

# Incentive Regulation of Electricity and Gas Networks in the UK: From RIIO-1 to RIIO-2

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## 1. Motivations underlying the research

During the initial post-liberalisation years in the UK, the regulation of electricity and gas networks was mainly focused on improving cost efficiency, quality of service, and network energy losses. By the 2000s, changes in the policy and technological landscape had brought about new regulatory possibilities and priorities. The UK energy regulator Ofgem faced challenges related to smart meters and networks, distributed generation, access charging methodologies, new business models, electric storage technologies, fuel poverty, and environmental concerns. This meant that regulation of energy networks has also implications for the wider energy systems, consumers, and the society.

As the regulatory and operating context of energy networks is dynamic and constantly evolving, achieving a multitude of economic, environmental, social and policy objectives is a challenge for the sector regulators. In 2010, Ofgem replaced its approach to energy network price control and incentive regulation with a Revenue-Incentive-Innovation-Output (RIIO-1) model. As part of the preparations for the second output-based network price controls (RIIO-2), Ofgem is revisiting the RIIO-1 model. RIIO marks a transition from cost-efficiency focused regulation to an output-oriented framework. RIIO-1 ends in March 2021 and Ofgem is considering modifications for RIIO-2 effective from 2021 (2023 for electricity distribution).

The motivation for revising the incentive mechanisms of the next price control of energy networks under the RIIO-2 framework is evident in Ofgem's Decision Document: "*When returns fall well outside ex ante expectations, particularly across all companies in a sector, we think it is more likely due to network companies exploiting information asymmetry, forecasting errors, or due to a poorly calibrated price control mechanism.*" (Ofgem, 2019).

## 2. A short account of the research performed

The possible changes to the RIIO model can affect the incentives, conduct, and output delivery of the energy networks in the short- and long-run. This paper is an economic assessment of the incentive properties of the main changes to RIIO energy network regulation model.

This paper reviews the incentive areas that influence the performance of the next version of RIIO-2. The assessment is guided by the principles of regulatory economics and evidence in the literature, we discuss key aspects and incentive properties of the regulation model under revision by the regulator.

We examine the main potential revision areas in the output-based RIIO-2 regulation for gas and electricity transmission and distribution network price controls considered by Ofgem. The changes concern several areas of price controls and incentive mechanisms. These changes include: (i) shorter price control periods, (ii) adjusting cost of equity (CoE), (iii) Return (on equity, RORE) Adjustment Mechanism (RAM) and profit sharing, (iv) Replacing the Information Quality Incentive (IQI) scheme with Business Plan Incentive (BPI), Totex Incentive Mechanism (TIM), and Sharing Factors, and (v) Blended Sharing Factors (BSF) as targeted incentives.

## 3. Main conclusions and policy implications of the work

RIIO-1 has been the longest network price control (8 years) in the UK. RIIO presents an innovation in utility regulation by attempting to reflect the changing nature of the role and services of the utilities. There are also indications that under RIIO-1 most companies have earned high ROREs.

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This has motivated the regulator to revisit the framework for RIIO-2 and a set of changes are being considered. The combined effect of the proposed changes in the regulation model is, however, difficult to determine and will depend on the details of implementation. The main sources of the excess RORE in RIIO-1 are (i) significant Totex underspend, (ii) over-performance in some targeted incentivised areas, and (iii) real price effects during the regulatory period.

The optimal length of price control is a longstanding issue in regulation and there is no clear answer to it. Uncertainty is a key factor in determining the benefits of a longer price control. The IQI can be eliminated. Instead of incentives based on forward-looking business plans, benefit sharing based on historical information and own assessments can be considered. The Totex Incentive Mechanism (TIM) and Blended Sharing Factors (BSF) are key components of RIIO. These incentive mechanisms can also reduce their reliance on information provided by the companies. The use of targeted incentive mechanisms should be limited to critical areas where performance improvement has a high priority. The return adjustment mechanism (RAM) should be a mechanism of last resort. When other incentive mechanisms are well-calibrated the need for RAM will be reduced. Incentive regulation models can quickly become complex. Simpler models will have the advantage that the effect of a given incentive change can be tracked.

The lessons of experience from the RIIO models in the UK are also relevant for energy regulators in other countries and can inform their design of incentive regulation of energy networks.