Cadent

Your Gas Network

Transition Bond Impact Report

March 2021

Introduction

1. Company overview

Cadent is the largest distributor of gas in Great Britain, owning and operating four of the eight regulated gas distribution networks in West Midlands, North West England, East of England, and North London and is responsible for the safe and efficient transportation of gas from the high-pressure national transmission system in these areas. This includes some of the largest and most densely populated cities in Great Britain, including London, Birmingham and Manchester.

The business controls and operates a wide range of infrastructure assets required to provide safe and efficient gas distribution. The four networks operate approximately 131,000 kilometres of lower-pressure gas distribution mains, serving 11 million customers, both domestic and business.

We play a crucial role in maintaining, repairing and replacing gas pipes across our distribution networks (GDNs). We are responsible for ensuring the safe and reliable flow of energy, now and long into the future. As part of this we also manage the National Gas Emergency Service telephone service on behalf of the gas industry.

In addition, we:

- Connect homes and renewable gas suppliers to our network.
- Work with local businesses to expand and develop our network.
- Provide extra care for those who might need it in a gas emergency.

Cadent is regulated by the Office of Gas and Electricity Markets (Ofgem). Ofgem sets price control frameworks, the amount companies can earn from charges to use the network, with the current regulatory period (RIIO (Revenue= Incentives + Innovation + Outputs) - GD1) running from 2013-2021. RIIO-2 will be the next network price control and will start from 1st April 2021, finishing in March 2026.

2. Transitioning to a more sustainable future

The UK's ambition to become Net Zero[1] by 2050 has fundamentally changed the way in which we think about energy. Across the country, local authorities, large energy users, homes and businesses are considering what this means in terms of transition plans. Cadent is doing the same in two main ways: ensuring the business operates in a low carbon way and supporting the transition to transportation of low and zero carbon gases such as hydrogen and biomethane.

Delivering Net Zero cannot be achieved solely through the work of the gas distribution companies and so Cadent is leading the development of industry-wide transition plans for the benefit of consumers. Cadent continues to work with both national organisations such as the Energy Networks Association (ENA), the Energy Utilities Appliance (EUA), and the Confederation of British Industry (CBI) to provide a common perspective to Government and regulators and also with regional and Local Authorities to help plan the energy transition.

[1] https://www.gov.uk/government/publications/achieving-net-zero-carbon-emissions-through-a-whole-systems-approach

Cadent leads the way in ensuring that the UK's gas network plays its role in securing energy for the UK that is zero carbon while also remaining reliable, flexible and convenient for customers to use. The gas network can be transitioned to bring biomethane and hydrogen to homes and industries, massively reducing the carbon footprint of heat in the process. It can work alongside renewably generated electricity to help flexibly meet all the needs of UK customers while at the same time reaching the UK's legislative target of being net zero by 2050.

It is now widely recognised that zero carbon gases, including hydrogen, will have to be an element of any future UK fuel provision. This goes beyond heating home and supports the UK in decarbonising freight and heavy transport by using fuel cells. Cadent is playing a key part in several significant hydrogen projects to make this happen.

The move to Net Zero requires a combined Energy System that makes best use of both electricity and gas infrastructure to achieve its aims. Cadent are extremely supportive of this approach and have recently submitted plans in the RIIO-2 submission[2] to show how this will work.

Decarbonisation of industrial clusters makes sense as it starts where emissions are the greatest. The gas to fuel industrial processes and the potential for carbon capture and storage is present in the same location. Cadent has been focused on developing an industrial cluster concept in the North West of England known as HyNet[3] and this has made huge progress in 2019/20.

The HyNet project, which was launched in May 2018, is designed to provide hydrogen at scale for heavy industry and has been developed with local partners and stakeholders including the Metro Mayors in the North West with the aim of being operational in the mid-2020s. The hydrogen will be produced from natural gas using the steam reforming process which produces CO_2 as a by-product. The resulting CO2 will be captured and together with CO2 from local industry will be sent by pipeline for storage offshore in the nearby Liverpool Bay depleted gas fields. Following Cadent's work on this project, Cadent were the only gas distribution network invited to provide evidence to the Department for Business, Energy & Industrial Strategy ('BEIS') select committee investigating carbon capture technology (July 2018).

Because of Cadent's expertise in biomethane connections and leadership regarding hydrogen, Cadent has been able to initiate the decarbonisation of heavy transport, which is a large emitter of CO_2. The focus is on supporting bio-CNG refuelling and the development of hydrogen for larger fuel cell vehicles. Progress has been made on Cadent's national bio-CNG refuelling infrastructure, with nine public access stations connected to the network, and a further three under development. Cadent's National Distribution Centre fleet now benefits from operating nine bio-CNG trucks, avoiding emissions of up to 500 tCO2e/year with a new bio-CNG refuelling station opened in June 2020.

[2] https://cadentgas.com/about-us/our-company/business-plan
[3] https://hynet.co.uk

Our partnership with CNG Fuels delivered the first commercial high pressure compressed natural gas ('CNG') refuelling station at Leyland in Lancashire which has been operating since 2016, supporting HGV fleets for Waitrose, John Lewis and others, significantly reducing their transport emissions. The latest facility opened in January 2019 in partnership with GasRec in Hertfordshire and will support Ocado's growing fleet of 29 gas powered HGVs. Using conventional fossil fuel CNG from this station, Ocado have reported a 29% CO2 emission reduction compared with its diesel fuelled HGVs.

Cadent's research and innovation portfolio explores key aspects associated with the future use of hydrogen in transport. The HyMotion project[4] and report (2019) shows the way for hydrogen refuelling infrastructure costs; the impact of hydrogen blends on conventional engines; and the impact of gas impurities in hydrogen distributed in new and/or repurposed gas networks on hydrogen Fuel Cell Electric Vehicles. Finally, Cadent is also working to decarbonise the First Call Operative fleet, that responds to emergency gas escape calls, of circa 1,100 vehicles. This initiative is expected to deliver a reduction in emissions of 4,000 tCO_2e/year by 2026.

Cadent supports the growth of the UK biomethane sector by turning food, farm and other wastes, otherwise destined for landfill, into a gas to fuel homes and transport. There are now 35 biomethane producing plants on Cadent's network, with the potential volumes entering the network equivalent to the heating demands of as many as 218,690 homes. (Source: utilitiessavings.co.uk). The growth of distributed gas generation, principally in the form of biomethane production, brings with it many challenges and Cadent is adapting to these. For example, the need to balance entry and exit requirements is being addressed by the introduction of smarter network management. With this, Cadent will be able to accept more biomethane connections, adding more green gas capacity into the network. This project is the first of its kind and aims to demonstrate the benefits of an optimised network solution for the first time in the UK.

The majority of Cadent's greenhouse gas emissions are from gas leakage. Leakage is the unintentional loss of gas to the atmosphere during the operation of the gas network. Across the company, this leakage is estimated to be less than 0.5% of Cadent's total transported gas and there is immense focus to reduce this further[5]. The most important actions Cadent has been taking is to reduce this leakage by replacing metallic pipes with plastic ones, to make sure that the joints between metallic pipes remain in good condition through gas conditioning and to keep the average system pressures as low as possible. A working group, including other networks and the plastic pipe manufactures, has been created to investigate how to reduce the carbon inputs to the plastic pipe manufacturing process.

[4] https://hynet.co.uk/app/uploads/2019/06/15480_CADENT_HYMOTION_PROJECT_REP.pdf

[5] *The estimate of leakage is based on measurements of how leakage in various pipe materials and sizes in various conditions when operated at different pressures, which is then modelled according to the average pressures at which the network is operated each year. This is a common and accepted approach across the industry.*

Cadent's mains and service replacement (Repex) programme delivers the greatest reduction in gas leakage and therefore greenhouse gas emissions. As part of the Health and Safety Executives 30/30 programme for RIIO1 that commenced in 2013, Cadent has replaced over 11,000 km of metallic pipe with polyethylene. This has been the main contributor to the delivery of a reduction of over 295,000 tonnes CO2e per year, the equivalent of taking more than 150,000 vehicles off the road.

Whilst COVID-19 has disrupted the schedule for mains replacement work the programme end date mandated by the HSE remains 2032. Spoil generated from Cadent's Repex programme, digging up and replacing thousands of kilometres of old gas pipes, is our most material source of waste. Cadent and its Repex programme contractors are currently outperforming our RIIO-1 target of 90% diversion from landfill. In 2018/19, over 97% of this waste was diverted from landfill through reuse or recycling. We are also outperforming our RIIO-1 target[6] of importing no more than 30% first use aggregate. Currently, this is 11% across our operations. Our aim is to target 100% diversion of excavated waste from landfill and to import 0% first use aggregate.

During RIIO-2, less than 10% of our backfill will be first use aggregate in the North West and East of England, and 5% in the West Midlands and North London.

Achieving these targets will support a more circular approach to the management of a high-volume waste stream. Setting challenging targets for waste management supports further innovation to reduce spoil arising from no- or low- dig approaches to mains replacement and repair.

[6] https://cadentgas.com/nggdwsdev/media/Downloads/business-plan/APP_CAD_07-04-00-Detailed-Environmental-Action-Plan.pdf

I. Cadent's Transition Bond issuance

In December 2019, Cadent published its Transition Bond framework which embeds the four pillars of Green Bond Principles. The use of proceeds outlined in the framework are: Retrofit of Gas Transmission and Distribution Networks, Renewable Energy, Clean Transportation and Energy Efficient Buildings.

The framework sets out that projects financed and/or refinanced through the net proceeds of any Transition Bond notes are evaluated and selected by a working group of representatives with the required level of expertise and seniority from Cadent.

In February 2020, Cadent conducted a series of debt investor meetings throughout Europe to introduce investors to the Transition Bond Framework and communicate Cadent's broader ESG strategy. Members of Cadent's senior leadership team met with investors in London, Amsterdam, Paris, Frankfurt and Munich. The feedback on the Framework and Cadent's strategy was positive, with investors supportive of Cadent's approach to a Transition labelled issuance.

Following the successful roadshow, on 4th March, Cadent (rated Baa1 by Moodys and BBB+ by S&P and Fitch) issued the UK's first Transition Bond. The bond was 8.5x oversubscribed highlighting strong investor appetite to support the energy transition in the UK.

"Cadent is delighted to be the first UK business to issue a transition bond. This type of financing has an important role to play in fostering the transition to a low-carbon economy.

Cadent will use the proceeds in line with our strategy of improving performance and service levels and delivering more sustainable outcomes for our customers, stakeholders and our business."

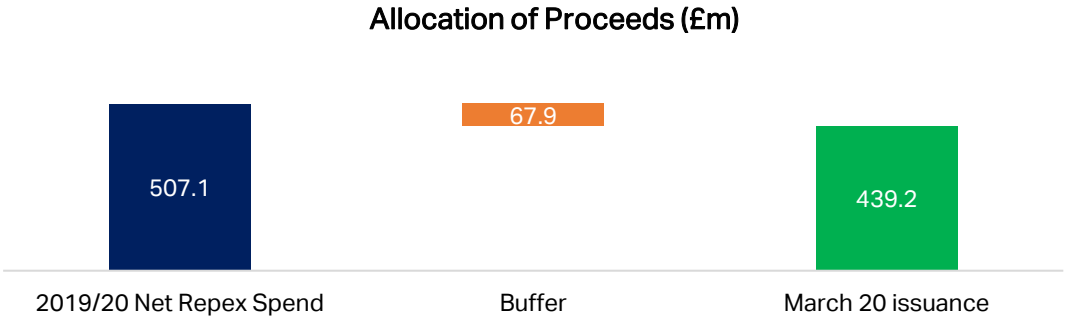
Steve Hurrell
Chief Financial Officer
Cadent

II. Allocation of Proceeds and Impact reporting

The proceeds of the Transition Bonds have been and will continue to be used to finance or refinance, in whole or in part, existing and/or future Eligible Projects, as outlined in the Transition Bond Framework.

At 31/12/2020, Cadent had issued €500m Transition Bond notes, equivalent to £439.2m at issuance. The proceeds of this issuance have been allocated in full against the eligible category - Retrofit of gas transmission and distribution networks.

Projects in this category that have been evaluated and selected for financing by Transition Bonds solely includes Cadent's spend on Mains and Service Replacement (Repex), in 2019/20 (£507.1m), thus maintaining a buffer over the net proceeds of the bond outstanding.



Impact of the allocated projects

The impact of this spend allocated can be calculated using Cadent's Ofgem approved leakage model for 2019/20, which is prorated to the allocated proceeds amount (£439.2m). The impact of this spend is summarised in the tables overleaf.

Reduction in leakage as a result of the 2019/20 Repex project (in GWh/yr)

	East of England	North London	North West	West Midlands	Total Cadent
Reduction in Leakage (GWh/yr)	12.5	7.1	10.4	7.1	37.1

Annual GHG emissions avoided (in tCO2e)

	East of England	North London	North West	West Midlands	Total Cadent
Annual GHG emissions avoided (in tCO2e)[7]	15,304.1	8,723.3	12,793.4	8,727.5	45,548.3

The leakage model underpinning the impact calculations in this report is the Shrinkage Leakage Model (SLM). It is used by each Distribution Network to calculate emissions from the transportation network. The SLM was built by Advantica and the methodology within it is agreed by Ofgem. Ofgem do not provide procedures or guidance as to how to complete the SLM, however the Distribution Networks meet periodically to ensure a standardised set of modelling rules. On an annual basis the Distribution Networks have a Licence obligation to review the methodology and application of the SLM and to investigate ways to improve the accuracy of the calculation. Changes to the methodology within the SLM requires Ofgem approval and expert review.

[7] Leakage model https://www.gasgovernance.co.uk/sf (password = jointoffice)

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