National Infrastructure Commission: The Future of Regulation

Consultation response from the

Centre for Competition Policy

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This consultation response has been drafted by the named academic members of the Centre, who retain responsibility for its content[1]. We have indicated the respondent(s) to each consultation question at the beginning of their response to facilitate further discussion.

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[1] The drafting and editing of this document is a collective effort from the authors stated above, with help from CCP research associates: James Craske and Bryn Enstone.

CCP Response to National Infrastructure Commission's Consultation on The Future of Regulation

CCP welcomes the opportunity to respond to the National Infrastructure Commission's consultation on The Future of Regulation. We respond to consultation questions 1, 3, 4, 5, 9, 10, 12 and 13. A reference list is provided at the end of this response and where possible, direct links have been provided to our sources in our footnotes.

1. Where has the economic regulation of water, energy or telecommunications systematically failed or succeeded to:

a. facilitate future investment needs;
b. promote competition and innovation; and
c. meet the needs of both current and future consumers;

and what do you see as the most important improvements that could be made to the UK's system of economic regulation?

(Catherine Waddams Price) One strong motivation for privatization was to release the utility sector from the constraints on investment which were imposed by the macroeconomic limits on public sector borrowing, so the increase in investment after privatization is not surprising. Early changes are shown in a variety of papers, including Markou and Waddams Price, 1999[2]. However one side effect of the separation between parts of the industry, which was often good for competition and regulation, was the reduction in centralised R&D spend. Regulators have attempted to address this is various ways, with some recent success.

Analysing the effect of independent regulation in the UK, separately from that of privatisation and other sector reforms, has proved difficult because many of these changes were simultaneous and interlinked. However, the academic literature which takes advantage of cross-country comparisons, as well as changes over time, shows that improvements in efficiency have generally been associated either with independent regulation or with effective competition[3] (see for example Davies et al., 2005, Li and Lyons, 2012).

Studies at the time and shortly after privatization showed the importance of restructuring prior to privatization to obtain the best results in terms of efficiency and benefits for consumers: the contrast between the British gas and Scottish electricity industries (privatized as vertically integrated companies) and the electricity sector in England and Wales (which was separated both horizontally and vertically prior to privatization) is clear[4]. In gas, pressure from

[2] Markou, E. and C. Waddams Price, 1999. UK utilities: past reform and current proposals *Annals of Public and Co-operative Economics*, 70(3), pp 371-416 10.1111/1467-8292.00118

[3] Davies, L., K. Wright and C. Waddams Price, 2005, Experience of Privatisation, Regulation and Competition: Lessons for Governments, CCP Working Paper 05-5, ESRC Centre for Competition Policy, University of East Anglia, UK. http://competitionpolicy.ac.uk/documents/8158338/8256120/CCP+Working+Paper+05-5.pdf
Li and Lyons, 2012, Market Structure, Regulation and the Speed of Mobile Network Penetration, *International Journal of Industrial*, 30(6), pp 697-707 S0167718712000926

[4] Green, R. and C. Waddams Price, 1995. Liberalisation and divestiture in the UK energy sector in *Fiscal Studies*, 16(1), pp 75-89 https://www.ifs.org.uk/publications/2296

economic regulation, and competition authorities[5] (MMC 1988, OFT, 1991, MMC 1992), as well as from government decisions (before the competition authorities were determinative) resulted in the voluntary vertical separation of the gas sector and the introduction of competition in both the industrial and residential markets[6]. Some of these changes, for example an exposure of the substantial price discrimination in the industrial market, although well known within the industry and government, could only be brought into public scrutiny as a result of private ownership and independent regulation.

In electricity, subsequent reconsolidation, both horizontally in the retail market and vertically between generators and retailers, resulted in the development of the Big 6 suppliers, who had economic power through their joint dominance of the national market, their regional advantages with non-switching consumers and an ability to hedge variations in upstream costs through integration with generation. However, the Competition and Markets Authority[7] did not find that their structure had an adverse effect on competition. Nevertheless, vertical structure seems to be influential: despite full accounting and organizational separation, regions where the incumbent electricity retailer shared ownership with the distribution system showed less switching away from the incumbent than in regions where ownership was separate[8], even after accounting for specific regional characteristics. Lower switching rates imply that consumers in these regions may have benefited less from the market.

There are clear differences between energy and water, where until now technology has been relatively stable, and telecommunications, which has seen much greater technological change (so that, for example, the public telephone boxes mentioned below, have much less, if any, social importance now, compared with the 1980s). Where there is dynamic technical change, regulation may be beneficial in identifying common standards (for example avoiding the problem with first generation smart meters which do not enable switching between suppliers), but can also be detrimental, as for example in early attempts to build a strong competitor by restricting entry in telecoms, which inhibited market expansion and development.

Many benefits of the regulatory and ownership reforms came from challenging vested interests and long-established existing systems. Improvements in productivity often preceded the reforms themselves, as constraints in the public sector became more realistic and binding in preparation for the sale of shares[9]. The original simple model of regulation, based on constraining prices, has become successively more complex as objectives other than

[5] Monopolies and Mergers Commission, 1988, Gas, Cm500; Monopolies and Mergers Commission, 1993, Gas and British Gas plc, Cm 2315-2318; Office of Fair Trading review, referred to in para 1.51 of MMC 1993, supra.
[6] Price, Catherine M., 1992. Regulation of the UK Gas Industry - Incentives and Responses Since Privatisation in Annals of Public and Co-operative Economics, 63(2), pp 189-206
[7] Competition and Markets Authority, 2016, Energy market investigation final report https://assets.publishing.service.gov.uk/media/5773de34e5274a0da3000113/final-report-energy-market-investigation.pdf
[8] Davies, S and C. Waddams Price, 2007. Does Ownership Unbundling Matter? Evidence from UK Energy Markets, Intereconomics, 42(6), pp 297-301 10.1007/s10272-007-0231-x
[9] Waddams Price, C and Weyman-Jones, T. 1996. Malmquist Indices of productivity change in the gas industry in *Applied Economics*, 28(1), pp 29-39. 10.1080/00036849600000004

restricting average prices have become more evident, both in the public and government eye, see response to question 13 below. Initially such considerations arose from recognizing the public service provided by public bodies which were reduced as part of the efficiency drive of a more single minded private sector; for example failing to maintain public phone boxes in the early years of telecoms privatization, stopping supplies to those who had not paid their energy bills and differentiating prices between consumers. These issues have increased as new duties have been added to the regulator's brief (see response to questions 5 and 13 below).

There has been significant investment in the water industry since privisation with £126 billion invested between 1987 and 2015 on building and maintaining of water services, and a further £44 billion of investment expected to be spend on improving water services, resilence and protecting the enviroment between April 2015 and March 2020 (National Audit Office 2015). This has led to a degree of technical change which some studies suggest has improved efficency within the industry[10]. The impact of such investment depends on whether funds are spent efficiently and consequent improvements in outcomes for consumers.

3. How might the increasing availability of data impact regulation in future? Can data increase the pace at which regulation responds to change, enabling innovation?

(Tola Amodu) In 2013 the OECD noted that the value of data is poorly captured in economic statistics and often under-appreciated by organisations and individuals[11]. This remains the case with regard to regulation. In 2016 it went further, noting that effective regulation 'will partly depend on whether and how competition authorities and regulators will be able to react to the new challenges of the digital economy'[12]. While the increasing availability of data has, as the OECD noted in 2018, 'the potential to be a game-changer for regulatory policy[13], this will largely depend upon the resources available to agencies to monitor and deploy effectively the data available in a 'smart' way. Compliance and regulatory feedback loops rest upon the capacity to monitor and respond – neither of which are necessarily easy to achieve. The increase in available resources of information can add to complexity and may demand new responses to the regulatory challenge – see by analogy the emergence of compliance and indeed risk regulation, given the limitations of command and control and the exigencies for better approaches to the regulatory challenge. One key concern will be the informational "lag" between the data sets available and the commensurate interpretation with the agency's ability to respond. Increasing data availability can, in some contexts lead to

[10] Saal, D.S., Parker, D. and Weyman-Jones, T., 2007. Determining the contribution of technical change, efficiency change and scale change to productivity growth in the privatized English and Welsh water and sewerage industry: 1985–2000. *Journal of Productivity Analysis*, *28*(1-2), pp.127-139

[11] OECD (2013) Growth, Innovation and Competitiveness – Maximising the Benefits of Knowledge-Based Capital. https://www.oecd.org/sti/ind/Background%20Notes%20-%20ALL%20web.pdf

[12] DAF COMP (2016) Big Data: Bringing Competition Policy to the Digital Era, paragraph 109. https://one.oecd.org/document/DAF/COMP(2016)14/en/pdf

[13] 10th OECD Conference on Measuring Regulatory Performance: Key findings and conference proceedings, June 2018. http://www.oecd.org/gov/regulatory-policy/Proceeding-MRP-Mexico-June-2018.pdf

less rather than greater responsiveness (see e.g. Herbert Simon's concerns relating to bounds on rationality that still hold good[14]).

4. How have the energy, water and telecoms sectors performed with respect to efficiency since privatization?

(Catherine Waddams Price) Efficiency has generally increased across the energy, water and telecoms sectors since privatization, taking account both of input-output and quality measures[15] Much of this was achieved by reducing labour input. As Newbery and Pollitt[16] found for electricity generation, such gains were often shared little with consumers. However, as regulation has generally been established for around three decades, it is increasingly difficult to identify what the counterfactual would be. Most research shows that efficiency has improved in the water sector (see Abbott and Cohen[17] for a review).

As noted above, regulators have been increasingly drawn into details of regulation, including the quality of the product and the service offered. Unsurprisingly, those aspects to which the regulator has attached some incentive have generally improved under regulation. Analysis of the first decade after privatization shows this in detail for water and electricity distribution, where performance on measures of quality improved across the industry (after some initial variation as better information was acquired). This was mainly by poorly performing companies improving their performance to converge with those of their higher quality counterparts, rather than through the best companies 'moving the boundary' by improving even further[18]. Measured quality standards have continued to improve in water and energy, as demonstrated by figures published by the regulators.

One area of particular debate within the water industry is leakage. Leakage decreased by 38% from 1990 levels when water lost peaked at over 5,112 million litres per day[19]. However, improvement has levelled off recently with leakage reducing by 6% over the past 7 years from 3,381 million litres a day in 2010/11[20] to 3,183 million litres per day in 2017/18.3[21]. Ofwat has challenged companies to improve their leakage levels, and they have promised investment to reduce levels by an additional 15% over the next five years.

Efficiency encompasses not only inputs, outputs and quality, but also the extent to which prices reflect the costs of provision to consumers. All aspects of the reform, namely private

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[14] Simon, H. 1957, Models of Man: Social and Rational. New York: Willey and Sons.

[15] Markou, E. and C. Waddams Price, 1999. UK utilities: past reform and current proposals *Annals of Public and Co-operative Economics*, 70(3), pp 371-416 10.1111/1467-8292.00118

[16] Newbery, David M. and Michael G. Pollitt, 1997. The Restructuring and Privatization of Britain's CEGB – Was it Worth it? *Journal of Industrial Economics* 45(3) pp 269-303

[17] Abbott, M. and Cohen, B., 2009. Productivity and efficiency in the water industry. *Utilities Policy*, *17*(3-4), pp 233-244 10.1016/j.jup.2009.05.001

[18] Waddams Price, C., B. Brigham and L.Fitzgerald Service, 2008. Quality in Regulated Monopolies, *Annals of Public and Cooperative Economics*, 79(2), pp 197-225 14678292/2008/79/2

[19] Ofwat (2016) *Service and delivery –performance of the water companies in England and Wales*, https://www.ofwat.gov.uk/wp-content/uploads/2017/01/FOI-123102016-report.pdf

[20] Water UK (2014) How water companies measure leakage, https://www.water.org.uk/news-item/how-water-companies-measure-leakage/

[21] Discover Water, Leaking pipes, https://discoverwater.co.uk/leaking-pipes (accessed 12.04.2019)

ownership, regulation and competition, incentivized different patterns of pricing[22]. While Giulietti and Waddams Price[23] did not find evidence of widespread response to ownership and regulatory incentives, the introduction of competition resulted in more rebalancing; this generally brought prices more in line with costs, and generated distributional effects which are considered in the answer to question 5.

5. How has competition impacted on investment and outcomes for consumers across energy, water and telecoms since privatization?

(Catherine Waddams Price) Competition generally exerts downward pressure on the average level of prices (through incentivizing both productive efficiency and the pressure to pass on gains to consumers) and the outcomes for particular consumers through price rebalancing. The extent to which rebalancing is possible and optimal for the firm depends both on the form of any remaining price regulation (eg caps on average revenue or individual prices as noted above) and more general competition and regulatory policy (eg non-discrimination clauses by the energy regulator 2009-2012).

Waddams Price and Hancock[24] chart initial distributional consequences of price rebalancing from the introduction of competition in telecoms and energy, finding overall gains for the richest households and losses for other groups, particularly for pensioner households, between privatization and 1996. These changes were driven by average tariffs charged for different quantities used and payment methods, rather than on differential switching rates.

More recent concern about the effect of competition on consumer outcomes has focused not on the tariffs themselves, but on who has taken advantage of competitive deals, particularly where there are wide price differentials between active and non-active consumers. This focus on outcomes rather than opportunity is an important change of emphasis, with considerable implications for regulation, as recent events in the energy market have shown. The introduction of a price cap for inactive consumers provides protection for those consumers who do not switch but is likely to dampen competition and raise average prices in the market (for more detail on these considerations see Deller et al., 2017[25]).

Competition has thus impacted outcomes for consumers differently according to their activity levels, as well as through rebalancing underlying tariffs to reflect costs more closely. It is difficult to generalize about the nature of these consumers. Although those in identifiably vulnerable situations are less likely to switch than average, many such consumers do switch, and so are likely to be harmed by policies which raise prices for switchers, which is the usual

[22] Bradley, I and C Price, 1988. Economic Regulation of Private Monopolies through Price Constraints, *Journal of Industrial Economics*, pp 99-106 10.2307/2098555;
Bradley, I and C Price, 1991. Average Revenue Regulation and Regional Price Structure, *Regional Science and Urban Economics*, 21(1), pp 89-108 10.1016/0166-0462(91)90055-R

[23] Giulietti, M. and C. Waddams Price, 2005. Incentive Regulation and Efficient Pricing Structures, *Annals of Public and Co-operative Economics,* 76(1), pp 1121-138 10.1111/j.1370-4788.2005.00273.x

[24] Waddams Price, C. and R. Hancock, 1998. Distributional Effects of Liberalising UK Residential Utility Markets, *Fiscal Studies*, 19(3), pp 295-320. 1120845825946/waddams98.pdf

[25] Deller, D., E. Errington, A. Fletcher, M. Hviid, D. Reader & C. Waddams, 2017. Response to BEIS Committee: Pre-legislative scrutiny of the draft Domestic Gas and Electricity (Tariff Cap) Bill inquiry

consequence of restraining them for non-switchers. Detailed work on consumer surveys emphasizes the heterogeneity of consumers in their propensity to switch (for example He and Reiner, 2017[26]; Waddams Price and Zhou, 2016[27]; Flores and Waddams Price, 2018[28]).

The needs of current and future consumers are changing, with increasing public and government pressure to incorporate concepts of fairness (as was seen in Ofgem's non-discrimination clauses, which had the anticipated effect of dampening competition (Hviid and Waddams Price, 2012[29]; Waddams Price and Zhou 2016). The imposition of price caps on energy prices by the government show a similar shift towards implementing fairness through regulated industries. Both competition and traditional regulation, which attempts to mimic some of its effects, are effective instruments to deliver lower average prices, but are 'blind' to distributional outcomes and fairness between particular market participants. If such fairness is to be a feature of future regulation, it is important to consider how it is best incorporated in regulators' remits, without detrimental effects on other objectives, as the discussion in response to question 12 shows.

9. What changes to the existing regulatory framework would be necessary to promote greater collaboration and regulatory consistency? Are there functions that might better be provided on a multi-utility basis without the need for wider organisational change?

(Tola Amodu) As most agencies are "creatures of statute", the imposition of enhanced collaborative duties would inevitably require amendments to the legal base, going arguably much further than the creation of the UKRN. The problem is not so much enhancing and promoting collaboration but squaring this with regulatory independence. This may be one area where ethics in regulatory behaviour could come to the fore by ensuring consistency in regulatory activity (especially enforcement and compliance – well the other way around) thus reducing duplication (especially for business) in information gathering. This could be a "win-win" that actually enhances regulatory efficiency and effectiveness.

10. What is the case for or against a multi-utility regulator covering energy, digital and water?

(Sean F. Ennis) Multi-utility regulators could in principle provide some benefits from uniformity of application of principles across multiple areas. For example, principles of access to rights of way – necessary for pipes, telecom wires and fibre and electricity distribution and retailing infrastructure – could share many common elements across regulators. However,

[26] He, X. and D. Reiner, 2017. Why Consumers Switch Energy Suppliers: The Role of Individual Attitudes, *The Energy Journal*, 38(6) pp 25-53 10.5547/01956574.38.6.hxia

[27] Waddams Price, C and Zhu, M., 2016a. Empirical Evidence of Consumer Response in Regulated Markets, *Journal of Competition Law and Economics*, 12, 1, pp 113-149 12/1/113/1750778

[28] Flores, M. and C. Waddams Price, 2018. Consumer behaviours in the British retail electricity market, *The Energy Journal*, 39(4), pp 153-179. ej39-4-waddams.html

[29] Hviid, M. and C. Waddams Price, 2012. Non-discrimination clauses in the retail energy Sector, *The Economic Journal*, 122, F236-252; 10.1111/j.1468-0297.2012.02537.x
Waddams Price, C and Zhu, M., 2016b. Non-discrimination clauses: their effect on GB Retail Energy Prices 2005-2013, *The Energy Journal*, 37, 2, pp 111-132. ej37-2-waddams.html

rights of way are a relatively small proportion of regulatory activity and operationally occur mostly at a local authority level as opposed to a national level.

Nonetheless, a number of disadvantages from creation of a multi-utility regulator do exist. Some of these were discussed in the CCP Annual Conference in 2013. These include:

Reduced focus and clarity of mission. There is a risk that as the number of sectors covered by a regulator is increased, its focus and clarity of mission will become broader. Maintaining a tight focus can be particularly challenging in multi-sector regulators, yet maintaining a clear focus in terms of purpose and objectives is often considered a key feature of successful regulators.[30] While in principle the clarity of objectives can be maintained across multiple sectors, in practice the reduced focus on any one sector, from the management and a single board view, may be inevitable.

Less board level expertise in the regulator's sectors. Reducing the extent to which any board member is an expert in the domain, as board membership searches will often focus on obtaining skills related to the specific board. While some professionals have multi-domain expertise, whether their base expertise lies in law, economics or other fields, the number of experts with both multi- and single-domain expertise will necessarily be larger. For example, in a relatively large organisation like the CCP, the number of individual experts (out of 39 faculty) with substantial expertise in one of these sectors is quite large, while the number of individuals with deep expertise in all three sectors is very limited.

Non-transferrable staff expertise. The expert staff in regulators are themselves often not very easily transferred from one to another. For example, water regulators may employ many experts with specific training or built-up expertise that would have less relevance to a digital regulator, a telecom regulator or an energy regulator. So while staff mobility might be one natural feature of an integrated regulator, such mobility may actually result in a reduction in domain-specific expertise and thus, if anything, would be likely to push downwards the level of expertise and possibly the quality of subsequent regulatory decisions.

Incompatibilities in organisational culture. The integration between existing regulators could involve combining different organisational cultures. While cultural integration can seem theoretically abstract, the practical implications, and subsequent human resource uncertainty or staff morale, are often detrimental and can be associated with output implications when change is announced and not yet implemented. Even when implemented, substantively, the style of regulatory activity, including need for speed of action and deliberation, could be quite different between regulators in the identified domains. A water regulator, whose stability and approach may need to assure 30-50 year asset lifespans, needs to be set up to provide high long-term confidence for investors. An energy regulator may oversee generation infrastructure with shorter lifespans. A digital regulator, overseeing infrastructure with much shorter lifespans, may need to prove agile and act with speed to prevent the build-up of infrastructure-based market power and blockages.

[30] OECD, 2014. The Governance of Regulators, 10.1787/9789264209015-en, p. 30.

Conflicting needs for budgeting. A multi-purpose regulator must balance competing functions and obligations. The budget aspects of allocating funds across activities can prove difficult to determine, especially when weighing the relatively long-term value to society of more highly resourced action in one domain than another against the immediate needs and legal requirements for action in each domain. According to the OECD, "Multi-purpose regulators face a greater challenge in balancing the competing functions"[31].

Overall, between the board expertise dilution, the staff focus, cultural differences, speed of action requirements and budgeting challenges, there are quite a few disadvantages from combining the three infrastructure regulators named. Nonetheless, a full consideration of costs and benefits would need to be carried out before determining whether the benefits, whether financial or substantive, from integration would outweigh these potential disadvantages.

12. What should be the boundary between government setting policy and strategic direction and independent regulation of these sectors? Do existing duties and functions of regulators need to be adjusted to reflect this?

(Catherine Waddams Price) Parliamentary Committees and government reviews[32] have emphasised the importance of regulators being: i) assigned a clear statutory remit, ii) issued a clear steer on prioritising their duties, and iii) protected from deciding political issues[33]. Despite these exhortations, duties have moved beyond pure economic regulation to incorporate expanded social and environment objectives. Figure 1. points to the fact that since the 1986 Gas Act, there has been 20 pieces of amending legislation, eight of which have been substantive changes to the content and presentation of the duties[34].

A greater number and complexity of duties raises the potential for conflicts between duties and creates ambiguities around how regulators should prioritise them. These ambiguities increase the need for government-regulator communication, which can provide more opportunity for government to pressure the regulator, undermining regulatory independence. CCP research[35] with interviewees in the regulatory community noted that the proliferation of duties had made it difficult to pursue any one of them successfully.

Based on past and current behaviour by governments, the reluctance of government to take on the burden of hard policy choices, or provide greater clarity when there are conflicts in policy aims, could further obfuscate the defined role of the regulator. For instance, trying to simultaneously tackle social justice issues (such as fuel poverty) with environmental concerns (increasing reliance on renewables) can be difficult to if encouraging renewable energy raises bills, which may, in turn, asymmetrically burden poorer or more vulnerable consumers.

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[31] OECD, 2014. The Governance of Regulators, 10.1787/9789264209015-en, p. 36.

[32] For instance, the House of Lords Select Committee on regulators, 2007. noted that 'government should be careful not to offload political policy issues onto unelected regulators' (paragraph 3.13, p25) https://publications.parliament.uk/pa/ld200607/ldselect/ldrgltrs/189/18902.htm; see also BIS, 2011. https://www.gov.uk/government/publications/principles-for-economic-regulation

[33] Dellar, D. and Waddams Price. C (eds) (2018) *Fairness in the Retail Energy Markets? Evidence from the UK.* Available: https://www.regulation.org.uk/library/2018-CCP&UKERC-Fairness_in_Retail_Energy_Markets_Report.pdf

[34] Ibid.

[35] Ibid.

13. Has there been a lack of clarity over strategic goals? What is the cause of this and what has been the impact?

(Catherine Waddams Price) The burgeoning duties for regulators are demonstrated in the following chart of duties for regulating the gas sector since privatization (Figure 1). The lack of clarity both gives the regulators themselves considerable responsibility and freedom for balancing different objectives, and leaves them open to public and political interference by those who disagree with the balance chosen.

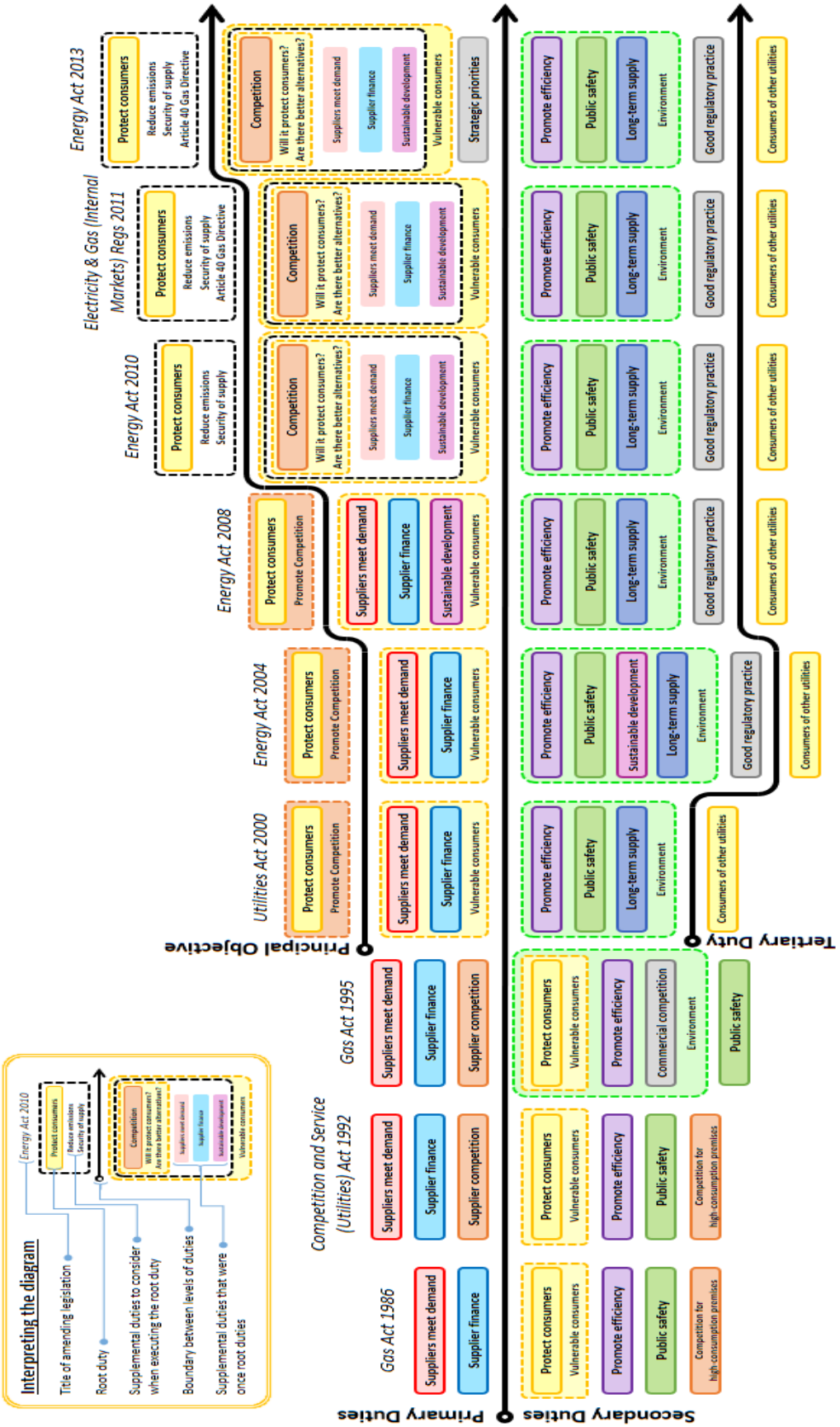

Figure 1. The evolution of the GB energy regulator's duties in respect of gas, 1986-2018[36]

[36] Harker, M. and Reader, D. (2018) W(h)iter independent regulation: the 'repoliticisaton' of British retail energy markets. Centre for Competition Policy, University of East Anglia. (under review).

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