Strategic investment and public confidence: Impact and costing note

Introduction

This note reviews the recommendations in the *Strategic investment and public confidence* report that could have significant spending implications. It assesses:

- the impact of the recommendations on the Commission's objectives to support sustainable economic growth across all regions of the UK, improve competitiveness and improve quality of life
- the expected costs of the recommendations, and their impact on the Commission's fiscal and economic remits
- uncertainty, distributional effects and risks around these estimates and the balance of evidence behind recommendations, as far as it has been possible to make these assessments.

The impact and costing note records the Commission's assessment of these factors in a standard format.

The core of each impact and costing note is how the cost of the recommendation affects the Commission's fiscal and economic remits. These were set out by government in 'Remit Letter to the National Infrastructure Commission'.[1]

Assessing the impact of recommendations in *Strategic investment and public confidence*

In *Strategic investment and public confidence*, the Commission has made eight recommendations to facilitate strategic investment and build public confidence. An updated and strengthened regulatory system should:

1. provide a strategic framework to deliver the UK's long-term investment needs
2. make investment decisions reflecting the priorities of the whole of the UK
3. have statutory duties that support long-term investment
4. use competition to drive innovation
5. balance risk and reward between investors and consumers
6. ensure retail markets work for consumers
7. ensure regulation acts fairly for all groups of consumers
8. improve coordination between the regulators.

The Commission expects that its eight recommendations will ensure that the substantial amount of new investment that is required over the coming decades will be financed and funded in a way that delivers good value for current and future consumers. However, it is very difficult to estimate ex-ante what the magnitude of the recommendations' impacts are likely to be. These recommendations focus on strengthening the framework and institutions of economic regulation, rather than recommending the delivery of any specific infrastructure. It is therefore difficult to identify a clear, direct impact of these recommendations on either public capital expenditure (fiscal remit) or other sources of infrastructure funding including consumer bills (economic remit).

To satisfy its obligations to the fiscal and economic remits, the Commission has reviewed the evidence from recent projects for delivering strategic infrastructure investments using competition; provided an illustrative estimate of how changes in the cost of capital could affect consumer bills; and assessed how much funding regulators' budgets adds to consumer bills.

Objectives

The table below reviews how the Commission's recommendations contribute towards its objectives: to support sustainable economic growth across all regions of the UK; improve competitiveness; and improve quality of life.

Sustainable growth	Reliable and affordable energy, water and telecoms are all enablers of economic growth.[2] Although it is difficult to quantify the impact of mature networks such as water and electricity, there are evaluations which show a positive impact of improved digital networks on economic growth.[3] Recommendation 1 for government to set out a long-term strategic vision for these sectors should help to provide a stable foundation for sustainable economic growth. Recommendation 3 to introduce new duties to comply with greenhouse gas emissions targets will also improve sustainability.
Balance across regions	The recommendations aim to improve the performance of energy, water, and telecoms networks across all countries and regions for which the UK government has reserved powers. Recommendation 2 specifically improves the potential for devolved authorities to influence decisions in their area.
Competitiveness	Recommendation 1 should make the UK water, energy and telecoms sectors more attractive for long-term investment by setting out a clearer long-term strategy. Recommendation 4 will use competition and bespoke price controls to deliver strategic investment at low cost and be open to innovative approaches. Recommendation 6 will increase the importance of competitive, sustainable pricing, rather than relying on consumer disengagement. Recommendation 7 will increase the stability and predictability of regulation, and encourage government to provide clearer direction, giving investors more confidence over the long-term. Recommendation 8 should improve regulator performance by supporting greater coordination and accountability.
Quality of life	Together, the Commission's recommendations aim to support the delivery of energy, water and telecoms investment that will improve consumer outcomes in an affordable way. Recommendation 3 will introduce new duties to ensure that regulator decisions promote infrastructure resilience, which is good for maintaining levels of service. Recommendation 5 should increase public trust in the regulatory system and ensure that the benefits of regulation are shared with consumers. Recommendation 6 requires pricing structures to be designed with real consumer behaviour in mind, which should make engaging with these markets easier and reduce the downsides of disengagement.

Fiscal remit

No fiscal remit impacts of the recommendations have been identified.

Investments in the energy, water and telecoms sectors are funded almost entirely through consumer bills, so public capital expenditure is unlikely to be affected by any impacts that the Commission's recommendations have on investment or operational spending by water, energy and telecoms companies.

Economic remit

The Commission expects that its recommendations will increase stability, transparency and trust in the system of independent regulation, and will provide greater clarity on decision making responsibilities. This should make investment in these sectors more attractive, reducing the return demanded by investors, and consequently the cost to consumers. However, it is impossible to say conclusively what the direction and scale of the impact of these recommendations on investor financing and consumer costs will be.

To satisfy its obligations to its economic remit, the Commission has:

- reviewed the evidence for how its recommendation to increase the use of competition for delivering strategic investments could result in savings on consumer bills
- considered how changes to the cost of capital required by investors can affect consumer bills, with an illustrative example of the impact of a change in the cost of capital for incumbent networks
- assessed the scale of regulators' budgets in the context of overall bills paid by consumers

Competition for delivery of strategic investments

The Commission's recommendation for greater use of competition in delivering strategic investments should help future investments to be delivered innovatively and at a low cost to consumers. It is difficult to quantify the impact of this competitive process on future projects, but evidence from recent competitive processes suggest that consumers should make savings relative to funding from incumbents' regulated asset base (RAB). Two examples of this are the Offshore Wind Transmission Owner (OFTO) regime and Thames Tideway Tunnel (TTT).

In the OFTO scheme, offshore wind developers build their own transmission cable, then Ofgem holds an auction to sell that asset to a specialist owner and operator. The successful bidder is granted a licence by Ofgem to own and operate the network asset for 20-25 years and earn a regulated revenue for use of their network asset.[4] National Grid can bid in these auctions but can also be outbid by others. Since 2009 Ofgem has held six tender rounds for OFTO assets.[5] An assessment for Ofgem has estimated that the first three tender rounds of the offshore regime has led to savings for consumers of between £683 million and £1,092 million in net present value (NPV) terms, which is equivalent to savings of between 19% and 31% of the total OFTO revenue stream in NPV terms.[6]

In 2013, Ofwat opened the Thames Tideway Tunnel tender to competition. The licence to build, own and operate this major new piece of infrastructure in the sewerage system in London (expected to cost £4.2 billion in 2016 prices[7]) was awarded by Ofwat to Bazalgette Tunnel Limited. The allowed real cost of capital agreed through this competitive tender process was 2.497%, significantly lower than the 3.74% allowed real cost of capital for Thames Water, the incumbent, in the PR14 price control.[8] Ofwat expect that this low cost of capital will result in substantial savings for consumers compared to previous expectations. Previous worst case forecasts had predicted the impact of the tunnel on average bills would be £70-80 per year, but Ofwat now expect the impact to be around £20-25 per year by the mid-2020s.[9]

The cost of capital

Although the Commission is not able to confidently quantify the impacts of its recommendations on consumer bills, it has assessed the order of magnitude by which changes to the cost of capital can affect consumer bills. The cost of capital is the return required by investors to finance infrastructure investments, and is therefore one of the major determinants of funding costs.

Water and energy networks both use a Regulated Asset Base (RAB) to determine the value of assets on which investors can earn a return. Ofcom does not currently use a RAB approach in its regulation of markets where it considers that there is Significant Market Power, but Ofcom does use estimates of company cost of capital to help set charge controls in these markets.[10,11]

Using the latest valuations of the RAB (the Regulated Asset Value, RAV) the impact on the costs to be recovered from consumers from a 0.5 percentage points change in the weighted average cost of capital (WACC) in these sectors can be estimated:

Bills impact of a 0.5ppts change in the weighted average cost of capital (WACC)

Network	**Regulated Asset Value in 2018 (RAV), £ billion[12]**	**Annual cost of 0.5ppts change in WACC, £ million**	**Households in 2018, million[13]**	**Annual change in bills per household, full cost passthrough***	**% of revenues from households[14]**	**Annual change in bills per household, direct impact****
Water	74.31	372	23.6 (E&W)	£15.76	78%	£12.35
Electricity distribution	25.98	130	27.6 (GBR)	£4.71	45%	£2.13
Gas distribution	19.66	98	24.0 (GBR, on-gas)	£4.10	74%	£3.03
Electricity transmission	18.22	91	27.6 (GBR)	£3.31	45%	£1.50
Gas transmission	6.08	30	24.0 (GBR, on-gas)	£1.27	74%	£0.94
Total (water and energy)	**144.26**	**721**		**£29.15**		**£19.94**
BT segments with Significant Market Power	13.60	68	28.3 (UK)	£2.40	85%	£2.04
Total (water, energy and telecoms)	**157.86**	**789**		**£31.55**		**£21.98**

* Assuming that all costs to businesses and public sector are passed through to households
** Assuming that the impact on households is in proportion to the percentage of total revenues that are earned from households

The costs above are annual, so the total costs/savings from a higher/lower cost of capital will accumulate over the course of a price control.

Although the illustrative impact is for a change in the cost of capital of around 0.5ppts, the cost of capital has varied much more than this over the past few decades. Looking at the water sector, at privatisation the cost of capital was initially set at around 7% in real terms, but in its draft determinations for PR19 Ofwat proposed a cost of capital closer to 2%; a 5ppts fall since privatisation began.[15] Much of this has been driven by a domestic and global decline in underlying risk-free interest rates.[16]

The direct impact of a change in consumer costs would affect households, businesses and the public sector, which are all major consumers of utilities. The direct impact on household bills has been estimated using the proportion of industry revenues that arise from households. However, it is likely that some proportion of the utility costs to businesses and the public sector would be passed through to households via changes to prices and taxation/public spending. The cost per household is also estimated with an assumption that these costs are passed through in full.

Regulator budgets

Regulators are largely funded by the companies they regulate, through industry fees and charges.[17] Their budget settlements are negotiated with HM Treasury through the spending review process and are approved by Parliament.[18]

Regulator licence fees, income and operating costs[19,20,21]

£ million, current prices	Licence fees		Total income		Operating costs	
	2018/19	**2017/18**	**2018/19**	**2017/18**	**2018/19**	**2017/18**
Ofwat	31.3	25.0	31.4	25.0	(30.5)	(24.6)
Ofgem	69.1	61.2	71.9	65.6	(71.9)	(65.6)
Ofcom (networks & services)	45.9	41.5	37.9	42.4	(37.9)	(42.4)
Total	**146.3**	**127.6**	**141.2**	**133.1**	**(140.3)**	**(132.7)**

The Commission recommends that government should ensure that regulators have enough resources to carry out its recommendations, including competitive tenders for transformational investments, greater engagement with devolved authorities, and increased coordination across regulators. Because Ofwat, Ofgem and Ofcom are largely funded by industry fees, the cost of any expansion in budgets resulting from the Commission's recommendations would be funded by industry. It is likely that industry in turn would recover these costs from consumers through higher bills.

The Commission has not been able to make a reliable estimate of the implications of its recommendations for regulator budgets. But funding regulators is only a small proportion of industry revenues in each of the water, energy and telecoms sectors, so even a substantial increase in regulator budgets and licence fees will have a relatively small impact on consumer bills.

Impact of regulator licence fees on household bills, by regulator

	Water/Ofwat		Electricity/Ofgem		Gas/Ofgem		Telecoms/Ofcom	
	2018/19	**2017/18**	**2018/19**	**2017/18**	**2018/19**	**2017/18**	**2018/19**	**2017/18**
Licence fees, £ million[22]	31.30	24.98	38.74	34.29	30.40	26.91	45.85	41.47
Industry revenues, £ million[23]	12,187	11,821	37,358	34,320	17,482	16,149	33,840	36,026
Licence fees, % of revenues	0.3%	0.2%	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%
Proportion of revenues attributable to households[24]	78%	78%	45%	46%	74%	75%	85%	85%
Licence fees recovered in proportion to revenue from households, £ million	24.53	19.55	17.54	15.76	22.45	20.21	38.92	35.22
Households, million[25]	23.58	23.35	27.56	27.30	23.97	23.74	28.29	28.03
Annual licence fee cost per household, £	**1.04**	**0.84**	**0.64**	**0.58**	**0.94**	**0.85**	**1.38**	**1.26**
Annual licence fee cost per household, full cost passthrough, £	**1.33**	**1.07**	**1.41**	**1.26**	**1.27**	**1.13**	**1.62**	**1.48**

On average, the cost of Ofwat, Ofgem and Ofcom that is funded directly by households is around £3-4 a year per household, less than 0.2% of the average bills that households pay for water, energy and telecoms. Even if all licence fee costs were eventually passed through to households, this would only cost around £5-6 a year per household.

Impact of regulator licence fees on household bills: total Ofwat, Ofgem and Ofcom (networks & services)

	2018/19	2017/18
Annual licence fee cost per household, £	3.99	3.52
Average annual bills for water, energy and telecoms, £[26]	2,563	2,577
% of annual bill that funds regulators	0.16%	0.14%
Annual licence fees cost per household, full cost passthrough, £	5.62	4.94

Uncertainty

The impacts estimated above are illustrative. The actual impacts of the study's recommendations are uncertain and difficult to quantify.

Distributional Impacts

Recommendation 7 requires regulators to publish analysis of distributional consequences of their proposals, and how adverse effects could be mitigated; and recommends that regulators have the power to seek guidance from government on distributional policy choices. This should improve the clarity of the distributional impacts of regulatory decision, and reduce the likelihood of unintended consequences by allowing government to make informed distributional choices.

Regional	The recommendations aim to improve the performance of energy, water, and telecoms networks across all countries and regions for which the UK government has reserved powers. Recommendation 2 specifically addresses the ability of devolved authorities to influence decisions in their area. This does not mean there is a case for more ambitious policy or investment priorities in one area to be cross subsidised by another area.
Winners and losers	Lower income households spend a higher proportion of their expenditure on water, energy and telecoms bills than higher income households: ranging from 14.9% of expenditure in the lowest gross income decile group to 5.3% in the highest gross income decile group.[27] As a result, any impact of the Commission's recommendations on consumer bills would be expected to have a proportionally larger impact on the budgets of lower income households. Recommendation 5 could result in some redistribution from investors to consumers through outperformance sharing mechanisms. Customers who are paying more for the same service as other users should benefit from the Commission's recommendation 6 for companies to report price discrimination, and to rectify price discrimination where it cannot be justified. Reduced price discrimination might cause prices to rise for the most active customers who are already on the cheapest tariffs, to compensate for price reductions elsewhere. Nevertheless, these active

	consumers might benefit in future if their ability or willingness to be highly engaged declines.
Vulnerable/protected groups	Vulnerable consumers are particularly likely to be negatively affected by price discrimination practices.[28] The Commission's recommendation 6 to prevent companies from engaging in price discrimination that does not provide an overall benefit to consumers should therefore benefit vulnerable consumers in particular. The Commission's recommendation 8 to improve information and knowledge sharing across regulators should help to identify and support consumers in vulnerable circumstances.

Indirect effects

The illustrative impact of a change in the cost of capital estimated above is calculated as a direct impact based on current consumption levels, and does not account for changes in consumption that might result from higher or lower prices.

Risks

Low = the recommendation is "no regrets" and is robust to a range of future scenarios.
Medium = some future scenarios could affect the optimal choice of variant or timing.
High = some future scenarios could make the recommendation unviable or obsolete.

Driver	Risk	Description
Economic growth	Low	The Commission's recommendations are robust to economic growth being higher or lower than expected.
Climate change	Low	The Commission's recommendations are robust to a range of climate change scenarios, and allow regulatory policy to reflect updated climate targets.
Technology	Med	Technological change could affect how consumers engage with the water, energy and telecoms markets. The Commission's recommendations were written with this possibility in mind, and some recommendations aim to increase the openness of the regulated networks to innovative technology, eg through the use of competition for strategic investment.
Population and demography	Low	The Commission's recommendations are robust to a range of future population and demographic scenarios.
Behaviour change	Med	There is some risk that changes in investor or consumer behaviour could require regulators to find new approaches to achieve the best outcomes for investment and consumers. The Commission's recommendations aim to be robust to behavioural change by strengthening the system of economic regulation rather than recommending sector-specific policies.

Political change	Med	Political change could affect the timing and stability of strategic statements, although the framework recommended by the Commission aims to mitigate this as much as possible. The Commission has not considered the case for or against public ownership of energy, water and telecoms assets, although many of the issues considered and recommendations in response would also be relevant in a nationalised system.

[1] HM Treasury (23 November 2016), Remit Letter to the National Infrastructure Commission. **Link**

[2] National Infrastructure Commission (2017) Economic growth and demand for infrastructure services. **Link**

[3] For example, Czernich et al. (2011) Broadband Infrastructure and Economic Growth, Economic Journal, 121(552).

[4] Ofgem (2018) OFTO Tender Process Changes for Future Tender Rounds implemented for Tender Round 6 onwards **Link**

[5] Ofgem (2019) Forward Work Programme 2019-21. **Link**

[6] 2014/15 prices. Cambridge Economic Policy Associates Ltd for Ofgem (2016) evaluation of OFTO Tender Round 2 and 3 Benefits. **Link**

[7] National Audit Office (2017) Review of the Thames Tideway Tunnel. **Link**

[8] TTT and incumbent cost of capital in real terms, using Retail Price Index (RPI). UKRN (2018) Cost of Capital – Annual Update Report. **Link**

[9] Ofwat (2015) PN 02/15 Ofwat awards licence for Thames Tideway Tunnel. **Link**

[10] Ofcom (2019) Promoting competition and investment in fibre networks Initial proposals – Approach to remedies. **Link**

[11] Ofcom (2019) Regulated prices. **Link**

[12] 2018/19 Regulated Asset Value sources. Water: Ofwat (2019) Regulatory capital values 2019. **Link**. Energy: Ofgem (2019) Regulatory Financial Performance annex to RIIO-1 annual reports 2017-18, Individual Licensee Regulatory Financial Performance Reporting Templates. **Link**. Telecoms: BT (2019) Regulatory Financial Statements 2019, Performance Summary by Market or Technical Area, Mean Capital Employed in SMP Markets. **Link**.

[13] Ministry of Housing, Communities & Local Government (2016) Live tables on household projections, Table 401: Household projections, United Kingdom. **Link**. Households connected to the gas network ('on-gas') are estimated by multiplying the number of households in Great Britain by the inverse of the latest estimate for the proportion of households not connected to the gas network: Department for Business, Energy and Industrial Strategy (2018) Sub-national estimates of households not connected to the gas network 2017. **Link**. For simplicity, households in Kingston upon Hull are included in this total, although KCOM rather than BT are the primary provider of telecoms infrastructure in that area.

[14] Revenues attributed to households: Water: Commission calculations using water company data provided by Ofwat. Energy: Commission calculations using Department for Business, Energy and Industrial Strategy, Digest of United Kingdom Energy Statistics (DUKES), Table 1.7 Sales of electricity and gas by sector. **Link**. Telecoms: Commission calculations using Ofcom (2019) Ofcom Communications Market report 2019, Summary of UK telecoms metrics, UK telecoms revenues, retail and wholesale services. **Link**.

[15] Cost of capital figures in real terms, using Retail Price Index (RPI). Privatisation cost of capital: Ofwat (1991) Cost of capital: a consultation paper, volume 1. **Link**. PR19 cost of capital: Ofwat (2019) PR19 draft determinations: Cost of capital technical appendix. **Link**

[16] Ofwat (2017) Delivering Water 2020: Our methodology for the 2019 price review – Appendix 12: Aligning risk and return. **Link**

[17] National Audit Office (2017) A Short Guide to Regulation. **Link**

[18] Ofwat (2018) Annual report and accounts, 2017-18; Ofgem (2019) Annual report and accounts, 2018-19

[19] Ofwat (2019) Annual report and accounts 2018-19, Table 1: Operating costs 2018-2019. **Link**

[20] Ofgem (2019) Annual Report and Accounts 2018-19. Notes to the departmental resource accounts, Table 2: Statement of operating costs by operating segment (Regulatory activities plus Corporate services, excluding E-serve); Table 5: Operating income, Licence fees. **Link**

[21] Ofcom (2019) The Office of Communications Annual Report & Accounts, 2018 to 2019, **Link**. Ofcom (2018) The Office of Communications Annual Report & Accounts, 2017 to 2018, **Link**. Notes to the accounts, Table 2: Sectoral analysis; Networks & services. Licence and administration fees, Cash income, Total costs. Income is less than licence fees in 2018/19 due to a deferred income adjustment.

[22] Regulator annual accounts, ibid. Ofgem licence fees attributed to electricity and gas using the share of total customers measured by meter points for each energy source in 2017. Licence fee allocation methodology: Ofgem (2016) Licence fee cost recovery principles. **Link**. Electricity meters: Department for Business, Energy and Industrial Strategy (2018) Regional and local authority electricity consumption statistics, Sub-national electricity consumption statistics 2005 to 2017. **Link**. Gas meters: Department for Business, Energy and Industrial Strategy (2018) Regional and local authority electricity consumption statistics, Sub-national electricity consumption statistics 2005 to 2017. **Link**

[23] Industry revenues: Water: Water company data provided by Ofwat. Energy: Department for Business, Energy and Industrial Strategy, Digest of United Kingdom Energy Statistics (DUKES), Table 1.7 Sales of electricity and gas by sector. **Link**. Telecoms: Ofcom (2019) Ofcom Communications Market report 2019, Summary of UK telecoms metrics, UK telecoms revenues. **Link**

[24] Methodology follows footnote 14

[25] Methodology follows footnote 13, including assumption for proportion of GB households connected to the gas network.

[26] Average annual bills: Water: Discover Water, Water UK (2019) Average annual water and sewerage charges across England and Wales households. **Link**. Energy: Department for Business, Energy & Industrial Strategy (2019) Annual domestic energy bills, Average annual domestic electricity and gas bills by various consumption levels, Overall bill based on average consumption (actual). **Link**. Telecoms: Ofcom (2019) Ofcom Communications Market report 2019, monthly spend multiplied to annual spend. **Link**

[27] Commission calculations using Office for National Statistics (2019) Family Spending in the UK, Table A6: Detailed household expenditure by gross income decile group. Water supply, electricity, gas, telephone and telefax services, internet subscription fees. **Link**

[28] BEIS (2018), Domestic Gas and Electricity (Tariff Cap) Bill Impact Assessment paragraphs 18-19. **Link**