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Creating a flexible framework for energy regulation

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How can Ofgem ensure the long-term development of the energy networks while meeting the challenges of the changing political, technological and policy landscape?

RIIO-2: a call to action

The GB energy sector is going through a period of rapid transformation. New technologies, decentralised power suppliers and the development of smart grids have the potential to change not only the energy system, but also the way we interact with it.

With this rapid change, the future state of the market looks uncertain. Ofgem's second round of RIIO network price reviews is now under way and will come into effect from 2021 for transmission and gas distribution, and from 2023 for electricity distribution. It is imperative that the regulatory framework delivers an efficient and coordinated energy system.

Ofgem's framework consultation in March signalled that the RIIO-2 price control will be tougher for energy network companies than RIIO-1. The review process will involve tight scrutiny of utility companies, with some stakeholders openly questioning whether current regulation is delivering quality services at fair prices. Concerns about companies' profitability, financing structures and dividend policies have also been widely reported and discussed.[1] As a result, one of the focal points of RIIO-2 is ensuring that utility companies earn 'fair returns'.[2]

However, it is important not to lose sight of the big picture. Until now, the GB regulatory regime has supported billions of pounds of investment and, according to Ofgem, has improved customer outcomes—its review of RIIO-1 to date has highlighted that '[c]ustomer satisfaction scores have been improving' and 'network reliability has improved across sectors'.[3]

RIIO-2 now needs to focus on creating a coherent package that supports this rapid pace of technological change.

[1] For example, see Citizens Advice (2017), 'Energy Consumers' Missing Billions, The profits gifted to energy networks', July.
[2] Ofgem (2018),'RIIO-2 Framework Consultation', 7 March, Chapter 7.
[3] Ibid., p. 16.

What does it take to be flexible?

The energy sector is facing a well-known 'trilemma': balancing the often-conflicting objectives of affordability, security of supply and improved environmental outcomes. Recent technological developments might help to ease the trade-offs between these objectives. For example, efficient (and more affordable) battery storage could help smooth out the intermittency of some renewable energy sources and improve security of supply. To balance these conflicts and enable flexibility, the energy sector needs to embrace innovation.

The RIIO-2 framework consultation signalled that a 'whole system' approach is essential for the efficient development of energy networks. In other words, there needs to be sufficient coordination across the value chain to facilitate outcomes that are in the interest of everyone. But what could this mean in practice?

There are two main approaches to network development. At one end of the spectrum is centralised system planning, and at the other is market-based planning.

Innovation funding creates 'options' that may be exercised and maintained in the future in order to meet policy objectives such as security of supply and decarbonisation targets

Centralised system planning—a system developed by an informed planning agency or 'single buyer' can, at least in theory, internalise trade-offs across the energy networks and between competing technologies. Centralised planning processes could be used to find the least-cost solution for configuring the network. It could help energy networks and non-network resources (e.g. distributed generation and storage) to meet long-term demand for heat, transport and other domestic usage. However, such an approach has vulnerabilities; for example, the agenda for system planning could be misappropriated by vested interests.

Market-based planning—a system that leaves the development of the energy system to market forces encourages competition between different technologies, at least in theory. This could lead to an optimal network configuration. However, this approach is also fraught with challenges; for example, coordination failure between different networks (e.g. electricity and gas) may lead to unnecessary duplication of investment. This could leave assets vulnerable to stranding or under-utilisation. Overcoming these challenges would require a consistent and clear system capable of assigning property rights. Market and price signals would also need to be efficient.

There is no 'silver bullet'. Both options have advantages and disadvantages. A key challenge for Ofgem will be to find the right balance between promoting market-led solutions and delivering a strategic vision for the development of the energy sector.

To achieve this, Ofgem could:

1. encourage innovation;
2. promote information sharing between energy networks.

Of course, each of these actions is reliant on the other. For example, the incentive to innovate is directly affected by the ability to benefit from the innovation, which in turn is affected by the extent of information sharing between individual networks.

First, Ofgem could rebalance the risk-adjusted returns that networks can earn on new technologies, either by increasing returns on relatively risky investments, or by lowering the risk of investment via regulatory mechanisms. Either approach would help provide the necessary incentives for companies to innovate.

Innovation funding creates 'options' that may be exercised and maintained in the future in order to meet policy objectives such as security of supply and decarbonisation targets. For example, if the government does not provide a clear policy on how to decarbonise heat, the value of these options could increase over time as the deadline

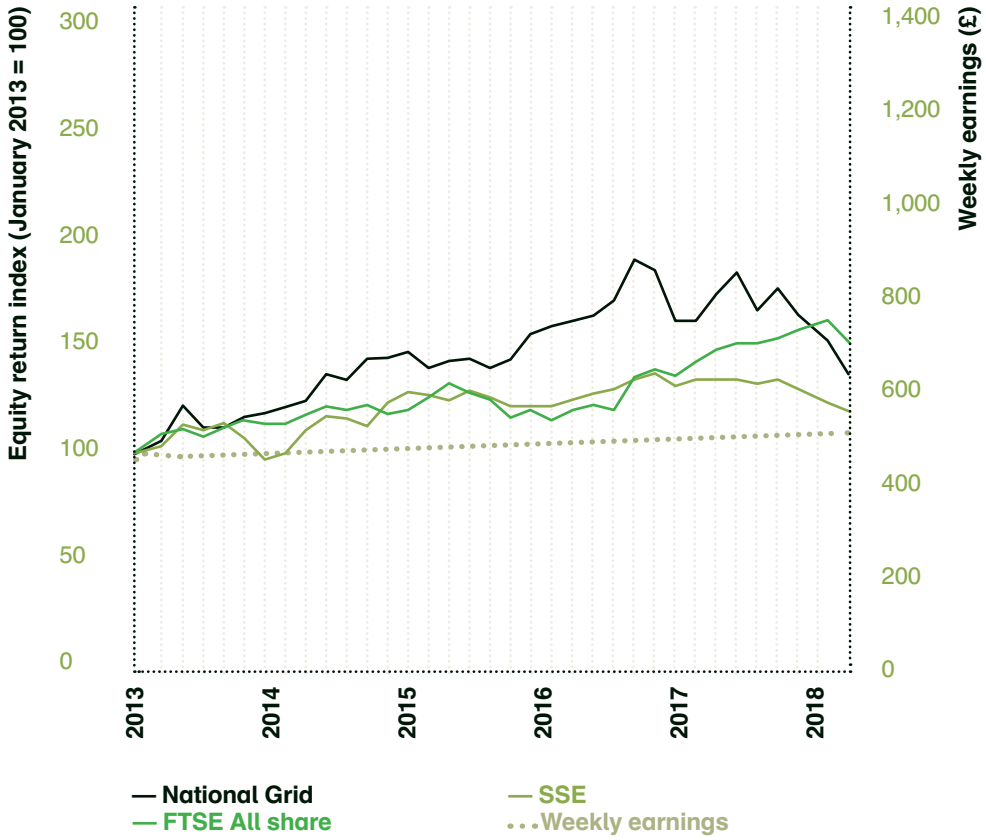
to meet the carbon budget approaches. Similarly, their value is increased by the observed volatility in commodity prices, which makes innovation funding today more valuable. This situation is compounded by the uncertainty about future energy needs; for example, uncertainty relating to demand, the extent and pace of the adoption of electric vehicles, and the economic viability of carbon capture and storage technologies.

Second, Ofgem could promote information sharing between the energy networks. In the absence of centralised system planning, regulatory scrutiny of networks' planned expenditure is unlikely to lead to efficient trade-offs between energy networks and competing technologies. Collaboration increases both the quality and success of innovation and allows companies to share the costs and risks of innovating.

However, companies typically under-invest in collaboration and R&D unless there are mechanisms to ensure that they benefit directly from their investment. In this context, industry innovation funding mechanisms (e.g. the Network Innovation Competition and the Network Innovation Allowance) could help. If used by Ofgem in RIIO-2, these innovations could provide a 'public good' by continuing to promote greater cross-network cooperation and cross-sector collaboration with third parties (e.g. technology providers). For example, two-thirds of Wales & West Utilities' Network Innovation Allowance project portfolio has been delivered in collaboration with one or more of the networks.[4]

Overall, if the government provides only limited guidance on the future configuration of the energy networks, the regulatory regime will have to equip the industry with the right tools to promote efficient system planning and delivery. Ofgem has emphasised this responsibility as part of the RIIO-2 consultation by promoting a 'whole system' perspective. The focus should now be on defining what the whole-system view entails, and what the mechanisms are that would lead to the efficient development of the energy system as a whole.

Figure 1 Stock returns (left axis) and UK nominal wages (right axis)



Note: Based on average weekly earnings in the UK and the total equity returns for National Grid and SSE. Equity returns rebased to 100 for January 2013.
Source: Oxera analysis based on Datastream.

Encouraging 'fair' returns and outcomes as part of a bigger vision

There is a perception that companies are earning high returns at a time when there is elevated political pressure to be seen as acting in the interests of customers. Against this backdrop, consumers' wages have risen relatively slowly in the past decade, while the returns realised by utility companies have shown an upward trend (see Figure 1). While incentive regulation encourages the network companies to outperform the regulatory control, there is some concern that the recent returns of energy networks have not been generated though genuine outperformance, but by financial engineering, or through imperfections of the regulatory system.

To provide some context, in the development of the regulatory system, it is worth noting that since privatisation Ofgem's framework has evolved as a largely ex ante regulatory approach. This method has successfully supported increasingly higher levels of capital expenditure (CAPEX). In addition, Ofgem has consistently exercised its regulatory oversight to drive the costs of the capital programme down on an ex ante basis. By way of example, Figure 2 outlines the business plan submissions and the final allowances for National Grid Electricity Transmission (NGET) up to the start of RIIO-T1.

The current RIIO framework relies on setting cost allowances and the allowed rate of return ex ante.[5] This gives companies strong incentives to outperform the regulatory settlement—if they deliver the regulated outputs for less than forecast, they earn higher returns. However, under an ex ante settlement, there may be situations where companies stand to gain (or lose) not only from their own management actions, but also from factors outside their control. These uncontrollable factors could include input price movements, price inflation or financing costs. Moreover, there is a risk that regulatory errors—e.g. those caused by incomplete and asymmetric information—could lead to windfall gains for the regulated companies.

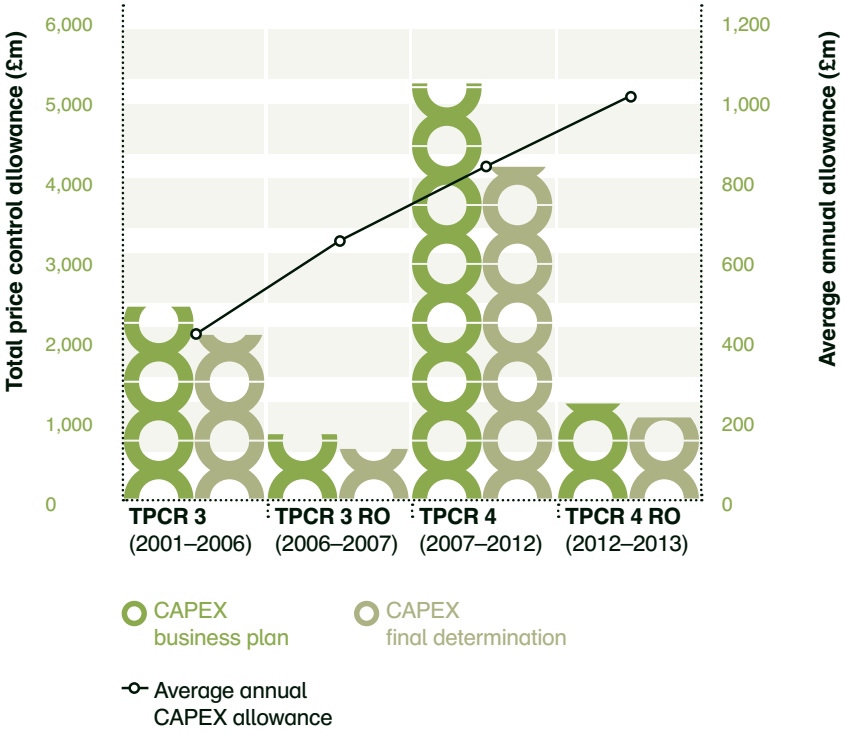
Consequently, under ex ante regulatory regimes, it is common for regulators to introduce risk-and-reward sharing mechanisms that allow changes to be made to revenue levels within the control period. It can also be tempting for regulators to intervene and to take account of actual expenditure and market developments. Such adjustments can be used to prevent windfall gains or losses, but they run the risk of diluting incentives to outperform the settlement. Any ex post intervention would run the risk of creating regulatory uncertainty, which could undermine incentives to invest.

The focus should now be on defining what the 'whole system' view entails, and what the mechanisms are that would lead to the efficient development of the energy system as a whole.

Given the concerns around profitability, the RIIO-2 consultation considers potential approaches for setting the allowed level of return (ex ante) and ensuring that the actual returns earned by companies (ex post) represent a fair deal for consumers. To date, Ofgem has consulted on several measures, including caps and collars, discretionary adjustments and anchoring returns.[6]

The intention of these measures would be to bring actual returns more closely in line with the allowed rate of return in the price

Figure 2 NGET final allowances and business plan submissions



Note: 2017/18 prices. RO refers to a rollover period. The RIIO-T1 period is excluded due to the non-comparability of reported expenditure using TOTEX allowances. For the TPCR4 one-year rollover period, the expenditure allowance reported by Ofgem excluded costs for system operation; however, this adjustment would be expected to have a small impact on the overall allowance (e.g. in preceding years, CAPEX for the system operator accounted for 2–3% of total CAPEX).
Source: Various regulatory determinations.

control. However, Ofgem will need to be careful not to create an undesirable change in behaviour once all the components of the regime are combined. It is important for Ofgem to retain a coherent vision of what RIIO-2 should achieve as a complete package. There is a risk that introducing more ex post measures could dilute the incentives built into the regulatory framework—in terms of both the incentives to invest (if companies fear that costs will subsequently be disallowed) and the incentives to outperform (if companies fear any resultant benefits will be stripped away).

If the RIIO-2 regime is heading towards the greater use of ex post outperformance sharing, with a view to reducing the perceived windfall gains made by energy companies, then in what sense could the outcome of this approach be perceived as 'optimal'?

Each regulatory approach comes with its own set of benefits and challenges. The current political and social environment is predisposed against companies significantly outperforming their price controls, even if this comes at the price of reduced efficiency incentives. Ofgem and the network companies will inevitably need to work towards a more sustainable regulatory model to maintain credibility in the eyes of consumers; sharing outperformance is one potential means for doing so.

However, any such sharing will need to be carefully designed to ensure that it does not impair parts of the regulatory model that have worked well and supported the delivery of good outcomes for consumers. For example, an area of focus for Ofgem could be to facilitate network development through improvements in informational efficiency. Mechanisms to reveal information could be substantially redesigned or strengthened, following the use of tools such as the Information Quality Incentive (IQI) in RIIO-1. In the short term, there are monetary costs associated with such mechanisms, where the customers effectively reward companies for revealing their private information. However, in the long run, these mechanisms may reduce the asymmetry of information, encourage efficient price signals and facilitate least-cost network development.

More fundamentally, the political and social environment is subject to change, and Ofgem should not lose its focus on ensuring the long-term development of the energy networks. It is essential that Ofgem's regulatory framework enables energy networks to adapt flexibly to meet the challenge of the changing political, technological and policy landscape in RIIO-2.

[4] Wales & West Utilities (2017), 'Open Letter on the RIIO-2 Framework', 4 September, p. 19.
[5] In RIIO-1, the allowed cost of equity for energy networks was determined ex ante as a fixed rate. The cost of debt was linked to a market corporate debt index, so it is not a single fixed rate for the period of the controls.
[6] For more details see Ofgem (2018), op. cit., p. 106.

To discuss any of the issues brought to light in this article, please contact the Oxera team:

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