1.1%
PNGL	-0.6%	-1.0%	0.4%	0.8%	1.4%	1.3%	1.3%	1.3%	0.6%
SGN (opex)	-1.0%	-2.0%	1.0%	1.4%	1.4%	1.4%	1.4%	1.4%	0.6%
SGN (capex)	-0.5%	-1.5%	1.5%	1.9%	1.9%	1.9%	1.9%	1.9%	1.1%

Note 1. Figures may not sum due to rounding.

Table 2.1: GDN business plan estimates of real price effects by year.

- 2.9 We proposed certain input cost categories in our final approach for the GD23 price control. As noted at that time, they would form the categories for GD23 as a minimum. Our decision on the weights to apply for RPEs at draft determination and reasons follow below.

Weights

- 2.10 To estimate RPEs we first separate a company's input costs into various input types. This is a necessary step as input prices in different cost categories may vary by input type.
- 2.11 Nominal price inflation for each category of cost is then calculated. Finally, accounting for general inflation (CPIH) and applying weights to each input category we calculate an overall value, or weighted average, of RPEs in each year of the price control.
- 2.12 As part of their business plan submissions, the GDNs were asked to submit what they thought were the appropriate cost category weights for both opex and capex.
- 2.13 FE proposed the same input cost types that were used at GD17 and in our GD23 final approach. The proportions/weights for the cost categories were however different and with the same weightings applied to both opex and capex.

- 2.14 PNGL's submission used different weights and cost categories than in GD17 and our final approach for GD23. The weights proposed were those used for the totex RPEs in Ofgem's RIIO-GD2 price control. For both opex and capex, the labour category was sub-divided into general and specialist and a further cost category of 'transport' was added.
- 2.15 SGN's submission used the GD17/GD23 final approach cost categories for opex and capex. Slightly different weights were used for opex. For capex also, different weights were proposed for cost input categories.
- 2.16 A comparison of the various cost categories and weights proposed by UR and the GDNs is in the table below.

Opex cost categories	Categories used				Weights			
	FE	PNGL	SGN	UR	FE	PNGL	SGN	UR (approach document)
Labour	✓	-	✓	✓	70%	-	56%	52%
General labour	✗	✓	✗	✗	-	41%	-	-
Specialist labour	✗	✓	✗	✗	-	29%	-	-
Materials	✓	✓	✓	✓	14%	14%	2%	6%
Equipment/Plant	✓	✓	✓	✓	4%	4%	1%	1%
Other	✓	✓	✓	✓	12%	9%	41%	41%
Transport	✗	✓	✗	✗	-	2%	-	-
Capex cost categories	FE	PNGL	SGN	UR	FE	PNGL	SGN	UR (approach document)
Labour	✓	-	✓	✓	70%	-	38%	56%
General labour	✗	✓	✗	✗	-	41%	-	-
Specialist labour	✗	✓	✗	✗	-	29%	-	-
Materials	✓	✓	✓	✓	14%	14%	25%	19%
Equipment/Plant	✓	✓	✓	✓	4%	4%	32%	4%
Other	✓	✓	✓	✓	12%	9%	5%	21%
Transport	✗	✓	✗	✗	-	2%	-	-

Note 1. Figures may not sum due to rounding.

Table 2.2: Input cost categories and weights proposed by UR and GDNs

- 2.17 For GD23, we considered the adoption of weights specific to each company. Following consideration of this, we have decided not to adopt this approach. We are concerned that if we were to do so, we may be inconsistent with the principal objective of RPEs – estimating the likely shift in the industry frontier. Our approach thereby avoids any risk that our frontier shift approach

essentially passes through company costs via a RPEs assessment which mirrors a company's actual cost proportions rather than the cost weights applying to an efficient company at the frontier.

- 2.18 We had proposed in our GD23 approach document to use the GD17 weights as a minimum. In addition, there are also the RIIO-GD2 weights to consider, which are the notional structure weights determined by GB energy regulator, Ofgem.
- 2.19 We are mindful of the relevance of the RIIO-GD2 price control analysis to GD23, a view also put forward by the NI GDNs in their submissions. The GD17 weights themselves were adopted from previous Ofgem gas distribution analysis. Given these considerations along with the adoption by 1 of the NI GDNs of the RIIO-GD2 weights, we have decided to use the Ofgem weights as the basis for GD23 weights.
- 2.20 The weights from RIIO-GD2, shown in the table below, do not differentiate between direct and contract labour. We consider that this approach helps avoid any unintentional influence on GDN decisions on labour supply when choosing between direct and/or contracted labour.
- 2.21 From the Ofgem analysis, we note that the same labour cost indices were applied to both general and specialist labour costs. That is, while presented as the 2 categories of general and specialist, cost inflation for both are in practice addressed as if a single category. As such, we present the labour input cost category here as a single category to reflect treatment of labour input price inflation in the RIIO-GD2 final determination.

Cost Category	RIIO-GD2	GD23
General labour	41%	70%
Specialist labour	29%	
Materials	14%	14%
Plant and equipment	4%	4%
Transport	2%	2%
Other	9%	9%

Note 1. Figures may not sum due to rounding.

Table 2.3: GD23 RPE cost categories and weights, adopted from Ofgem's RIIO-GD2 RPEs final determination

Input prices - labour

- 2.22 As the cost category of labour makes up over half of the opex and capex, it is important that the figures used for these input prices are both fair and robust.

- 2.23 The three GDNs were asked to provide their estimates of wage inflation for the GD23 period. Different methods were employed to produce these including: review and use of precedent; third party data provider forecast; use of econometric modelling; and a combination of these.
- 2.24 Looking across the GDNs submissions for GD23, all the GDNs expect (nominal) labour costs to rise within a relatively close range, on average. That is, between 3% and 3.6% per year across the GDNs. Some year on year volatility can be observed across the submissions and PNGL did sub-divide labour into general and specialist. That said, the profile of the labour cost increases presented is broadly similar: starting from around 2% and rising to a peak around mid-GD23, then flattening out.
- 2.25 The RIIO-GD2 input cost category weights contain a sub-division of labour between general and specialist labour. Looking to the Ofgem analysis, we note that the same labour cost indices were selected for both general and specialist labour costs. That is, while presented as 2 categories - general and specialist, their costs inflation are in practice accounted for as a single category. We treat the labour categories the same, using our chosen source for labour cost inflation for both categories. The source is the Office of Budget Responsibility (OBR), a body which is independent of government that provides authoritative analysis on a range of economic issues.
- 2.26 For our GD17 analysis we used average earnings data to assess labour cost changes. Forecasts for this data series are provided by OBR. For GD23 we consider continuity of this approach beneficial and given the data source, reliable and consistent with our other data series. Reflecting the RIIO-2 analysis, we are also applying our chosen data source to general and specialist labour categories.
- 2.27 At the time of writing, full 2021 yearly data is not available to allow use of out turn labour cost growth data. For draft determination we therefore turn to OBR forecast data from October 2021 and subsequent years labour cost growth.
- 2.28 Figure 2.1 below shows the historic growth in average earnings, along with the OBR forecast (October 2021) out to Q1 2027. Note the volatility expected as the effects of the pandemic continue to work through the economy.

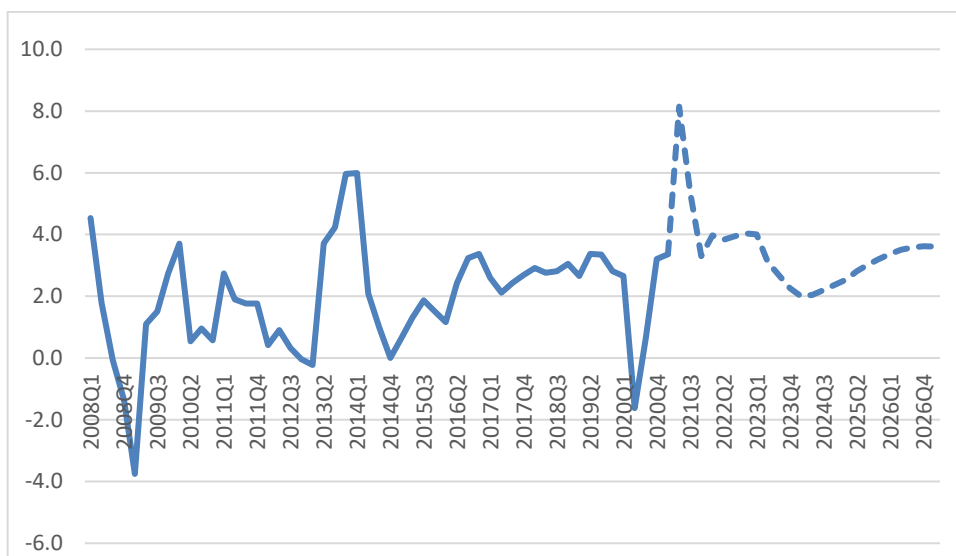


Figure 2.1: Average earnings growth (%) - OBR Economic and Fiscal Outlook October 2021

2.29 Table 2.4 below shows the OBR forecast annual amounts of average earnings growth that we apply at draft determination. For the years for which no forecast is available, we apply the last year of forecast made by OBR.

Labour market	% change on year earlier, unless otherwise stated						
	Out turn	Forecast					
	2020	2021	2022	2023	2024	2025	2026
Average earnings	1.2	5.0	3.9	3.0	2.2	2.9	3.5

Table 2.4: OBR Economic and Fiscal Outlook, October 2021 - Labour market summary, Table 2.7

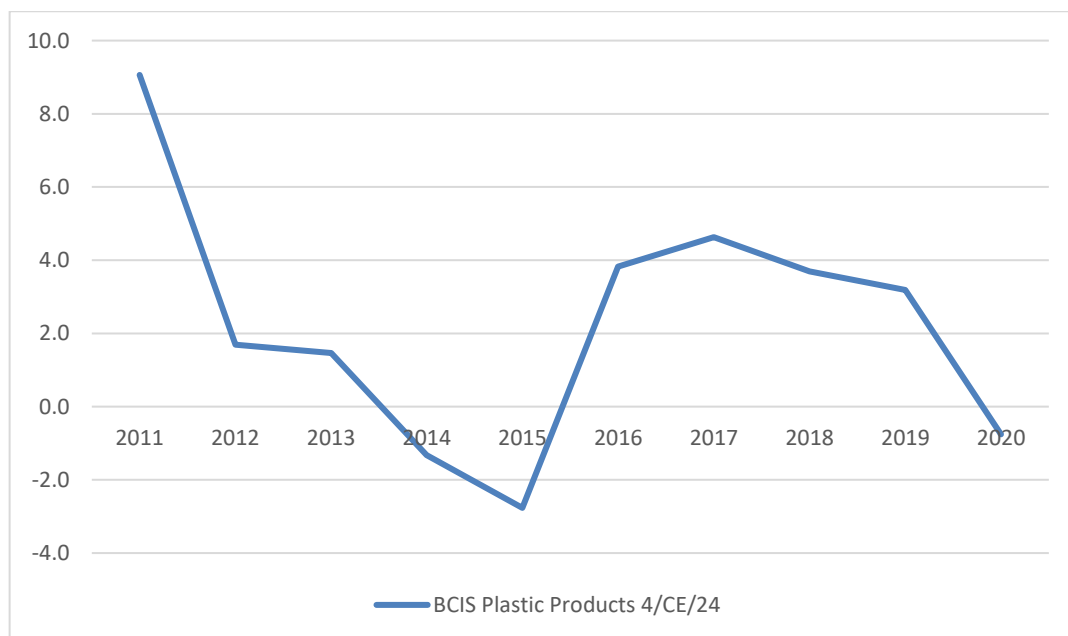
Input prices - materials

2.30 The next category we assess is materials, which make up 14% of input costs in the structure applied, being an important consideration of RPEs.

2.31 All GDNs provided a view on materials cost changes for GD23, with differing expectations on the expected growth rate. Within the detailed annual amounts submitted by the GDNs, the minimum was just over 2.5% and the peak just below 6%. The separate annual amounts taken over the whole GD23 period average to annual growth rates ranging from slightly below 4% to slightly above 5%.

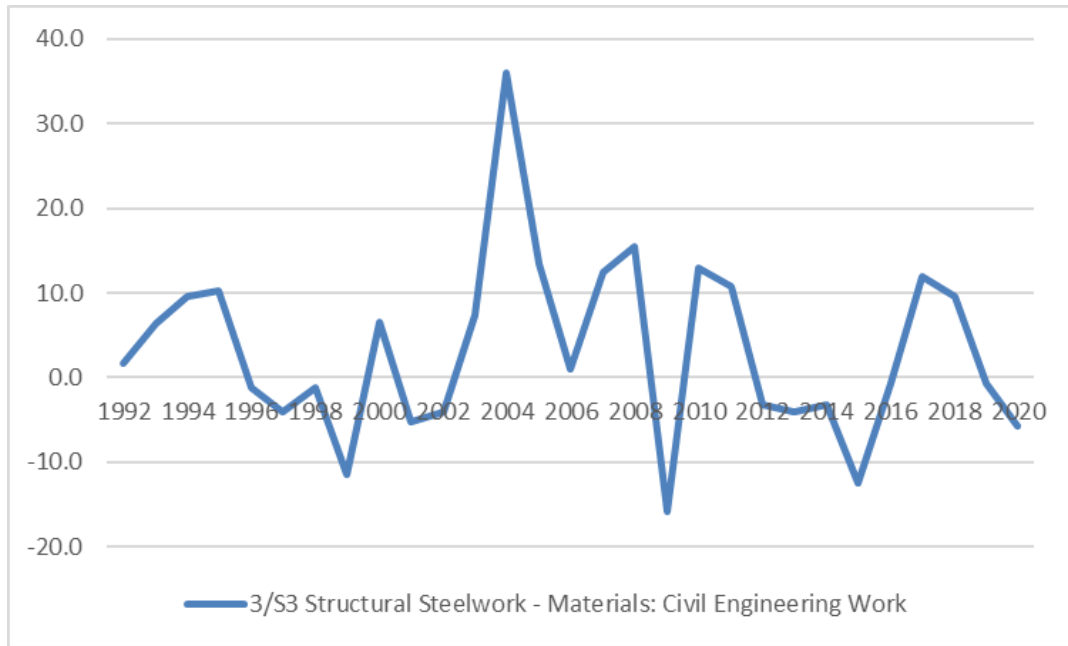
2.32 There was also some variation on the expected profile of yearly growth. This ranged from starting slower and building toward a peak amount, to placing a flat estimate for the full GD23 period.

- 2.33 Our analysis for this area used data from the Royal Institute of Chartered Surveyors Building Cost Information Service (BCIS). We also used the NOCOS and FOCOS indices from the Department for Business, Innovation and Skills (BIS).
- 2.34 To provide annual estimates for materials nominal input price inflation, we first looked at the BCIS index dataset for Plastic Products (including pipes). This dataset runs from 2010 providing a 10 year view of price inflation for that materials type. We also drew on the BCIS index for Structural Steelwork - Materials: Civil Engineering Work. This second BCIS dataset gives a longer view, from 1991. In addition there are the NOCOS and FOCOS series that have a longer time series again available.
- 2.35 The figures below show the historic growth of the materials indices referenced above:
- Figure 2.2 shows Plastic Products (including pipes), 4/CE/24, change year on year (%);
 - Figure 2.3 shows Structural Steelwork - Materials: Civil Engineering Work, 3/S3,m change year on year (%);
 - Figure 2.4 shows NOCOS and FOCOS change year on year (%).



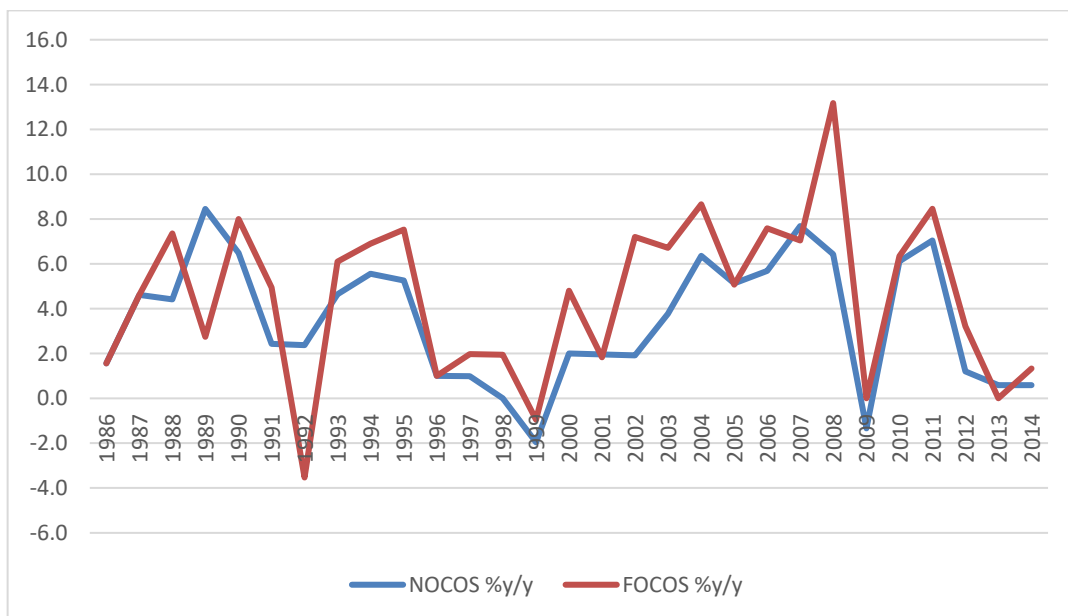
Source: BCIS Plastic Products (including pipes), 4/CE/24, November 2021.

Figure 2.2: BCIS Plastic Products (including pipes), 4/CE/24, change year on year (%)



Source: BCIS 3/S3 Structural Steelwork - Materials: Civil Engineering Work November 2021.

Figure 2.3: BCIS Structural Steelwork - Materials: Civil Engineering Work, 3/S3,m change year on year (%)



Source: BIS Construction Resource Indices: NOCOS' - Resource Cost Index of Building Non-Housing, Material and 'FOCOS' Resource Cost Index for Infrastructure, Materials

Figure 2.4: NOCOS and FOCOS change year on year (%)

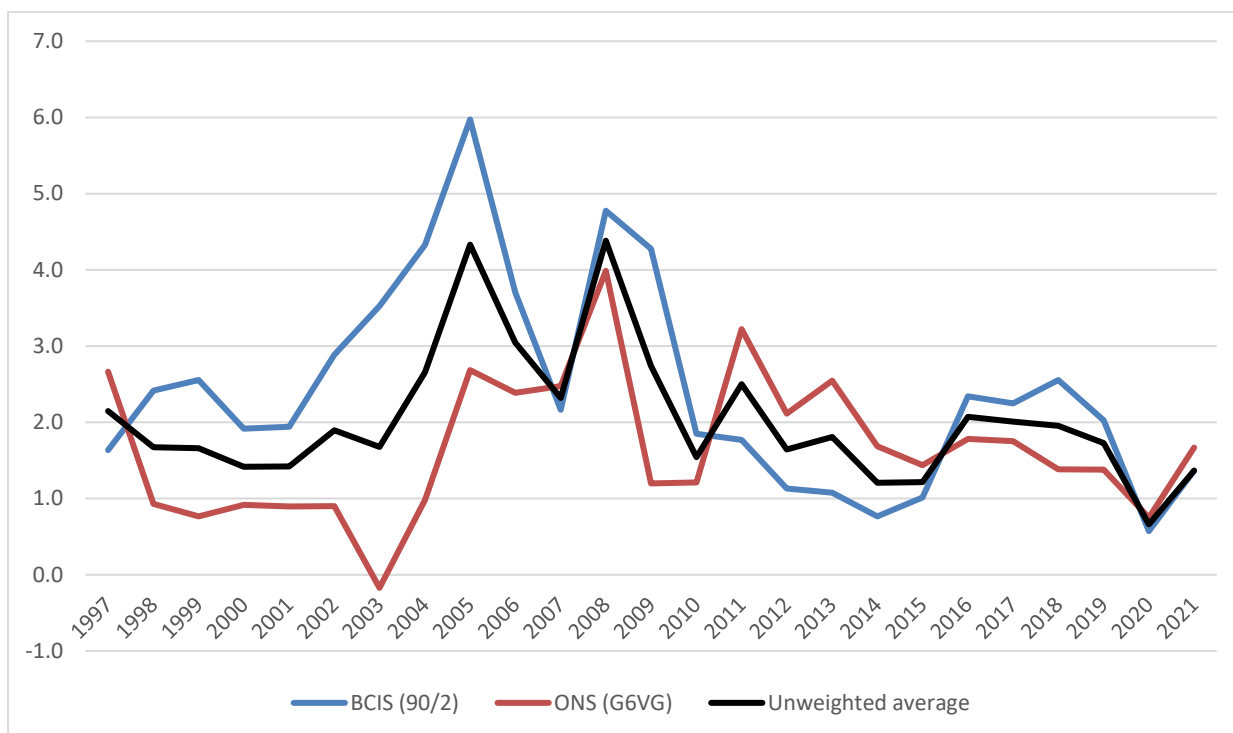
2.36 We use the long term average over the full dataset of each index, BCIS 4/CE/24 (2010 - 2020), BCIS 3/S3 (1991 - 2020), NOCOS (1986 - 2014) and FOCOS (1986 - 2014), to give an estimate for the input price inflation for the materials category. Combined, these unweighted long term averages give the amounts shown in Table 2.5.

	2021	2022	2023	2024	2025	2026	2027	2028
Materials inflation	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%

Table 2.5: Materials price inflation

Input prices - equipment and plant

- 2.37 FE and SGN provided forecasts for this cost category that show an increase in annual cost growth up to a peak in 2024. The growth then remains at the peak level to the end of GD23.
- 2.38 PNGL opted for a flat estimate for annual cost growth for equipment and plant.
- 2.39 While profiling of the various estimates vary, the different approaches averaged to a range of 2.2% to 2.6% cost increase annually across the GDNs.
- 2.40 To establish potential cost changes in this category in GD17 we examined indices from the Office for National Statistics (ONS) and the BCIS. From ONS we used the Machinery and Equipment component (K389) of the Producer Prices Index. And, from BCIS we used Plant and Road Vehicles (90/2).
- 2.41 For GD23 we have used Machinery and Equipment Market (G6VG) from ONS along with the BCIS index to inform price changes in this area. For 2021 we take an unweighted average of out turn data from both indices. For the years thereafter, in the absence of any published forecast, we use the unweighted long term average (1997 - 2020) of both indices.
- 2.42 Figure 2.5 below shows the historic growth of the indices plus an unweighted average of both.



Source: Office for National Statistics, Machinery and Equipment N.E.C. for Domestic Market (G6VG) and Building Cost Information Service: Price Adjustment Formulae Indices for Civil Engineering, 90/2 Plant and Road Vehicles.

Figure 2.5: Equipment and plant indices inflation, % change over 12 months

2.43 Our annual amounts for equipment and plant inflation over the GD23 period are shown in Table 2.6 below.

	2021	2022	2023	2024	2025	2026	2027	2028
Equipment and plant inflation	1.5%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%

Table 2.6: Equipment and plant price inflation

Input prices - other

2.44 As was the case in our last GDN price control review (GD17), for the “other” category, in the absence of a suitable index for this cost item we assume that prices increase at the same nominal rate as general inflation. In this case the Consumer Prices Index including owner occupiers housing costs (CPIH). This in effect leads to a nil RPE applying to 'other' costs.

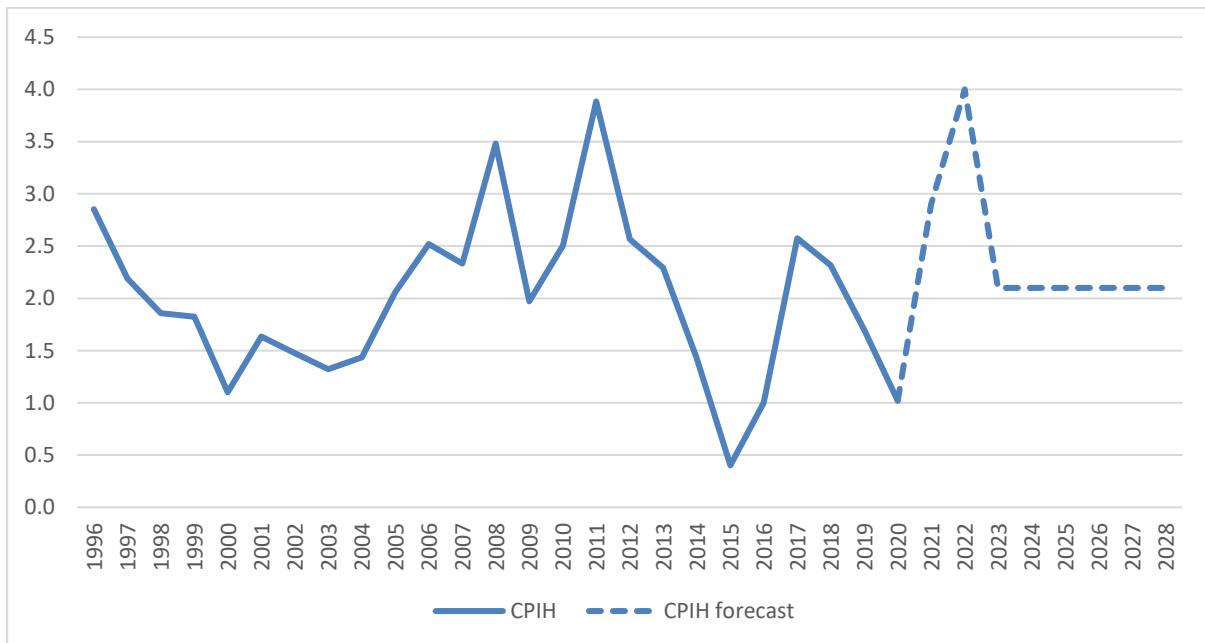
2.45 More detail of the assumed CPIH values is provided below.

Consumer Prices Index projections

2.46 As the input prices above are in nominal terms, it is necessary to apply an inflation discount in order to transform the calculated price effects into real terms.

2.47 We have moved to using CPIH as our inflation measure for GD23. The latest OBR forecasts were published in October 2021 and show RPI generally increasing in the early part of the forecast to a peak around 5% in 2022, before settling back down around 2024 to the end of the forecast.

2.48 CPIH sits at 3.8% for the 12 months to October 2021, when the latest OBR economy data was published. The Bank of England acknowledges upward pressure on prices in their latest November 2021 Monetary Policy Report. They however expect current cost pressures to prove temporary, with inflation falling back to around expected levels in around 2 years' time.



Source: CPIH out turn data ONS, CPIH All Items Index; UR forecast CPIH

Figure 2.6: Consumer Prices Index, annual change (%)

2.49 The numbers presented in Figure 2.6 are also shown in Table 2.7 below.

	2021	2022	2023	2024	2025	2026	2027	2028
CPIH forecast	2.9%	4.0%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%

Note: numbers rounded to 1 decimal place

Table 2.7: Consumer prices index, including owner occupier housing costs (CPIH) UR forecast annual change %

3. Productivity

3.1 A company can become more efficient over time and so close the gap between its efficiency level and that of the economic frontier. Equally, the industry's overall efficiency or frontier can change over time. It is possible the most efficient company in an industry can find new or improved ways of using less input volumes to maintain current output levels.

Company business plan submissions

3.2 All the GDNs provided estimates of frontier productivity improvement to apply in GD23. These ranged from 0.23% to 0.85% for opex and from 0.34% to 0.75% for capex. The individual GDN proposals are shown in Table 3.1 below.

GDN	Opex	Capex
FE	0.85%	0.75%
PNGL	0.40%	0.34%
SGN	0.23%	0.35%

Note 1. Figures may not sum due to rounding.

Table 3.1: Annual productivity improvements proposed by GDNs

3.3 FE focused on the recent RIIO-GD2 decisions from Ofgem. In particular, on the productivity (ongoing efficiency) range proposed by Ofgem's advisors, CEPA. FE calculated a mid-point of the CEPA range as their GD23 productivity amounts.

3.4 PNGL submitted a paper provided by their advisors, NERA. This set out how their productivity (ongoing efficiency) proposals included in Table 3.1 above were arrived at. Topics covered included: use of growth accounting data (EU KLEMS²); productivity input and output measures (total or partial factor productivity and gross output or value added) and the time period assessed (full dataset or other period e.g. business cycle).

3.5 NERA used EU KLEMS data from 3 sectors: (i) construction; (ii) wholesale retail trade: repair of motor vehicles and (iii) total manufacturing. An average of total factor productivity (TFP) and partial factor productivity measures for the 3 sectors gave the opex amount. And an average of TFP for the 3 sectors gave the capex amount. All used the gross output (GO) measure, rather than the value added (VA). GO was not provided in the EU KLEMS

² <https://euklems.eu> (2019 release)

data published. Having a preference for it, NERA calculated an approximated GO measure using the published VA data.

- 3.6 SGN also looked at the recent RIIO-GD2 price control to establish a range of possible productivity improvement for GD23. Based on the development stage of SGN (relative maturity of the network), SGN believed productivity improvement exhibited by mature GDNs should not be applied to them. This has the effect of reducing their proposed productivity improvement as they 'aim down' within the RIIO-2 range of possible estimates.
- 3.7 SGN also took the view that the TFP measure was particularly relevant to SGN activities and inputs. Hence in their submissions there is a preference for use of TFP in arriving at any productivity estimate for GD23.
- 3.8 Using EU KLEMS presents choices to be made around productivity input and output measures, as discussed by the PNGL/NERA paper. Analysis in the area generally says that there is a systematic difference in growth calculated by GO or VA measures. That is, GO is systematically lower than VA.

Regulatory precedent

- 3.9 In their decision for productivity improvement for RIIO-GD2, Ofgem assessed the productivity improvement that could be observed from comparator sectors to the GB GDNs using EU KLEMS data. This was one factor in establishing the range of possible productivity improvement for GB GDNs.
- 3.10 The different types of productivity measures and comparator sets considered by Ofgem are shown in the table below. As can be seen in Table 3.2, there is a range of possible productivity change presented from the data selected.
- 3.11 Ofgem interpreted this data that EU KLEMS supports a range of up to approximately 1.0% for opex and 0.9% for capex³.

³ CEPA, RIIO-GD2 and T2: Cost Assessment – Advice on Frontier Shift policy for Final Determinations, November 2020, Table 1.

Unweighted average of selected industries (opex) ⁴	Productivity measure			
	TFP VA	LP VA	TFP GO	LEMS GO
Full dataset (1995 - 2016)	0.78	1.15	0.36	0.42
2006 - 2016	-0.49	-0.77	-0.21	-0.25
1997 - 2016	0.51	0.77	0.24	0.28
Weighted average of all industries (capex) ⁵	TFP VA	LP VA	TFP GO	LEMS GO
Full dataset (1995 - 2016)	0.85	1.00	0.44	0.50
2006 - 2016	0.10	-0.41	0.10	0.06
1997 - 2016	0.88	1.00	0.45	0.51

Note 1. Source: Excel workbook - CEPA, [Final] Ongoing Efficiency - Version 2 (30/11/20)

Table 3.2: EU KLEMS productivity growth estimates by CEPA, for Ofgem's RIIO-T2/GD2 price control review.

- 3.12 Another factor in arriving at an annual productivity change amount is consideration of productivity assumptions applied to regulated businesses in recent price control decisions (regulatory precedent).
- 3.13 Table 3.3 below shows the productivity (or ongoing efficiency) assumptions applied by various regulatory decision makers. Most have applied assumptions of or around 1% per year for opex and capex. The most recent gas distribution related decision is shown at the top of the table, the CMA RIIO-T2/GD2 appeal decision.

Decision body	Year	Opex	Capex
CMA RIIO-T2/GD2	2021	1.05%	0.95%
UR NI Water PC21	2021	0.8%	0.6%
CMA PR19	2019	1.0%	
UR NIE Networks RP6	2017	1.0%	1.0%
UR Gas Distribution Networks GD17	2016	1.0%	1.0%
UR NI Water PC15	2014	0.9%	0.6%
Competition Commission – NIE RP5	2014	1.0%	1.0%
UR Gas Distribution Networks GD14	2013	1.0%	1.0%
Ofgem RIIO-T1/GD1	2012	1.0%	0.7%

Note 1. Figures may not sum due to rounding.

Table 3.3: Recent regulatory decisions on annual productivity growth (%).

⁴ "Targeted comparator set": (1997 - 2016) construction, wholesale and retail trade: repair of motor vehicles and motorcycles; transportation and storage; and financial and insurance activities

⁵ "Economy-wide comparator set": (1997 - 2016) weighted average of all industries excluding real estate, public admin, education, health and social services

Our assessment

- 3.14 To inform the range for possible productivity estimates at GD17 we drew on: (i) the annual productivity growth rates considered by Ofgem from EU KLEMS analysis as part of RIIO-1 and (ii) regulatory precedent. Taken together, (i) and (ii) led to a 1.0% productivity improvement for opex and capex being adopted.
- 3.15 For GD23 a similar approach would lead us to the RIIO-2 analysis on productivity improvement. There was support for the relevance of RIIO-GD2 RPE and ongoing efficiency (OE)⁶ estimates in the GDNs business plan submissions. Further to that, we consider precedent of the RIIO-2 gas distribution companies the most relevant for our considerations.
- 3.16 In addition we consider what GDNs proposed in their business plan submissions for RIIO-2. Ofgem note that 2 (GB) companies offered up annual productivity growth of 1.0% totex and a further 2 offered 1.1% opex. From Table 3.1 above, we see the NI GDNs offered a range of annual productivity growth in their business plans, with firmus energy offering 0.85% opex and 0.75% capex.
- 3.17 The productivity (OE) rate determined by Ofgem has subsequently been through a review by the Competition and Markets Authority (CMA). The CMA decided Ofgem was "not wrong" in setting the 'core' productivity rates of 0.95% for opex and 1.05% for capex. However the CMA decided an 'innovation uplift' of 0.2% applied by Ofgem on top of the core productivity assumptions was "wrong".
- 3.18 Ofgem's advisors (CEPA) provided a report of their analysis and a range of possible productivity challenge. These are shown in Table 3.4 below, along with the final determination numbers arrived at by Ofgem.

	CEPA range
Opex	0.7% - 1.2%
Capex (& repex)	0.5% - 1.0%

Note 1. Source: RIIO-GD2 and T2: Cost Assessment – Frontier shift methodology paper, May 2020, Table 3.2, excluding 0.2% innovation uplift amount.

Table 3.4: CEPA range of productivity improvement for Ofgem consideration.

- 3.19 For Ofgem to arrive at their final proposals they used the CEPA ranges and also took into account other factors including:

⁶ Ofgem use the term 'ongoing efficiency' (OE) to refer to what we term 'productivity' [change].

- giving some weight to GO measures (which reduced proposals on productivity given at the draft determination);
- available productivity forecasts. On this latter point on the use of available forecasts, Ofgem stated they:
- "[did] not wish to place significant weight on such economy-wide and short-term forecasts, as network companies are not exposed to these short-term risks (to volume and revenue) as their comparators in the wider economy and are better able to withstand any short-term shocks. OBR and BoE forecasts may therefore underestimate productivity in network companies and are not appropriate for setting ongoing efficiency."

3.20 Given the endorsement of the Ofgem productivity conclusions by CMA review (core amount) and the views of GB GDNs on what productivity is achievable in RIIO-2, we propose a productivity improvement for the GDNs opex and capex in Table 3.5 below.

	Opex	Capex
Productivity change	1.0%	1.0%

Table 3.5: GD23 productivity change (%)

4. Frontier shift conclusions

4.1 Frontier shift can be determined as follows:

$$\text{Frontier shift in real terms} = \text{input price increase minus forecast CPIH (measured inflation) minus productivity increase}$$

4.2 The respective net impact of frontier shift for both opex and capex is shown in Table 4.1 and Table 4.2 below. Please note numbers may not sum due to rounding. For draft determination we propose a cumulative frontier shift over the GD23 period of ~1.8% for opex and capex.

Figures in %	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
Weighted nominal input prices	4.4	3.8	2.9	2.3	2.8	3.3	3.3	3.3
CPIH	(2.9)	(4.0)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)
Productivity	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)
Frontier shift	CPIH + 0.4	CPIH -1.2	CPIH -0.2	CPIH -0.8	CPIH -0.3	CPIH +0.1	CPIH +0.1	CPIH +0.1
Cumulative frontier shift	0.4	-0.8	-1.0	-1.9	-2.2	-2.0	-1.9	-1.8

Note 1. Figures may not sum due to rounding.

Table 4.1: Opex frontier shift calculations

Figures in %	GD17		GD23					
	2021	2022	2023	2024	2025	2026	2027	2028
Weighted nominal input prices	4.4	3.8	2.9	2.3	2.8	3.3	3.3	3.3
CPIH	(2.9)	(4.0)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)
Productivity	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)
Frontier shift	CPIH + 0.4	CPIH -1.2	CPIH -0.2	CPIH -0.8	CPIH -0.3	CPIH +0.1	CPIH +0.1	CPIH +0.1
Cumulative frontier shift	0.4	-0.8	-1.0	-1.9	-2.2	-2.0	-1.9	-1.8

Note 1. Figures may not sum due to rounding.

Table 4.2: Capex frontier shift calculations