Utilities Handbook 2023: Western Europe Regulated Gas

Claire Mauduit-Le Clercq, Director
Federico Loreti, Associate

Sept. 20, 2023

This report does not constitute a rating action
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Rating Drivers</td>
<td>3</td>
</tr>
<tr>
<td>Regulated Gas Utilities Ratings</td>
<td>10</td>
</tr>
<tr>
<td>Comparison Of Gas Regulatory Frameworks</td>
<td>11</td>
</tr>
<tr>
<td>Comparison Of Rating Drivers</td>
<td>38</td>
</tr>
<tr>
<td>Rated Companies Snapshots</td>
<td>45</td>
</tr>
<tr>
<td>Related Research And Analytical Contacts</td>
<td>61</td>
</tr>
</tbody>
</table>
Key Rating Drivers

- This handbook examines rated regulated gas utilities in eight countries within Western Europe where natural gas plays an important role in the energy mix, namely the U.K., Ireland, Germany, the Netherlands, Italy, France, Spain, and Portugal. S&P Global Ratings rates 15 transmission and distribution system operators (TSOs and DSOs) in that region. We use forecasts from S&P Global Commodity Insights.

- Through 2030, we expect regulated gas operators in most countries will experience a limited and gradual decline in residential and industrial demand. Government decarbonization efforts focus on reducing gas-to-power even if gas will remain key to balancing energy markets.

- This, paired with supportive regulatory frameworks across all jurisdictions, should underpin healthy and predictable cash flows for network operators in the next three to five years.

- However, we foresee a sharper drop in demand from 2030, which heightens business risk, making leverage reduction increasingly important for maintaining creditworthiness. As regulatory periods end, operators could face higher regulatory reset risk, depending on the pace of the energy transition. Regulatory support will be a major variable including timeliness of cost recovery, tariff setting changes, and compensation for decline in gas usage.

- A pickup in green gases could reduce the risk of stranded assets for gas networks, but significant investments and related regulation are unlikely this decade. We see regional differences in the pace of development and typically more growth potential on hydrogen for TSOs and on biomethane for DSOs.
### Deleveraging Will Be Critical As The Energy Transition Intensifies

#### Sector dynamics

<table>
<thead>
<tr>
<th>Energy policies</th>
<th>Current state</th>
<th>Challenges ahead</th>
<th>Possible mitigants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas demand</td>
<td>Residential and industrial demand decline is gradual in most countries until 2030</td>
<td>Natural gas demand for residential heating declines sharply from 2030 due to electrification</td>
<td>Pickup of green gases could reduce risk of stranded assets</td>
</tr>
<tr>
<td>Regulation</td>
<td>Timely pass-through of opex and capex protects remuneration of assets and investments</td>
<td>Risk of adjustments to remuneration to account for lower demand</td>
<td>Regulators to gradually incentivize investments in green gases</td>
</tr>
<tr>
<td>Rating impact</td>
<td>Strong and predictable cash flows support credit quality over the next three to five years</td>
<td>Business and financial risks could increase between regulatory reset and potential pick-up in green gases, making it critical to have prioritized leverage reduction over shareholder distributions ahead of 2030</td>
<td></td>
</tr>
</tbody>
</table>

**Opex**—Operating expenditure. **Capex**—Capital expenditure. Green gases include biogas (including biomethane) and green hydrogen.
Residential Gas Demand Decline Accelerates From 2030

- Residential demand is a major component of current fossil gas demand, and 80% of it is heating. This is especially true in the U.K., Germany, France, Italy and the Netherlands, the largest pools of residential consumers (about 120 bcm in 2022).

- Policies and surging gas prices boost heat pumps additions. Decarbonization of residential heating will come primarily from hybrid heat pumps, building efficiency and, from 2030 onward, district heating.

- But heatpump deployment strategies must strengthen, and hurdles be removed, to accelerate the drastic cut in residential demand before 2030. Practical performance and affordability (consumer acceptability) need to be addressed on top of supply ramp-up.

- The pace of gas boiler bans should largely shape actual fossil gas usage decline and thus Transition Risk for infrastructures.

RepowerEU Heat Pump Addition Targeted Pace Of 2 Million Annually Is Below The Pace Required To Decarbonize The Residential Sector

Annual additions of heat pumps: historic sales and projections

<table>
<thead>
<tr>
<th>Millions per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTLOOKS</td>
</tr>
<tr>
<td>Annual additions required to fully decarbonize the building sector by a defined date</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Annual replacement requirement</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>by 2050</td>
</tr>
<tr>
<td>Historic sales</td>
</tr>
<tr>
<td>2022</td>
</tr>
<tr>
<td>Hydronic</td>
</tr>
<tr>
<td>2021</td>
</tr>
<tr>
<td>Hydronic</td>
</tr>
<tr>
<td>2020</td>
</tr>
<tr>
<td>Hydronic</td>
</tr>
</tbody>
</table>

Based on data from IEA, estimates from S&P Global Commodity Insights.
How Will Gas Grids Prepare For Increasing Challenges After 2030?

- Gas remains critical in balancing the energy mix through 2030, but demand is likely to drop sharply thereafter due to EU-impulsed decarbonization efforts. This decline will be underpinned by:
  - Lower demand for gas to power, as embedded in EU & U.K. net-zero targets;
  - A strong decline in residential demand from 2030, due to electrification of heating; and
  - Reduced industrial demand, even if some processes remain hard to electrify.

- While a pickup in renewable gases could reduce the risk of stranded assets for gas networks, we envision a step-up in related investments only from 2030. Uncertainty remains on the timing, cost, and magnitude of the repurposing of natural gas pipelines. That said, we see progress:
  - The European Commission’s Third Gas Package plans to introduce hydrogen regulation from 2031.
  - REPowerEU focuses on replacing fossil natural gas in heating and power generation; and targets 10 million tonnes (mt) of green hydrogen by 2030 (plus 10 mt of imports)*.
  - In the U.K., the state has committed to provide more clarity on hydrogen regulation by 2026.

- As regulatory periods end, gas network operators face increasing exposure to regulatory reset risk, with potential pressure on remuneration to reflect the demand trajectory.

- Future rating actions, or revisions of credit metrics expected at the rating level, may reflect how deleveraging paths raise balance sheet flexibility ahead of the next investment cycle and before regulation provides sufficient visibility on green gas infrastructure.

*The European Hydrogen Bank should lead auctions from this fall for fixed payments for 10 years per kilogram of green hydrogen produced. Auctions for green hydrogen in fall 2023 will be backed by €800 million from EU’s Innovation Fund.
Dependency Risks May Shift From Fossil Gas To Hydrogen

- **Gas grids’ credit quality** emerged **relatively unscathed** from Europe’s 2022 energy crisis, and Europe is no longer significantly dependent on a geopolitically risky gas supplier. Yet acute gas supplier plights and economic energy challenges highlighted the costs of depending on imports.

- **Since 2023, the EU is the only major gas consuming region with binding low-carbon use targets**: by 2030, more than 1% of energy use in transport and 42% (60% by 2035) of hydrogen used by industries must be renewable, equaling about 5 million metric tons per year (mtpa; 10 mtpa in 2035) according to SPCI.

- **These ambitious targets are part of broader REPowerEU targeted 20 mtpa renewable hydrogen use by 2030, of which half imported.** The 20 mtpa’s energy equivalent (660 TWh) would save an appreciable 63 bcm of natural gas or one-sixth of current use. Germany’s strategy updated in July sees 3-4 mtpa 2030 demand, over 50% covered by imports.

- **As the EU gradually swaps fossil natural gas for hydrogen, what dependency risks does this strategy carry?**
  - Building a 10 mtpa-consistent infrastructure is a considerable challenge, with necessary transport, storage and distribution infrastructure. There is uncertainty on regulation until 2031 and on technology, which has yet to prove its economic viability.
  - Renewable power feed will be competing with the higher-ranking goal of direct electrification: Producing just 5 mtpa, requiring about 35 GW electrolyzer plus 50-150 GW renewable generation capacity, may absorb one-eighth of total EU renewable capacity.
  - Even assuming it could produce 10 mtpa, the EU still needs to source the same quantity, for which the U.K. and Norway will be clearly insufficient, generating a new type of dependency on non-European gas sources.
The Energy Crisis Leaves Demand Weaker, Prices Higher

- Gas prices spiked in 2022 and until 2025 they are set to remain elevated, at multiples of 2019 European / future U.S. levels

- High gas prices translated in industrial demand destruction, with hard-to-abate like chemicals, mining, and steel most affected. See below for the structure of industrial gas consumption in EU27 + the U.K. in 2021 and 2022 (in bcm).
<table>
<thead>
<tr>
<th>Issuer</th>
<th>Long-term ICR</th>
<th>Outlook</th>
<th>Business risk profile</th>
<th>Financial risk profile</th>
<th>Volatility table</th>
<th>SACP</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.V. Nederlandse Gasunie</td>
<td>AA-</td>
<td>Stable</td>
<td>Excellent</td>
<td>Intermediate</td>
<td>Low</td>
<td>a</td>
</tr>
<tr>
<td>Gas Networks Ireland</td>
<td>A+</td>
<td>Stable</td>
<td>Excellent</td>
<td>Intermediate</td>
<td>Low</td>
<td>a-</td>
</tr>
<tr>
<td>Wales &amp; West Utilities Finance PLC*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class A debt: A-</td>
<td>Negative</td>
<td>Excellent</td>
<td>Aggressive</td>
<td>Low</td>
<td>bbb+</td>
<td></td>
</tr>
<tr>
<td>Class B debt: BBB</td>
<td>Negative</td>
<td>Excellent</td>
<td>Aggressive</td>
<td>Low</td>
<td>bbb</td>
<td></td>
</tr>
<tr>
<td>Snam S.p.A.</td>
<td>BBB+</td>
<td>Stable</td>
<td>Excellent</td>
<td>Significant</td>
<td>Low</td>
<td>a-</td>
</tr>
<tr>
<td>Northern Gas Networks Ltd.</td>
<td>BBB+</td>
<td>Stable</td>
<td>Excellent</td>
<td>Significant</td>
<td>Low</td>
<td>bbb+</td>
</tr>
<tr>
<td>Cadent Gas Ltd.</td>
<td>BBB+</td>
<td>Negative</td>
<td>Excellent</td>
<td>Significant</td>
<td>Low</td>
<td>bbb+</td>
</tr>
<tr>
<td>Vier Gas Transport GmbH</td>
<td>BBB+</td>
<td>Stable</td>
<td>Excellent</td>
<td>Aggressive</td>
<td>Low</td>
<td>bbb+</td>
</tr>
<tr>
<td>SGN Ltd. §</td>
<td>BBB</td>
<td>Stable</td>
<td>Excellent</td>
<td>Aggressive</td>
<td>Low</td>
<td>bbb</td>
</tr>
<tr>
<td>2i Rete Gas SpA</td>
<td>BBB</td>
<td>Stable</td>
<td>Excellent</td>
<td>Aggressive</td>
<td>Low</td>
<td>bbb</td>
</tr>
<tr>
<td>REN-Redes Energeticas Nacionais, SGPS, S.A.</td>
<td>BBB</td>
<td>Stable</td>
<td>Excellent</td>
<td>Aggressive</td>
<td>Media</td>
<td>bbb</td>
</tr>
<tr>
<td>Enagas S.A.</td>
<td>BBB</td>
<td>Stable</td>
<td>Strong</td>
<td>Significant</td>
<td>Media</td>
<td>bbb</td>
</tr>
<tr>
<td>Floene Energias S.A.</td>
<td>BBB-</td>
<td>Stable</td>
<td>Excellent</td>
<td>Aggressive</td>
<td>Media</td>
<td>bbb-</td>
</tr>
<tr>
<td>NorteGas Energia Distribucion, S.A.U.</td>
<td>BBB-</td>
<td>Stable</td>
<td>Excellent</td>
<td>Aggressive</td>
<td>Media</td>
<td>bbb</td>
</tr>
<tr>
<td>Redexis S.A.</td>
<td>BBB-</td>
<td>Stable</td>
<td>Excellent</td>
<td>Aggressive</td>
<td>Media</td>
<td>bbb-</td>
</tr>
<tr>
<td>Madrilena Red de Gas, S.A.U.</td>
<td>BBB-</td>
<td>Stable</td>
<td>Strong</td>
<td>Aggressive</td>
<td>Media</td>
<td>bbb-</td>
</tr>
</tbody>
</table>

ICR—Issuer credit rating; SACP—Stand-alone credit profile. CRA—Comparable rating analysis. Source: S&P Global Ratings. *Ratings are issue ratings. §Southern Gas Networks Plc and Scotland Gas Networks PLC. †Formerly Galp Gas Natural Distribuição (GGND).
Comparison Of Gas Regulatory Frameworks
## Key Features Of Western European Regulatory Frameworks

<table>
<thead>
<tr>
<th>S&amp;P Global Ratings' Regulatory framework assessment</th>
<th>U.K.</th>
<th>Germany</th>
<th>Netherlands</th>
<th>Italy</th>
<th>France</th>
<th>Spain</th>
<th>Portugal</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulator</td>
<td>Ofgem</td>
<td>BundesNetzAgentur</td>
<td>Authority for Consumers and Markets (ACM)</td>
<td>Autorità di Regolazione per Energia Reti e Ambiente</td>
<td>Commission de régulation de l’Energie</td>
<td>Comisión Nacional de los Mercados y la Competencia</td>
<td>Energy Services Regulatory Authority</td>
<td>Commission for Regulation of Utilities</td>
</tr>
<tr>
<td>Type of regulation</td>
<td>Weighted average cost of capital (WACC) on regulatory asset value (RAV)</td>
<td>Return on equity (ROE) on regulatory asset base (RAB), revenue cap</td>
<td>Nominal WACC on RAB</td>
<td>Real WACC on RAB</td>
<td>Real WACC on RAB</td>
<td>• Transmission: RAB-based</td>
<td>• Transmission: RoR on RAB</td>
<td>Real WACC on RAB</td>
</tr>
<tr>
<td>Allowed regulatory returns</td>
<td>• Average vanilla WACC: - 3.2% for Cadent and SGN Southern; - 3.24% for WWU, PNG and SGN Scotland. • Post removal of 25-basis-point wedge, company-specific adjustments are possible</td>
<td>• Fourth regulatory period (2023-2027)*: Proposed RoE for new investments of 7.09% pre-tax. 5.07% (3.01% post-tax) for old investments</td>
<td>• Transmission: 3.1% (pre-tax) in 2022</td>
<td>• Distribution: 2.9% (pre-tax) in 2022</td>
<td>• Cost of debt and equity components recalculated yearly with a two-year lag in IFRS</td>
<td>• Transmissi on: 5.1% (real pre-tax) until April 2024</td>
<td>• Distribution: 4.1% (real pre-tax) until April 2024</td>
<td>3.65% (real pre-tax) as per consultation on PCS, for both transmission and distribution (consultation does not mean final decision)</td>
</tr>
</tbody>
</table>

*On June 7, 2023, the BNetzA proposed to increase RoE based on interest rate environment. This rate is still subject to final decision and would be revised at the beginning of each year starting 2024. SGN South—Southern Gas Networks. PNG—Northern Gas Networks, WWU—Wales and West Utilities Finance. SGN Scotland—Scotland Gas Networks. WACC—Weighted-average cost of capital.
## Key Features Of Western European Regulatory Frameworks

<table>
<thead>
<tr>
<th>U.K.</th>
<th>Germany</th>
<th>Netherlands</th>
<th>Italy</th>
<th>France</th>
<th>Spain</th>
<th>Portugal</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pass-through of costs for balancing the system</strong></td>
<td>Yes, full pass-through with about one-year lag.</td>
<td>Yes, pass-through. Balancing energy system is organized at TSOs level via Trading Hub Europe. Annual adjustments for highly volatile cost items (e.g., fuel gas).</td>
<td>The regulator has allowed full post-calculation of energy costs for Gasunie (GTS). Partial recovery for gas DSOs from 2023 onwards.</td>
<td>Yes, full pass-through of energy costs for balancing the system with almost immediate cash flow recognition.</td>
<td>TSO is responsible for balancing the system. 80% of costs for additional spot volumes are passed through with a one-year lag.</td>
<td>Yes, full pass-through with up to two-year lag.</td>
<td>Reconciliation between forecast and actual costs with a two-year lag and the potential to extend recovery or give back over a long period if divergence is material.</td>
</tr>
<tr>
<td><strong>Inflation linked?</strong></td>
<td>Yes, both regulated revenue and RAV are linked to the consumer price index including owner occupiers’ housing costs (CPIH).</td>
<td>Yes, the cost base that flows into the revenue cap is adjusted annually for inflation (consumer price index [CPI]) and recovered through allowed revenue.</td>
<td>Yes, with annual indexation. In the current period for gas, the regulator switched from real to nominal returns, so operators receive advanced cash flows, which means RAB is not indexed to inflation annually.</td>
<td>Yes, the framework provides protection against inflation. RAB is calculated every year at revalued historical cost and using an annual deflator. Revenue is also inflation linked.</td>
<td>No, not automatically CPI-linked. Gas TSOs and DSOs are provided an inflation allowance in the following regulatory period only (2027), which makes for a substantial lag. For transmission however, some audited costs are a pass-through (electricity, CO2 etc.).</td>
<td>Yes, base rate of return is adjusted every year (intraperiod), with 10-year Portuguese government bond yields evolution. The remaining parameters are fixed for the period. Opex is updated annually with GDP deflator minus efficiency parameters.</td>
<td>Yes, on an annual basis revenue operating costs are linked with inflation.</td>
</tr>
<tr>
<td><strong>Volume risk</strong></td>
<td>None to very limited</td>
<td>None to very limited</td>
<td>None to very limited</td>
<td>None to very limited</td>
<td>None to very limited</td>
<td>Only DSOs. Limited to some, depending on customer base (e.g., residential volume is less cyclic than industrial but more sensitive to remuneration).</td>
<td>None to very limited</td>
</tr>
</tbody>
</table>
U.K. | The Pace Of Decarbonizing Residential Heating Will Be Key

- **We estimate residential gas demand could decline by 25% by 2030 (versus 2022)*, with an acceleration from 2030 (about 50% until 2040) reflecting transformation of heating.** Policy measures are signaling the start of a rapid transformation away from fossil natural gas as a space heating fuel. A ban on gas boilers in new homes will take effect in 2025 (2029 currently proposed in the EU) and on all new gas boilers in 2035. The government targets decarbonizing residential heating by installing 600,000 heat pumps by 2028, over 8x the 2022 pace. Further subsidies (on top of the current Boiler Upgrade Scheme) are needed to accelerate the uptake and make them cost-competitive (current pace of installation is 72,000 in 2022 from 30,000 in 2021).

- **Industrial gas demand should be more resilient.** The transition to blue hydrogen will fuel demand for fossil gas for industrial/transport use. Gas’ role in the power mix should halve by 2030. The state aims to exit gas-fired power generation by 2035 by advancing on offshore wind deployment and delivering new nuclear power.

- **Gas operators will benefit from supportive regulation until 2026,** with no exposure to volume/inflation risk and full pass-through of shrinkage costs (costs recovered the year after incurred). How the regulator will adapt remuneration of transport and distribution activities to declining natural gas usage will be key.

- **The uncertainties on the transition to green hydrogen and required infrastructure should remain until 2026.** The state targets low-carbon hydrogen capacity of 10 GW by 2030, with at least half from electrolysis (green hydrogen and the rest in blue hydrogen). Current public investment package on clean energy amounts to £375 million of which £240 million is earmarked for the net-zero hydrogen fund. By 2026, the state has committed to design new business models and regulation to support development of hydrogen transport and storage infrastructure.

- **We are monitoring:**
  - The pace of residential heating decarbonization through installation of heat pumps (hybrid and fully electricity-based)
  - How green gas ambitions will be incorporated in the regulatory framework from 2026.

*Based on data from S&P Global Commodity Insights.*
Residential Demand Could Decline By 25% By 2030 (bcm)

Green And Blue Hydrogen Supplies Could Exceed Domestic Demand

U.K. Gas Demand And Generation Mix Trends

Residential & Industrial Demand Could Halve In The 2030s (bcm)

Gas Could Drop To 17% In Power Mix By 2030 From 38% In 2022 (TWh)


S&P Global Ratings
The U.K. Has A Strong Regulatory Advantage

Regulator: Office of Gas and Electricity Markets (Ofgem)

Key rated players:
- TSO: National Gas Transmission
- DSOs: Cadent Gas, Northern Gas Networks, Scotia Gas Networks, and Wales and West Utilities

Tariff-setting methodology:
Total expenditure, regulatory asset value based. Capital expenditure is set by the regulator at inception of the regulatory period.

Green gas regulatory incentives:
Low-carbon hydrogen capacity target of 10 gigawatts (GW) by 2030, with at least half coming from electrolytic hydrogen.

Gas Transmission Regulatory Periods
- RIIO-GT1 2013-2021
- RIIO-GT2 2021-2026

Gas Distribution Regulatory Periods
- RIIO-GD1 2013-2021
- RIIO-GD2 2021-2026

Regulatory Advantage Overview For U.K. Gas Activities

- Regulatory stability
  - Very credit supportive
  - Less credit supportive
  - Advanced and predictable regulation
  - Long track record

- Tariff setting
  - Regulator interacts in a transparent way with regulated players
  - Based on auditable formula, allowing companies to earn fair returns

- Financial stability
  - Full cost recovery
  - No exposure to volume, commodity, or inflation risk
  - Work in progress enters into regulatory asset base

- Regulatory independence
  - Ofgem has a strong track record of independence
  - Regulator engages with all stakeholders in an open and transparent manner
  - Possibility of regulatory appeal to the U.K. Competition and Markets Authority
We expect residential demand to decline by about 30% by 2030 from 2022* and industrial /transport demand to plateau at 2022 historic low level.

- Residential heating is gradually moving away from fossil-fuel with the state subsidizing hybrid system solutions (e.g. up to 20-45% of the initial cost of the heat pump) and proposed banning new fossil fuel heating by 2025. Target is 500,000 new heat pumps annually by 2024 to reach an installed stock of 6 million by 2030.
- Industrial demand is likely to remain stable through 2022-2030 despite gas supply risks and high market prices. Demand could be less resilient with government subsidizing cleaner industrial process in less hard-to-abate industries.

Gas grid operators benefit from supportive regulation through 2027, in our view, with no exposure to volume or price risk, and the cost base being adjusted annually for inflation. Investments commissioned post 2023 benefit from accelerated depreciation until 2045, front-loading their effective remuneration. However, we foresee limited investments, especially for DSOs.

Germany has the most ambitious targets and advanced strategy on hydrogen in Europe (National Hydrogen Strategy updated in July 2023). It targets 10 GW of domestic electrolysis capacity by 2030 (to meet demand of 95-130 TWh). The state aims to foster development of transport infrastructure by privately owned operators through incentives (e.g. contracts for difference); and set up a start-up grid of 1,800 km of converted and newly built hydrogen lines via IPCEI funding by 2028, targeting a total hydrogen backbone of 11,200 km by 2032.

We are monitoring:

- Legislation on heat pumps and the pace of implementation; and
- Progress in green gas penetration and implementation of hydrogen strategy notably the step-up of a legal and regulatory framework on infrastructure and advances on deployment of the hydrogen grid.

---


S&P Global
Ratings
Germany’s Gas Demand And Generation Mix Trends

Residential Demand Could Drop 31% By 2030 From 2022 (bcm)

Low Carbon Gases To Jump To 30 Bcm By 2040

Residential, Industrial Demand Could Contract 40% By 2040 Versus 2030 (bcm)

Gas Could Sink To 13% By 2030 From 20% In 2022 (TWh)

bcm--Billion cubic meters, TWh--Terawatt-hours. CCGT--Combined cycle gas turbine. Sources: S&P Global Commodity Insights, Low carbon net import includes green and blue hydrogen, biomethane.

S&P Global Ratings
# Germany Has A **Strong** Regulatory Advantage

<table>
<thead>
<tr>
<th>Regulator:</th>
<th>Bundesnetzagentur (BNetzA)</th>
</tr>
</thead>
</table>
| Key rated players: | TSOs: Gasunie; Vier Gas Transport (owner of Open Grid Europe Group), and EnBW (Transnet BW and ONTRAS)  
DSOs: E.ON and EnBW |
| Tariff-setting methodology: | Incentive regulation based on a revenue cap, which is set using a base level of costs (reported in the so-called photo or base year, i.e., the middle year of the five-year regulatory period). Capital cost adjustment (CCA) system from 2023: annual adjustment for growth and replacement capex, while the previous system only recognized growth capex via investment measures. |
| Biomethane technical potential: | 130 TWh per year |
| Green gas regulatory incentives: |  
- Biomethane investments enter the RAB.  
- Renewable Energy Sources Act and amendments: Incentives for biomass plants are paid in a competitive tendering process.  
- Small-scale biomass installations (up to 150 kilowatt-hours) receive statutory feed-in tariff. |

**Regulatory Advantage Overview For German Gas Activities**

<table>
<thead>
<tr>
<th>Regulatory stability</th>
<th>Very credit supportive</th>
<th>Less credit supportive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced and predictable regulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long track record</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tariff setting</th>
<th></th>
</tr>
</thead>
</table>
| Regulator interacts in a transparent way with regulated players  
Based on auditable formula, allowing companies to earn fair returns |

<table>
<thead>
<tr>
<th>Financial stability</th>
<th></th>
</tr>
</thead>
</table>
| Full cost recovery  
No exposure to volume, commodity, or inflation risk  
Work in progress enters into regulatory asset base |

<table>
<thead>
<tr>
<th>Regulatory independence</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong record of independence</td>
<td></td>
</tr>
</tbody>
</table>

**Gas Regulatory Periods**

1. **2nd regulatory period**: 2012-2017  
2. **3rd regulatory period**: 2018-2022  
3. **4th regulatory period**: 2023-2027  

We expect relatively resilient residential demand until 2030 and industrial demand to be boosted by blue hydrogen. This reflects:

- Residential heating transformation started early (2018 ban on new gas connections); from 2026, a sharper decline could stem from fossil heating being banned, with only hybrid solutions (combination of heat pump and gas boiler) permitted.
- Sharp transformation of industry replacing fossil gas, with some carbon capture component, will support fossil natural gas use until 2030. This should allow to bridge for green hydrogen when the power mix will be majorly renewable (the national policy targets 70% by 2030).

Gas grid operators benefit from supportive regulation until 2026, with no exposure to volume or price risk and annual indexation to inflation. Energy costs are generally not covered in the current regulatory period but were introduced specifically for this year and next for DSOs. Their expense for grid losses will be partly compensated in 2023-2024, instead of at the end of the regulatory period.

The Netherlands is among the more advanced countries in Europe in terms of transitioning to green gases, with a focus on hydrogen, (starting with blue, ultimately green, targeting installed electrolysis capacity of 8 GW by 2032). Gasunie is responsible for developing the national transport network, connecting large industrial clusters, storage sites, and neighboring countries. State subsidies of €750 million will start the development of the grid with Gasunie, which should invest about €1.5 billion until 2030, and regulation is gradually taking shape.

We are monitoring:
- Implementation of the gas-boiler ban and pace of deployment of heat pumps (hybrid and 100% electric-based);
- The evolution of regulation post-2026, particularly incentives on investments into green hydrogen; and
- Advances on a national hydrogen network.

*Based on data from S&P Global Commodity Insights. Source: Ministry for Climate And Energy June 2022
The Netherlands’ Gas Demand And Generation Mix Trends

**Demand To Stabilize By 2030, Led By Industrial Demand (bcm)**

Residential, Industrial Demand Drop 15% By 2040 From 2030 (bcm)

Green Gases To Meet 30% Of Demand By 2050 (bcm)

Gas Drops To 25% Of Power Mix In 2030 From 51% In 2022 (TWh)

<table>
<thead>
<tr>
<th>Year</th>
<th>Fossil natural gas</th>
<th>Residential</th>
<th>Industrial and transport</th>
<th>CCGT</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022</td>
<td>12</td>
<td>8</td>
<td>4</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>2023</td>
<td>12</td>
<td>9</td>
<td>10</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>2025</td>
<td>13</td>
<td>8</td>
<td>12</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>2027</td>
<td>15</td>
<td>8</td>
<td>13</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>2030</td>
<td>17</td>
<td>8</td>
<td>15</td>
<td>17</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Fossil natural gas</th>
<th>Green gas own supply</th>
<th>Blue hydrogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>35</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2025</td>
<td>37</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>2030</td>
<td>37</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2040</td>
<td>28</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>2050</td>
<td>22</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Fossil natural gas</th>
<th>Residential</th>
<th>Industrial and transport</th>
<th>CCGT</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2030</td>
<td>5</td>
<td>17</td>
<td>7</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>2040</td>
<td>3</td>
<td>15</td>
<td>6</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>2050</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal</th>
<th>Fossil natural gas</th>
<th>Hydro</th>
<th>Nuclear</th>
<th>Oil</th>
<th>Renewables</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022</td>
<td>80</td>
<td>120</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>300</td>
</tr>
<tr>
<td>2024</td>
<td>60</td>
<td>100</td>
<td>180</td>
<td>280</td>
<td>360</td>
<td>360</td>
</tr>
<tr>
<td>2026</td>
<td>40</td>
<td>80</td>
<td>160</td>
<td>260</td>
<td>340</td>
<td>340</td>
</tr>
<tr>
<td>2028</td>
<td>20</td>
<td>60</td>
<td>140</td>
<td>240</td>
<td>320</td>
<td>320</td>
</tr>
<tr>
<td>2030</td>
<td>10</td>
<td>40</td>
<td>120</td>
<td>220</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>2032</td>
<td>5</td>
<td>20</td>
<td>100</td>
<td>200</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>2034</td>
<td>2.5</td>
<td>10</td>
<td>50</td>
<td>150</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>2036</td>
<td>2.5</td>
<td>5</td>
<td>25</td>
<td>125</td>
<td>175</td>
<td>175</td>
</tr>
<tr>
<td>2038</td>
<td>2.5</td>
<td>2.5</td>
<td>12.5</td>
<td>107.5</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>2040</td>
<td>2.5</td>
<td>1.25</td>
<td>6.25</td>
<td>97.75</td>
<td>140</td>
<td>140</td>
</tr>
</tbody>
</table>

bcm--Billion cubic meters, TWh--Terawatt-hours. CCGT--Combined cycle gas turbine. Sources: S&P Global Commodity Insights, Low carbon net import includes green and blue hydrogen, biomethane.
Netherlands Has A Strong Regulatory Advantage

<table>
<thead>
<tr>
<th>Regulator:</th>
<th>Authority for Consumers and Markets (ACM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key rated players:</td>
<td>TSO: Gasunie Transport Services (GTS)</td>
</tr>
<tr>
<td>Tariff-setting methodology:</td>
<td>WACC on RAB</td>
</tr>
<tr>
<td>Biomethane technical potential:</td>
<td>20 TWh per year</td>
</tr>
</tbody>
</table>
| Green gas regulatory incentives: | • Support in the form of subsidies for the financial gap between market price for fossil-based energy and cost of production.  
 • Total amount of subsidies is capped each year and cheaper technologies like photovoltaic are first in line  
 • Reserved fund of €150 million for small-scale biogas projects (less than 400 kW)  
 • The government has closed forest-based biogas subsidization |

Regulatory Advantage Overview For Dutch Gas Activities

- **Regulatory stability**
  - Very credit supportive
  - Less credit supportive
  - Advanced and predictable regulation
  - Long track record

- **Tariff setting**
  - Regulator interacts in a transparent way with regulated players
  - Based on auditable formula, allowing companies to earn fair returns

- **Financial stability**
  - Full cost recovery
  - No exposure to volume or inflation risk, limited exposure to commodity prices
  - Work in progress enters into regulatory asset base

- **Regulatory independence**
  - Strong record of independence

Italy | Decarbonizing To Take Longer Than In Other Countries

- We expect resilient residential gas demand until 2030, and industrial demand to fall by 22%*. This reflects low building renewal rate (even after 2022’s tax-driven surge in heat pumps, which led to sales exceeding 500,000) and relatively slow electrification of heavy industry, despite some structural demand reduction from the energy crisis. The national energy plan’s primary focus is reducing fossil fuels in the power mix and increasing renewables to 30% of total gross energy consumption in 2030.

- Transmission infrastructure will remain strategic amid reshuffled gas routes. TSO Snam will remain key to domestic and European security of supply. New storage and LNG projects extend the lifetime of the gas transmission grid, while the Adriatic pipeline is a solid platform for building a hydrogen backbone linking North Africa. We expect flows to switch gradually from natural gas to green gases.

- Gas networks benefit from a stable and supportive regulation, despite the slow retendering process for distribution concessions. RAB is indexed annually to inflation. There is no exposure to volume or price risk and an almost immediate passthrough of energy costs. We expect WACC to increase next year off higher risk-free rates and to continue reflecting higher sovereign risk than other Western European countries.

- Regulation does not currently incorporate investments for hydrogen into the grids. The state targets:
  - Increasing hydrogen penetration to 2% of total energy demand by 2030 and 20% in 2050; and
  - Achieving 5GW electrolysis capacity by 2030 with up to €10 billion investments.

- We are monitoring:
  - The trend of residential and industrial demand;
  - The gradual evolution to a totex remuneration method for transmission from next regulatory period (2024-2027); and
  - The implementation of green gas targets to 2030.

Italy’s Gas Demand And Generation Mix Trends

Resilient Residential, Industrial Demand Falling 22% By 2030 (bcm)

- Residential, Industrial and transport, CCGT, Other

Green Gases Jump To More Than 50% Of Demand By 2050 (bcm)

- Fossil natural gas, Green gas own supply, Low carbon net import

Residential, Industrial Demand Drop 14% By 2040 From 2030 (bcm)

- Residential, Industrial and transport, CCGT, Other

Gas Share In Power Mix Halves To 21% By 2030 (TWh)

- Coal, Fossil natural gas, Hydro, Oil, Renewables

bcm—Billion cubic meters, TWh—Terawatt-hours. CCGT—Combined cycle gas turbine. Sources: S&P Global Commodity Insights, Low carbon net import includes green and blue hydrogen, and biomethane.
Italy Has A Strong Regulatory Advantage

Regulator: Autorità di Regolazione per Energia Reti e Ambiente (ARERA)

Key rated players:
- TSO: Snam
- DSO: 2i Rete Gas

Tariff-setting methodology:
Rate of return on RAB; WACC on RAB

Biomethane technical potential:
85 TWh per year

Green gases regulatory incentives:
- Biomethane investments do not enter the RAB
- The national recovery and resilience plan (PNNR): €1.92 billion dedicated to biomethane development (energy, transport, and heating)
- Subsidy of 40% of the investment for the realization of new biomethane plants
- Up to €10 billion in capex for hydrogen until 2030 for 5 GW electrolysis capacity

Gas Transmission Regulatory Periods

1st regulatory period 2001-2005
2nd regulatory period 2006-2009
3rd regulatory period 2009-2013
4th regulatory period 2014-2017
Transition period 2018-2019
5th regulatory period 2020-2023

Gas Distribution Regulatory Periods

1st regulatory period 2000-2004
2nd regulatory period 2004-2008
3rd regulatory period 2009-2013
4th regulatory period 2014-2019
5th regulatory period 2020-2025

Regulatory Advantage Overview For Italian Gas Activities

- Very credit supportive
  - Advanced and predictable regulation
  - Long track record of regulation for power and gas sectors

- Tariff setting
  - Regulator interacts in a transparent way with regulated players
  - Based on auditable formula, allowing companies to earn fair returns

- Financial stability
  - Recovery of all costs with no exposure to volume or price, with the exception of temporary working capital savings
  - Annual indexation to inflation
  - Work in progress enters into regulatory asset base

- Regulatory independence
  - National regulator has a strong track record of independence


S&P Global Ratings
France | Less Disruption Given Low Gas Penetration

- **By 2030, we expect resilient industrial and residential demand, down only 10% versus 2022. The decline is primarily driven by fiscal incentives to switch to hybrid heat pumps from gas boilers and is limited due to low penetration of gas for individual heating. Gas should only represent 2% of the power mix.**

- **Gas networks benefit from supportive regulation.** In its August 2023 consultation paper, the regulator envisages to adapt tariff method for gas transmission to adapt to declining fossil gas usage and the integration of green gases. This may mitigate stranded asset risk.
  - Transmission/storage (until end-2024): cost plus tariff, yearly update; LNG terminals: cost plus tariff, update every two years.
  - Distribution: cost plus tariff with yearly update (until end-June 2024).

- **France’s transition to green gases starts with biomethane.** France’s energy policy targets raising grid connections to 14-22 TWh per year by 2028 from current 10.5 TWh, off ample agriculture feedstock. France’s regulator CRE foresees a potential of about 50 TWh by 2030. However, regulatory incentives to support the production (through public tenders, with regulated tariffs including inflation, with the BPA biomethane purchase agreement) are developing.

- **Hydrogen is becoming more important in France’s energy policies.** The hydrogen support plan, which includes €7.2 billion of investments, targets 6.5 GW of electrolyzer capacity by 2030. We see 2050 production targets (50 TWh-150 TWh) as even more uncertain. By 2030, Engie is committed to developing about 700 km of new or repurposed pipes by 2030 and 1 TWh of storage capacity.

- **We are monitoring:**
  - The implementation of gas-boiler bans on new buildings; and
  - The evolution of regulation to incentivize green gas investments.

Sources: Ministère de la Transition Ecologique ; Commission de Régulation de l’Energie, April 2023 report. *Based on data from S&P Global Commodity Insights.*
France’s Gas Demand And Generation Mix Trends

Residential And Industrial Demands Are Resilient By 2030 (bcm)

- Residential
- Industrial and transport
- CCGT
- Other

Green Gases Jump To Two-Thirds Of Demand By 2050 (Bcm)

- Fossil natural gas
- Green gas own supply
- Low carbon net import

Residential, Industrial Demand Could Drop Over 30% In 2030s (bcm)

Gas To 2% Of Power Mix By 2030 From 10% In 2022 (TWh)

- Fossil natural gas
- Hydro
- Nuclear
- Oil
- Renewables

bcm—Billion cubic meters, TWh—Terawatt-hours. CCGT—Combined cycle gas turbine. Sources: S&P Global Commodity Insights, Low carbon net import includes green and blue hydrogen, biomethane.
France Has A Strong Regulatory Advantage

Regulator: Commission de Regulation de l’Energie (CRE)

Key rated players: Engie (owns 60.8% of GRTgaz, TSO; 100% GRDF, DSO; 100% storage company Storengy, and indirectly Elengy, LNG infrastructure)

Tariff-setting methodology: ROR on RAB; WACC on RAB

Biomethane technical potential: About 165-245 TWh per year based on ADEME*.

Green gas regulatory incentives:
- Biomethane investments enter into the regulatory assets
- The 2011 regulation introduced a feed-in tariff for injected biomethane; vary from €65/MWh-€125/MWh
- There are no specific tax incentives for the injection of biomethane into the grid. There are tax incentives for using it as biofuel, and for on-farm installations.

Regulatory Advantage Overview For French Gas Activities

Gas Transmission Regulatory Periods

1st regulatory period 2002-2005
2nd regulatory period 2005-2008
3rd regulatory period 2009-2011
4th regulatory period 2011-2014
5th regulatory period 2014-2017
6th regulatory period 2017-2020
7th regulatory period 2020-2024

Gas Distribution Regulatory Periods

1st regulatory period 2005
2nd regulatory period 2005-2008
3rd regulatory period 2009-2012
4th regulatory period 2012-2016
5th regulatory period 2016-2020
6th regulatory period 2016-2020
7th regulatory period 2020-2024


S&P Global Ratings
We anticipate residential demand down 24% and industrial/transport segment down 8% over 2023-2030.

- Residential heating gradually decarbonizes (acceleration from 2027), through economic incentivization for hybrid heat pumps on new buildings, although the pace of transition depends on a higher building renewal rate (1% per year);
- Electrification remains challenging in some heavy industrial sectors and transportation.

The decline of gas in the power mix should not materially affect gas DSO credits as they are not remunerated on gas distributed to CCGTs. The draft PNIEC update targets by 2030 an ambitious decarbonization with renewables reaching 48% of the energy mix and increases targets on green hydrogen (11 GW). Investments for green gases remain marginal for grids beyond the H2Med pipe to France (operational by 2030, total initial cost of $2.6 billion).

We already factor the relative weaknesses of Spain’s regulatory framework in our business risk profiles. There is no inflation pass-through in the current regulatory period. For gas DSOs, regulation incentivizes penetration in new municipalities for residential heating and the connection of new industrial customers by remunerating such connections at a premium. Volume risk should be manageable for gas DSOs depending on client portfolio mixes.

Spain’s gas infrastructure players exhibit some of the highest EBITDA margins in Western Europe, despite remuneration cuts for TSO Enagas and DSOs embedded in the current regulatory period.

We are monitoring:
- The remuneration framework for next regulatory period and green gas incentives;
- The impact of inflation on earnings; and
- Legislation on heat pumps and the pace of implementation.

Spain’s Gas Demand And Generation Mix Trends

Residential Demand Down To 4 bcm By 2030 From 5 bcm In 2023

Green Gases Will Rise Substantially To More Than 16 Bcm By 2050

Residential Demand Could Shrink Over 40% By 2040 From 2030 (bcm)

Gas Drops To 12% In The Power Mix By 2030 From 34% In 2022 (TWh)

Source: S&P Global Commodity Insights, Low carbon net import includes green and blue hydrogen, biomethane.

S&P Global Ratings
Spain Has A **Strong/Adequate** Regulatory Advantage

<table>
<thead>
<tr>
<th>Regulator:</th>
<th>Comision Nacional de los Mercados y la Competencia (CNMC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key rated players:</td>
<td>TSO: Enagas. Redexis also conducts transmission activities on top of its distribution activities. DSOs: Redexis, Nortegas, Madrileña Red de Gas, and Naturgy (owns 100% Nedgia, DSO)</td>
</tr>
<tr>
<td>Tariff-setting methodology:</td>
<td>• Transmission: WACC on RAB • Distribution: Parametric formula based on additional connection points and volumes</td>
</tr>
<tr>
<td>Biomethane technical potential:</td>
<td>120 TWh per year</td>
</tr>
<tr>
<td>Green gas regulatory incentives:</td>
<td>• Biomethane investments do not enter into RAB • DSOs have a capex pass-through for biomethane injections at capex plus margin (if applicable)</td>
</tr>
</tbody>
</table>

### Regulatory Advantage Overview For Spanish Gas Activities

<table>
<thead>
<tr>
<th>Regulatory stability</th>
<th>Very credit supportive</th>
<th>Less credit supportive</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Advanced and predictable regulation</td>
<td>• Long track record in line with other jurisdictions</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tariff setting</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Regulator interacts in a transparent way with regulated players</td>
<td>• Remuneration based on auditable formula, allowing companies to earn fair returns</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial stability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Regulated revenues and RAB are not indexed annually to inflation, which is partially considered only in the following regulatory period</td>
<td>• WIP not entering into regulatory asset base for transmission</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regulatory independence</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Short track record of CNMC as independent regulator</td>
<td></td>
</tr>
</tbody>
</table>

Portugal | Less Disruption Given Low Gas Penetration In Energy Mix

- **We expect resilient gas consumption for industrial, transport, and residential components through 2030.** The PNEC targets climate neutrality by 2045; for 2030, it focuses on cutting the share of gas in the power mix (30% in 2022) and increasing renewable generation to 80%. It aims to switch industrial and household demand (limited to 1 bcm) to green gases.

- **Portugal’s gas networks benefit from a relatively supportive regulation, which we assess as strong/adequate.** This reflects that energy costs are passed through into the tariff, albeit with a two-year lag, and that tariffs are inflation-linked for transmission and distribution with allowed opex indexed to GDP deflator. Also, the rate of return on RAB, defined individually for gas transmission and distribution, is indexed to 10-year Portuguese government bond yields, which partially hedges against increases in interest expenses. Weaknesses include that the regulator has a strong track record, but relatively short regulatory periods (four years); the CESE tax is not covered by the remuneration framework; and some working capital burden is driven by the tariff deviation (difference between allowed and invoiced revenue).

- **The national strategy for hydrogen is now embedded in regulation, although no sizable investments are expected before 2030.** It targets 10%-15% of green hydrogen injection into gas grids with limited associated investments, for green hydrogen to make up 2%-5% of industrial energy use (1.5%-2.0% total consumption), and 2 GW of electrolysis capacity by 2030.

- **We are monitoring:**
  - Resilience of industrial demand by 2030 and its substitution by green gas; and
  - Related regulatory incentives.

Source: S&P Global Ratings. PNEC--Plano Nacional de Energia e Clima. CESE--Extraordinary Contribution on the energy sector.
Portugal’s Gas Demand And Generation Mix Trends

**Resilient Residential and Industrial Demand Until 2030 (bcm)**

- Residential
- Industrial and transport
- CCGT

**Green Gases Supply To Jump To 5 Bcm By 2050**

- Fossil natural gas
- Green gas own supply

**Overall Demand Could Drop 41% By 2040 Compared To 2030 (bcm)**

- Residential
- Industrial and transport
- CCGT

**Gas Drops To 8% Of The Energy Mix By 2030 From 30% In 2022 (TWh)**

- Fossil natural gas
- Hydro
- Oil
- Renewables

---

**S&P Global Ratings**

bcm—Billion cubic meters, TWh—Terawatt-hours. CCGT—Combined cycle gas turbine. Sources: S&P Global Commodity Insights, Low carbon net import includes green and blue hydrogen, biomethane.
Portugal Has A **Strong/Adequate** Regulatory Advantage

<table>
<thead>
<tr>
<th>Regulator:</th>
<th>Entidade Reguladora dos Serviços Energeticos (ERSE)</th>
</tr>
</thead>
</table>
| Key rated players: | Redes Energeticas Nacionais (TSO)  
Floene Energias (formerly Galp Gás Natural Distribuição, DSO) |
| Tariff-setting methodology: | RoR on RAB and price cap for operational expenditure |
| Biomethane technical potential: | 18 TWh per year |
| Green gas regulatory incentives: |  
• Green gas investments enter the RAB.  
• The government reintroduced a limited feed-in tariff (FiT) in 2014 only available for small production units, with a maximum capacity of 250 kilowatts (kW). The FiT is €95 per MWh. Photovoltaic and hydro receive the full FiT rate, while biomass and biogas receive 90% of the full rate.  
• New regulations passed in 2019 give a seven-year exemption on payment of 50%-100% of grid access tariffs for energy communities and self-consumption of renewable electricity. |

### Gas Regulatory Periods


---

**Regulatory Advantage Overview For Portuguese Gas Activities**

<table>
<thead>
<tr>
<th>Regulatory stability</th>
<th>Very credit supportive</th>
<th>Less credit supportive</th>
</tr>
</thead>
</table>
| • Advanced and predictable regulation  
• Long track record of regulation for power and gas sectors |

<table>
<thead>
<tr>
<th>Tariff setting</th>
<th>Very credit supportive</th>
<th>Less credit supportive</th>
</tr>
</thead>
</table>
| • Detailed and transparent with full cost recovery  
• Based on auditable formula, allowing companies to earn fair returns |

<table>
<thead>
<tr>
<th>Financial stability</th>
<th>Very credit supportive</th>
<th>Less credit supportive</th>
</tr>
</thead>
</table>
| • Full recovery of costs with a 2-year lag and no exposure to volume or price risk  
• Annual indexation to inflation  
• Work in progress is not remunerated |

<table>
<thead>
<tr>
<th>Regulatory independence</th>
<th>Very credit supportive</th>
<th>Less credit supportive</th>
</tr>
</thead>
</table>
| • National regulator has a strong track record of independence  
• Special government tax applied to the energy operators in Portugal |
Overall demand will remain resilient, driven by robust industrial demand, absent economically viable substitutes. Downside to our base case includes higher for longer gas prices. We expect residential demand will gradually decline, as the State is focused on decarbonizing residential heating by banning fossil fuel (oil) boilers in new homes from 2023 and gas boilers from 2025 (as in the U.K.) and has the ambitious target of installing 680,000 electric heat pumps in homes by 2030.

Ireland’s decarbonization goals focus on its power mix, targeting up to 80% of electricity from renewables by 2030, with gas remaining the alternative source.

Gas grids benefit from supportive regulation through the next regulatory period (until September 2027). Operators are not exposed to volume or price risk and there is annual indexation to inflation. There is also full energy costs pass-through with a two-year lag typically, although it can be extended.

Given that Ireland is a gas-rich country, its transition to green gases will be key. We believe biomethane could cover up to 10% of gas demand by 2030 (5.7 TWh). A national hydrogen plan is currently discussed, targeting to 2 GW of offshore wind dedicated to green hydrogen production.

We are monitoring:

- The evolution of regulation from 2023, including affordability concerns amid higher gas prices; and
- The decarbonization investments.
Ireland’s Gas Demand And Generation Mix Trends

**Resilient Demand Until 2030, Except For CCGT (bcm)**

- Residential
- Industrial and transport
- CCGT

**Green Gases Demand To Rise Considerably By 2050 (bcm)**

- Fossil natural gas
- Green gas own supply
- Low carbon net export

**Overall Demand Could Decline 29% In 2040 From 2030 (bcm)**

- Residential
- Industrial and transport
- CCGT

**Gas Drops To 16% Of The Energy Mix By 2030 From 41% In 2022 (TWh)**

- Fossil natural gas
- Hydro
- Oil
- Renewables

Ireland Has A Strong Regulatory Advantage

Regulator: Commission for Regulation of Utilities (CRU)

Key rated players: Gas Networks Ireland (TSO and DSO)

Tariff-setting methodology: WACC on RAB

Regulatory Advantage Overview For Irish Gas Activities

- Regulatory stability
  - Very credit supportive
  - Frameworks are predictable and transparent, with a long track record
  - Less credit supportive

- Tariff setting
  - Regulator interacts in a transparent way with regulated players
  - The framework allows for full cost recoverability for the Irish networks

- Financial stability
  - Regulatory environment contribute to a significant degree of financial stability
  - The system is somewhat weaker than a cost-plus approach, risk cost overruns if actual costs were to deviate from projected costs and would only fully recover the difference after two years

- Regulatory independence
  - We are currently not aware of any instances of political interference since the establishment of the framework
  - There is no designated external appeal body that can arbitrate disputes with the regulator

Source: S&P Global Ratings.

Gas Regulatory Periods

1st regulatory period

2nd regulatory period

3rd regulatory period

4th regulatory period
Oct. 2017 - Sept. 2022

5th regulatory period
Oct. 2022 - Sept. 2027

Source: S&P Global Ratings.
Comparison Of Rating Drivers
Adjusted EBITDA | Few Grow EBITDA In Real Terms


S&P Global Ratings
Adjusted EBITDA Margin | Southern Europe Leads

Capital Expenditure To Depreciation And Amortization | Most Iberian Operators Are Lagging

### Funds From Operations To Debt | 2023e-2025f

<table>
<thead>
<tr>
<th>Company</th>
<th>2023</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enagas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redexis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nortegas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madrilena</td>
<td></td>
<td></td>
</tr>
<tr>
<td>REN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2i Rete Gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vier Gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gasunie</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WWU*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNI</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*WWU’s data considers consolidated debt i.e., class A+B, where senior secured debt is class A only. No metric upside for Nortegas, Madrilena, Floene Energias, and GNI. Source: S&P Global Ratings.*
Capital Expenditure To Dividends | Aggressive Financial Policies Across The Sector

*2022 refers to March 2022, 2025 refers to March 2025. WWU excluded. Redexis ratio is above 5x (12x). Source: S&P Global Ratings.

S&P Global Ratings

42
**Funds From Operations To Debt | Stronger Regulatory Frameworks Offset Weaker Metrics**

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snam</td>
<td>12%</td>
<td>15%</td>
</tr>
<tr>
<td>2i Rete Gas</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>Vier Gas</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>Gasunie</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>Cadent</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>SGN</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>Northern Gas</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>WWU*</td>
<td>5%</td>
<td>7%</td>
</tr>
<tr>
<td>GNI</td>
<td>35%</td>
<td>30%</td>
</tr>
</tbody>
</table>

*WWU’s data considers consolidated debt i.e., class A+B, where senior secured debt is class A only. Source: S&P Global Ratings.*

---

**S&P Global Ratings**

---
Rated Companies Snapshots
Company Description

- Wales & West Utilities Finance PLC (WWU) operates two gas distribution networks, one in Wales and the other in the southwest of England.
- It holds one of the eight regulatory licenses from Ofgem. With a gas network of more than 35,000 km of mains, WWU transports gas to the homes and businesses of 2.5 million consumers across one-sixth of the U.K., serving more than 7 million people.
- The group’s regulatory asset value stood at £2.8 billion as of March 31, 2023.

Rating Drivers

- The surge in U.K. inflation will weigh on WWU.
- Credit metrics will remain below the 6% target for its subordinated debt (class A and B) and the 7% target for its senior secured debt (class A only).
- We expected underperformance against regulatory cost of debt allowance under RIIO-GD2 regulations due to high fixed borrowing costs based on a large and long-dated index-linked swaps portfolio.
- WWU’s overall regulatory returns are lower than in previous periods. There is pressure on operating performance and limited scope for total expenditure outperformance during the current regulatory period.

Outlook: Negative

- Credit metrics being unlikely to recover and exceed our targets by fiscal years 2025 and 2026 (ending March 31).
- Large inflation accruals throughout the regulatory period.
- Failing to reduce exposure to inflation-linked financing instruments.
- Weaker-than-anticipated operating performance, failing to deliver on its business plan.
- Less supportive financial policy.
- Strong path to recovery on credit metrics, bouncing back to levels significantly above our current thresholds for the ratings by fiscal 2025.
- Normalization in U.K. inflation.
- Reduction in the group’s current exposure to inflation-linked financing or the implementation by management of significant remedy measures.
Cadent Gas Ltd. | U.K.
Issuer Credit Rating: BBB+/Negative/--
Analyst: Andres D’Ascoli

Company Description
- Cadent owns and operates four gas distribution networks (half of the U.K.’s total) and all operations stem from U.K. regulated gas distribution activities.
- It transports gas on behalf of 61 gas shippers through 131,000 km of pipelines to about 11 million consumers.
- Cadent is the largest by size with a regulatory asset value of £12 billion on March 31, 2023.

Rating Drivers
- The increased cost of inflation-linked debt at Cadent, combined with higher refinancing costs, will erode the already limited headroom on its credit metrics.
- We do not anticipate that the company’s key credit metrics will show a pronounced improvement through RIIO-GD2.
- Cadent’s operating performance has risen to the middle of the pack in the U.K., previously having lagged the four gas distributors in the U.K.
- Large investment needs and relatively large dividend distribution limit debt reduction.

Outlook: Negative
- FFO to debt consistently below 9%.
- Actions that bring into question management’s commitment to the rating, for example an aggressive shareholder distribution policy.
- Strong path to recovery leading to adjusted FFO to debt above 9% by 2025.

Northern Gas Networks Ltd. | U.K.
Issuer Credit Rating: BBB+/Stable/--
Analyst: Andres D’Ascoli

Company Description

- Northern Gas Networks Ltd. (NGN) distributes gas to the North of England, including West, East, and North Yorkshire, northeast England, and northern Cumbria.
- It transports gas for gas shippers through 37,000 km of pipelines to about 2.7 million U.K. homes and business, serving 6.8 million people.
- The group has a regulatory asset value of £2.7 billion (March 2022) making it the fifth largest of the eight gas distribution networks in Britain.

Rating Drivers

- RIIO-GD2 will prove more challenging for the group, but we expect FFO to debt will average 11%-12% over the regulatory period and remain commensurate with the rating.
- NGN has an excellent operational track record, and we believe it has enough buffer to execute its current business plan without putting the rating at risk.
- Large investment needs and relatively large dividends limit debt reduction prospects.

Outlook: Stable

- NGN demonstrating weaker operating performance or reduced profitability, causing FFO to debt to fall below 9%.
- Failure to deliver on its business plan.
- Cannot maintain its current level of operating efficiencies or fails to meet regulatory targets.
- Higher dividend payments than anticipated.
- A track record of sustainably maintaining FFO to debt above 12%, coupled with a sector-leading operational performance.

S&P Global
Ratings
Company Description
– Scotland and Southern Gas Networks PLC (SGN) operates a 75,000 km gas network that supplies 5.9 million customers, equivalent to about 28% of U.K. gas users.
– The group’s regulatory asset value stood at £7 billion as of March 31, 2023.

Rating Drivers
– High inflation has led to temporary contraction in credit metrics.
– This adds to an already challenging financial package for gas distribution networks over RIIO-GD2.
– That said, we believe SGN’s credit metrics will remain in line with the current ‘BBB’ rating during the current five-year regulatory period (RIIO-GD2), assuming inflation levels will gradually ease, leading to a recovery in credit metrics as short-term pressures fade, while the benefits of revenues indexation to higher inflation will gradually accrue from FY 2024 onwards.

Outlook: Stable
– Weaker operating performance or reduced profitability, causing FFO to debt to fall below 6%.
– FFO to debt metrics sustainably above 9% coupled with excellent operational performance.
– FOCF (free operating cash flow after capex) to debt at a broadly neutral level.

α--Actual, f--Forecast. FFO--Funds from operations. Capex--Capital expenditure. Years ending March 31 of respective year.
Company Description

- Parent company of Open Grid Europe GmbH (OGE), the largest of Germany’s 16 gas TSOs. Through OGE, the group designs, constructs, operates, and markets gas transmission networks.
- OGE transmits gas through its 12,000-km network, making it the largest supraregional pipeline network in Germany.
- Its pipeline systems connect the border-crossing points in German regions and to pipeline systems of neighboring countries, such as the Netherlands, Belgium, France, Switzerland, Austria, and the Czech Republic.

Rating Drivers

- Favorable position as the largest gas transmission network in Germany; operations somewhat concentrated in western Germany.
- Focused on low-risk gas transmission activities, leading to predictable revenue and EBITDA with limited volume and commodity risk.
- High capex is likely to lead to negative discretionary cash flow.
- We expect 2023 reported EBITDA to be temporarily high followed by a negative regulatory impact in 2024, all translating into an average 2023-2025 EBITDA in line with our expectations.
- Long-term prospects for gas infrastructure are likely to moderate, and uncertainty remains on the regulation in place for projects such as hydrogen and a pipeline for carbon capture.

Outlook: Stable

- FFO to debt expected below 9% on average.
- We see this scenario as unlikely, given regulatory returns over the 2023-2027 regulatory period are now set.
- Pressure could emerge from a change in financial policy, which we don’t foresee at this stage.
- FFO to debt above 12% sustainably.
- This would also require visibility on investment into and including adoption of a regulated framework for hydrogen infrastructure strong enough to offset the medium-to-long-term declining gas prospects.

**Snam S.p.A. | Italy**
Credit Issue Rating: BBB+/Stable/A-2
Analyst: Federico Loreti

**Company Description**
- One of Europe’s largest gas transmission network operators and Italy’s principal gas transmission, storage, and regasification operator.
- It manages a transportation network of around 38,000 km in Italy and abroad as well as nine storage sites and three liquefied natural gas terminals.
- More than 90% of 2022 EBITDA (considering the proportional consolidation of TAG) came from regulated gas transmission, storage, and regasification operations.

**Rating Drivers**
- Focus on regulated domestic activities under a very supportive regulatory framework, which generates stable and predictable cash flows.
- Commitment to the rating, with remedy measures envisaged in case of prolonged pressure on financials due to debt-funded investments and sustained dividends.
- Some uncertainty on future gas prospects, although we view Snam’s infrastructure as instrumental to Europe’s carbon-neutral transition.
- Exposed to Italian sovereign risk.

**Outlook: Stable**
- FFO to debt declining below 11% in the next two years without material recovery prospects.
- An unexpected and far-reaching overhaul of the Italian regulatory framework or an increasing contribution from nonregulated activities.
- Substantial deterioration of Snam’s financial risk profile.

- Upward revision of the stand-alone credit profile if FFO to debt exceeding 14%, which we see as unlikely.
- Upgrade of the sovereign, all else being equal, and the company retaining supportive liquidity and debt-maturity profiles (to withstand our stress test in case of a sovereign default).

---

**S&P Global Ratings**

Company Description

- 100% state-owned gas transport group based in the Netherlands.
- Its high-pressure gas pipeline network is one of the largest in Europe and consists of about 12,849 km in the Netherlands and 4,604 km in northern Germany and about 1,300 gas receiving stations.
- Its throughput volume is about 100 bcm / year (~1,100 TWh).

Rating Drivers

- Focus on low-risk monopolistic activities under supportive regulatory frameworks with Dutch transmission operations contributing 70% to EBITDA and German 15%.
- High likelihood of extraordinary support if needed from the Dutch government (hence two notches of uplift from the ‘a’ stand-alone profile (SACP)).
- Credit-supportive financial policy.
- Long-term business reshaping need, given the reduced relevance of fossil gas, from a gas-transportation to an energy-infrastructure company focusing on hydrogen and biogas transport. Uncertain medium-to-long-term growth prospects for regulated gas infrastructure.

Outlook: Stable

- FFO to debt declining below 11% on a prolonged basis.
- If we downgraded the sovereign or cut our SACP to 'bbb+' from 'a'.
- If we thought a declining role of gas in the Netherlands meant a lower likelihood of extraordinary government support.
- An upgrade is unlikely in the short term.
- FFO to debt stabilizing sustainably above 23%.
- We assume Gasunie will use financial headroom for investment supporting its vision for 2030.
- Business risk weakens, mitigating strengthening credit metrics.

S&P Global Ratings

Issuer Credit Rating: AA-/Stable/A-1+

Analyst: Massimo Schiavo

Company Description
- Second-largest gas distributor in Italy, with a market share of more than 20% (based on delivery points).
- Network of about 71,755 km serving 4.9 million customers and more than 2,000 municipalities.
- Total estimated RAB of more than €4.4 billion and EBITDA of €506 million at year-end 2022.

Rating Drivers
- Excellent business risk profile supported by a strong regulatory framework and gas’ prominence in Italy.
- Financial headroom under the 'BBB' rating based on our updated 2023-2025 forecast.
- Relatively flexible financial policy and proactiveness in its debt refinancing.
- Uncertainty on the timing and outcome of the gas concession retendering process, although the company has recently taken over a large concession in the Naples area.

Outlook: Stable
- FFO to debt below 9%.
- Accelerated capital spending for new concessions or from a sizable acquisition.
- Italian sovereign downgrade by two or more notches.
- FFO to debt above 13% and debt to EBITDA of about 5.5x.
- An upgrade is constrained by uncertainty regarding the gas concession retendering process, which reduces visibility on growth.

S&P Global
Ratings

Enagas S.A. | Spain
Issuer Credit Rating: BBB/Stable/A-2
Analyst: Gerardo Leal

Company Description
- Spain’s leading natural gas transmission company and technical manager of the gas system, with more than 85% of the national transmission remuneration.
- About 12,000 km of gas pipelines, three underground storage facilities, four regasification terminals and a stake in two others (in Bilbao and Sagunto).
- Can act as an operator in any country in Europe. Operates regulated and midstream infrastructure in the U.S., Mexico, Peru, Greece, Albania, and Italy.

Rating Drivers
- Declining regulated revenue within the 2021-2026 gas transmission regulatory framework, showcasing Enagas’ business maturity in domestic operations.
- Limited rating headroom in the next three years, as increasing dividends add pressure for remedy measures.
- Two ongoing international arbitration processes (Gasoducto Sur del Peru, and Transportadora de Gas del Peru) restricting a significant amount of capital in Peru. If favorable, their resolution could improve credit metrics.

Outlook: Stable
- FFO to debt below 14% without signs of recovery.
- Committing more capital to international activities with higher industry or country risk, without leverage consistent with the current rating.
- Project completion support is triggered at the Trans Adriatic Pipeline and results in contingent liabilities.
- Unsuccessful at issuing a hybrid security without other timely remedy measures.

- FFO to debt is consistently above 17%, e.g. on a more conservative financial policy with more flexible dividends.
- Arbitrage processes against Peru are resolved in favor of Enagas, and the proceeds are used to deleverage.
- International activities outperform significantly our expectations.

S&P Global Ratings

\[\text{FFO/debt (left scale)} \quad \text{Dividends adj. (left scale)} \quad \text{EBITDA adj. (right scale)}\]

\[\text{Capex adj. (left scale)} \quad \text{Dividends adj. (left scale)} \quad \text{EBITDA adj. (right scale)}\]

Madrilena Red de Gas S.A.U. | Spain
Issuer Credit Rating: BBB-/Stable/A-3
Analyst: Federico Loreti

Company Description
- One of the largest natural gas distribution networks in Spain after Nedgia (Naturgy’s networks subsidiary) and Nortegas and before Redexis.
- With 6,234 km of network 915,000 connection points as of Dec. 31, 2022, it operates in several municipalities in the Autonomous Community of Madrid, including the capital city, where it operates in five districts.
- In addition to distribution (80% of EBITDA), it operates other gas-related services, mainly metering and liquid petroleum gas supply and has some hydrogen pilot projects.

Rating Drivers
- Gas demand in Spain this year will remain subdued, in line with 2022, and demand and growth of adjacent businesses are difficult to assess for 2024-2025, making our EBITDA trajectory slightly more conservative than previously.
- Nonetheless, we expect the company to continue to gradually deleverage.
- Financial policy remains a key driver of the rating as the business reaches its maturity phase.
- The appeal process against the Spanish regulator’s decision on the upstream intercompany loan is ongoing, with no tangible rating impact for now.

Outlook: Stable
- FFO to debt falls below 10% in the near term and fails to increase toward 12% by 2026 in the context of low-to-no growth prospects.
- The rating could also come under pressure if unregulated activities diluted MRG’s earnings quality beyond what we already capture in the rating.

The likelihood of an upgrade is remote.
It would require the uncertainty regarding long-term growth prospects for gas grids in Spain to abate, along with a more supportive regulatory framework and material deleveraging.
Nonetheless, we expect the company to continue to gradually deleverage.
Financial policy remains a key driver of the rating as the business reaches its maturity phase.
The appeal process against the Spanish regulator’s decision on the upstream intercompany loan is ongoing, with no tangible rating impact for now.

S&P Global Ratings

a—Actual. f—Forecast. FFO—Funds from operations. Capex—Capital expenditure.
NorteGas Energia Distribucion S.A.U. | Spain
Issuer Credit Rating: BBB-/Stable/--
Analyst: Federico Loreti

Company Description
- NorteGas operates and develops natural gas distribution infrastructure, as well as the distribution and commercialization of liquefied petroleum gas, in the Asturias, Cantabria, and the Basque Country regions of Spain.
- As of December 2022, Nortegas had a network of 8,477 kilometers (of which 7,985 for natural gas and 492 for LPG), with about 1.1 million supply points.
- The second-largest gas distributor in Spain in terms of market share (11%-12%).
- Active in the commercialization of liquefied petroleum gas and in biomethane and hydrogen pilot projects.

Rating Drivers
- We expect limited revenue growth on its regulated gas activities over the next few years, with unregulated activities not fully offsetting the lower medium-term growth.
- We think Nortegas will have to accelerate leverage reduction as it approaches the next regulatory reset.
- Financial policy supports the investment-grade rating.

Outlook: Stable
- FFO to debt below 9% and failing to increase toward 12% by 2026 in the context of low growth prospects.
- If unregulated activities diluted Nortegas' consolidated earnings quality beyond what we already capture in the rating.
- The likelihood of an upgrade is remote.
- It would require the uncertainty regarding long-term growth prospects for gas grids in Spain to abate, along with a more supportive regulatory framework and material deleveraging.

S&P Global Ratings
Redexis S.A. | Spain
Issuer Credit Rating: BBB-/Stable/--
Analyst: Federico Loreti

Company Description
- Redexis operates and develops natural gas transmission and distribution infrastructure in Spain, being the fourth-largest distributor in terms of connection points and energy distributed.
- It is the second-largest gas transmission operator and the second-largest piped liquid petroleum gas operator in terms of connection points and sales.
- With close to 772,000 connection points along its network of more than 12,090 km, the company provides services in 882 municipalities in Aragon, Andalucia, the Balearic Islands, Castile and Leon, Castile-La Mancha, Community of Valencia, Madrid, Murcia, Catalonia, and Extremadura.

Rating Drivers
- More than 80% of revenue from purely regulated activities under the Spanish regulatory framework.
- Above-average sector growth in areas with low gas penetration.
- Exposure to volumes, and remuneration indexed to inflation only in the following regulatory period.
- Potential upside from renewable gases.
- Commitment to an investment-grade rating.

Outlook: Stable
- FFO to debt below 9% and failing to increase toward 12% by 2026 in the context of low growth prospects.
- Aggressive capex deployment, unexpected acquisitions, or deviation from financial discipline.
- An upgrade is remote due to large dividend distribution and high capex.
- It would require the uncertainty regarding long-term growth prospects for gas grids in Spain to abate, along with a more supportive regulatory framework and material deleveraging.

Floene Energias S.A. | Portugal
Credit Issue Rating: BBB-/Stable/--
Analyst: Pauline Pasquier

Company Description
- Largest gas distribution company in Portugal, with a portfolio comprising long-term contracts that regulate the construction, maintenance, and operation of the regulated infrastructures.
- It has majority stakes in nine gas distributors in Portugal.
- Floene is slowly but steadily increasing its connection points and network length. In 2022, the number of connection points increased to 1.13 million (roughly stable, year-on-year) and its network length to 13,673 kilometers (up 1.3%).

Rating Drivers
- Operating environment is likely to remain stable in the four-year regulatory period starting in January 2024 until December 2027.
- The regulator and operators decreased previous capex expectations, suggesting that growth prospects will be lower during the next regulatory period.
- Recent reduction in demand for gas could become a long-term trend.
- Credit metrics are commensurate with the ‘BBB-‘ rating, largely because the “energy sector extraordinary contribution” (CESE), a tax introduced in 2014, is likely to be withdrawn for all Floene’s DSOs supported by 2023 court rulings.
- Commitment to the investment-grade rating will be tested.

Outlook: Stable
- FFO to debt failing to increase toward 12% by the end of 2027 or falling below 9%.
- Adverse regulatory developments or adverse legal ruling on the CESE energy tax, if combined with a lack of support from shareholders and no path to a reduction in leverage during 2023-2027.
- An upgrade is remote at this stage.
- It would depend on less uncertainty regarding long-term growth prospects for Floene’s gas grid in Portugal, and a successful transition to renewable gases, with a supportive regulatory framework and material deleveraging.

S&P Global
Ratings
57

Rating Drivers
- Largest gas distribution company in Portugal, with a portfolio comprising long-term contracts that regulate the construction, maintenance, and operation of the regulated infrastructures.
- It has majority stakes in nine gas distributors in Portugal.
- Floene is slowly but steadily increasing its connection points and network length. In 2022, the number of connection points increased to 1.13 million (roughly stable, year-on-year) and its network length to 13,673 kilometers (up 1.3%).

Rating Drivers
- Operating environment is likely to remain stable in the four-year regulatory period starting in January 2024 until December 2027.
- The regulator and operators decreased previous capex expectations, suggesting that growth prospects will be lower during the next regulatory period.
- Recent reduction in demand for gas could become a long-term trend.
- Credit metrics are commensurate with the ‘BBB-‘ rating, largely because the “energy sector extraordinary contribution” (CESE), a tax introduced in 2014, is likely to be withdrawn for all Floene’s DSOs supported by 2023 court rulings.
- Commitment to the investment-grade rating will be tested.

Outlook: Stable
- FFO to debt failing to increase toward 12% by the end of 2027 or falling below 9%.
- Adverse regulatory developments or adverse legal ruling on the CESE energy tax, if combined with a lack of support from shareholders and no path to a reduction in leverage during 2023-2027.
- An upgrade is remote at this stage.
- It would depend on less uncertainty regarding long-term growth prospects for Floene’s gas grid in Portugal, and a successful transition to renewable gases, with a supportive regulatory framework and material deleveraging.

S&P Global
Ratings
57

Rating Drivers
- Largest gas distribution company in Portugal, with a portfolio comprising long-term contracts that regulate the construction, maintenance, and operation of the regulated infrastructures.
- It has majority stakes in nine gas distributors in Portugal.
- Floene is slowly but steadily increasing its connection points and network length. In 2022, the number of connection points increased to 1.13 million (roughly stable, year-on-year) and its network length to 13,673 kilometers (up 1.3%).

Rating Drivers
- Operating environment is likely to remain stable in the four-year regulatory period starting in January 2024 until December 2027.
- The regulator and operators decreased previous capex expectations, suggesting that growth prospects will be lower during the next regulatory period.
- Recent reduction in demand for gas could become a long-term trend.
- Credit metrics are commensurate with the ‘BBB-‘ rating, largely because the “energy sector extraordinary contribution” (CESE), a tax introduced in 2014, is likely to be withdrawn for all Floene’s DSOs supported by 2023 court rulings.
- Commitment to the investment-grade rating will be tested.

Outlook: Stable
- FFO to debt failing to increase toward 12% by the end of 2027 or falling below 9%.
- Adverse regulatory developments or adverse legal ruling on the CESE energy tax, if combined with a lack of support from shareholders and no path to a reduction in leverage during 2023-2027.
- An upgrade is remote at this stage.
- It would depend on less uncertainty regarding long-term growth prospects for Floene’s gas grid in Portugal, and a successful transition to renewable gases, with a supportive regulatory framework and material deleveraging.

S&P Global
Ratings
57

Rating Drivers
- Largest gas distribution company in Portugal, with a portfolio comprising long-term contracts that regulate the construction, maintenance, and operation of the regulated infrastructures.
- It has majority stakes in nine gas distributors in Portugal.
- Floene is slowly but steadily increasing its connection points and network length. In 2022, the number of connection points increased to 1.13 million (roughly stable, year-on-year) and its network length to 13,673 kilometers (up 1.3%).

Rating Drivers
- Operating environment is likely to remain stable in the four-year regulatory period starting in January 2024 until December 2027.
- The regulator and operators decreased previous capex expectations, suggesting that growth prospects will be lower during the next regulatory period.
- Recent reduction in demand for gas could become a long-term trend.
- Credit metrics are commensurate with the ‘BBB-‘ rating, largely because the “energy sector extraordinary contribution” (CESE), a tax introduced in 2014, is likely to be withdrawn for all Floene’s DSOs supported by 2023 court rulings.
- Commitment to the investment-grade rating will be tested.

Outlook: Stable
- FFO to debt failing to increase toward 12% by the end of 2027 or falling below 9%.
- Adverse regulatory developments or adverse legal ruling on the CESE energy tax, if combined with a lack of support from shareholders and no path to a reduction in leverage during 2023-2027.
- An upgrade is remote at this stage.
- It would depend on less uncertainty regarding long-term growth prospects for Floene’s gas grid in Portugal, and a successful transition to renewable gases, with a supportive regulatory framework and material deleveraging.

S&P Global
Ratings
57

Rating Drivers
- Largest gas distribution company in Portugal, with a portfolio comprising long-term contracts that regulate the construction, maintenance, and operation of the regulated infrastructures.
- It has majority stakes in nine gas distributors in Portugal.
- Floene is slowly but steadily increasing its connection points and network length. In 2022, the number of connection points increased to 1.13 million (roughly stable, year-on-year) and its network length to 13,673 kilometers (up 1.3%).

Rating Drivers
- Operating environment is likely to remain stable in the four-year regulatory period starting in January 2024 until December 2027.
- The regulator and operators decreased previous capex expectations, suggesting that growth prospects will be lower during the next regulatory period.
- Recent reduction in demand for gas could become a long-term trend.
- Credit metrics are commensurate with the ‘BBB-‘ rating, largely because the “energy sector extraordinary contribution” (CESE), a tax introduced in 2014, is likely to be withdrawn for all Floene’s DSOs supported by 2023 court rulings.
- Commitment to the investment-grade rating will be tested.

Outlook: Stable
- FFO to debt failing to increase toward 12% by the end of 2027 or falling below 9%.
- Adverse regulatory developments or adverse legal ruling on the CESE energy tax, if combined with a lack of support from shareholders and no path to a reduction in leverage during 2023-2027.
- An upgrade is remote at this stage.
- It would depend on less uncertainty regarding long-term growth prospects for Floene’s gas grid in Portugal, and a successful transition to renewable gases, with a supportive regulatory framework and material deleveraging.

S&P Global
Ratings
57

Rating Drivers
- Largest gas distribution company in Portugal, with a portfolio comprising long-term contracts that regulate the construction, maintenance, and operation of the regulated infrastructures.
- It has majority stakes in nine gas distributors in Portugal.
- Floene is slowly but steadily increasing its connection points and network length. In 2022, the number of connection points increased to 1.13 million (roughly stable, year-on-year) and its network length to 13,673 kilometers (up 1.3%).

Rating Drivers
- Operating environment is likely to remain stable in the four-year regulatory period starting in January 2024 until December 2027.
- The regulator and operators decreased previous capex expectations, suggesting that growth prospects will be lower during the next regulatory period.
- Recent reduction in demand for gas could become a long-term trend.
- Credit metrics are commensurate with the ‘BBB-‘ rating, largely because the “energy sector extraordinary contribution” (CESE), a tax introduced in 2014, is likely to be withdrawn for all Floene’s DSOs supported by 2023 court rulings.
- Commitment to the investment-grade rating will be tested.

Outlook: Stable
- FFO to debt failing to increase toward 12% by the end of 2027 or falling below 9%.
- Adverse regulatory developments or adverse legal ruling on the CESE energy tax, if combined with a lack of support from shareholders and no path to a reduction in leverage during 2023-2027.
- An upgrade is remote at this stage.
- It would depend on less uncertainty regarding long-term growth prospects for Floene’s gas grid in Portugal, and a successful transition to renewable gases, with a supportive regulatory framework and material deleveraging.

S&P Global
Ratings
57

Rating Drivers
- Largest gas distribution company in Portugal, with a portfolio comprising long-term contracts that regulate the construction, maintenance, and operation of the regulated infrastructures.
- It has majority stakes in nine gas distributors in Portugal.
- Floene is slowly but steadily increasing its connection points and network length. In 2022, the number of connection points increased to 1.13 million (roughly stable, year-on-year) and its network length to 13,673 kilometers (up 1.3%).

Rating Drivers
- Operating environment is likely to remain stable in the four-year regulatory period starting in January 2024 until December 2027.
- The regulator and operators decreased previous capex expectations, suggesting that growth prospects will be lower during the next regulatory period.
- Recent reduction in demand for gas could become a long-term trend.
- Credit metrics are commensurate with the ‘BBB-‘ rating, largely because the “energy sector extraordinary contribution” (CESE), a tax introduced in 2014, is likely to be withdrawn for all Floene’s DSOs supported by 2023 court rulings.
- Commitment to the investment-grade rating will be tested.

Outlook: Stable
- FFO to debt failing to increase toward 12% by the end of 2027 or falling below 9%.
- Adverse regulatory developments or adverse legal ruling on the CESE energy tax, if combined with a lack of support from shareholders and no path to a reduction in leverage during 2023-2027.
- An upgrade is remote at this stage.
- It would depend on less uncertainty regarding long-term growth prospects for Floene’s gas grid in Portugal, and a successful transition to renewable gases, with a supportive regulatory framework and material deleveraging.
REN—Redes Energeticas Nacionais, SGPS S.A. | Portugal
Issuer Credit Rating: BBB/Stable/A-2
Analyst: Renata Gottliebova

**Company Description**

- REN is the monopoly gas and electricity transmission operator in Portugal, and the second-largest national gas distribution operator.
- It is the sole owner and operator of the electricity and gas transmission infrastructure in Portugal.
- The bulk of the company’s assets are regulated and held under long-term public-service monopoly concession contracts with the state.

**Rating Drivers**

- Supportive regulatory framework in Portugal and low-risk investments in either domestic regulated activities or in countries that we consider supportive.
- Declining RAB and potential volatility of remuneration due to annual update of RoR, though this provides good protection in the current interest rate environment.
- Volatility in working capital and taxes paid due to the tariff deviation mechanism.
- Exposure to uncertainty on long-term prospects for gas grids.

**Outlook: Stable**

- FFO to debt below 12% on average.
- Lower profitability than expected, more aggressive dividends, acquisitions, or major negative regulatory developments, as well as signs of deterioration in the political or financial environment.
- A positive rating action is unlikely over the two-year outlook horizon.
- FFO to debt sustainably above 15%.

---

S&P Global Ratings

---

a--Actual, f--Forecast, FFO--Funds from operations, Capex--Capital expenditure. Credit metrics are for consolidated debt.

Company Description
- Gas Networks Ireland owns, develops, operates, and maintains the natural gas transmission and distribution networks in Ireland, as well as the two natural gas interconnectors between Ireland and the U.K. The group also provides gas transportation services to suppliers and shippers.
- It is 100% owned by the government.

Rating Drivers
- Operations stemming from regulated activities under a very supportive regulatory framework.
- Final decision on the parameters of the next regulatory period (PC5) running through September 2027.
- Gas will continue to play a larger role for Irish energy security compared with some European peers.
- The rating is supported by 100% ownership by the Irish government.

Outlook: Stable
- Downgrade to the sovereign or downward revision of the SACP to 'bbb+', which we view as unlikely given metrics will remain comfortably above the 12% FFO to debt threshold.
- Diminished likelihood of extraordinary government support.
- Unlikely over the next two years.
- It would require either a two-notch upward revision of the sovereign rating or a two-notch upward revision of the SACP.

S&P Global Ratings
Related Research

S&P Global Ratings

- [Germany's Green Energy Ambitions Spark A Transformative Decade For Utilities](#), Sept 14, 2023
- [Industry Top Trends Update Europe: Utilities](#), July 18, 2023
- [Europe's Utilities Face A Power Cliff From 2026](#), June 22, 2023
- [EU's Proposed Energy Market Redesign Mitigates Merchant Risks And Accelerates Renewables](#), April 3, 2023
- [Latest Infrastructure And Energy Insights Focus On Inflation, Affordability, And Tight LNG Markets](#), Jan 25, 2023
- [What Europe's Energy Redesign Might Mean For Its Power And Gas Markets](#), Sept. 13, 2022

S&P Global Commodity Insights

- [Hydrogen policy tracker](#), July 17, 2023
- [Long-term gas and power dynamics (Client Briefing Europe 2023)](#), June 27, 2023
- [European Long-Term Hydrogen Supply and Demand Outlook: Planning Case](#), Dec 15, 2022
- [Heat pumps and gas demand - How fast can Europe decarbonize its building heating sector](#), Nov 11, 2022
Primary Analytical Contacts

Claire Mauduit-Le Clercq
Director, Lead Analyst
Paris
+33 14 420 7201
claire.mauduit@spglobal.com

Béatrice de Taisne
Head of EMEA Utilities
London
+ 44 20 7176 3938
beatrice.de.taisne@spglobal.com

Federico Loreti
Associate
Paris
+33 14 075 2509
federico.loreti@spglobal.com

Emmanuel Dubois-Pelerin
Senior Director, Sector Lead
Paris
+ 33 14 420 6673
emmanuel.dubois-pelerin@spglobal.com
# Analytical Contacts By Region

## U.K.
- **Aarti Sakhuja**
  - Director
  - +44 20 7176 3718
  - aarti.sakhuja@spglobal.com

- **Gustav Rydevik**
  - Associate Director
  - +44 20 7176 1282
  - gustav.rydevik@spglobal.com

- **Julien Bernu, CFA**
  - Associate Director
  - +44 20 7176 1282
  - julien.bernu@spglobal.com

## Germany
- **Per Karlsson**
  - Director
  - +46 8 440 5827
  - per.karlsson@spglobal.com

- **Gerardo Leal**
  - Associate Director
  - +33 1 45 40 67 40
  - gerardo.leal@spglobal.com

- **Karin Kanj**
  - Credit Analyst
  - +49 69 339 9107
  - karin.kanj@spglobal.com

## France
- **Claire Mauduit-Le Clercq**
  - Director
  - +33 1 44 20 73 07
  - claire.mauduit@spglobal.com

- **Federico Loreti**
  - Associate
  - +33 1 45 54 25 09
  - federico.loreti@spglobal.com

- **Massimo Schiavo**
  - Director
  - +33 1 44 20 67 18
  - massimo.schiavo@spglobal.com

## Italy
- **Massimo Schiavo**
  - Director
  - +33 1 44 20 67 18
  - massimo.schiavo@spglobal.com

- **Daniel Annas**
  - Associate Director
  - +39 04 456 926
  - daniel.annas@spglobal.com

- **Federico Loreti**
  - Associate
  - +33 1 44 20 67 18
  - federico.loreti@spglobal.com

## Portugal
- **Pauline Pasquier**
  - Associate
  - +33 1 44 20 67 18
  - pauline.pasquier@spglobal.com

## Spain
- **Gerardo Leal**
  - Associate Director
  - +33 1 44 20 67 18
  - gerardo.leal@spglobal.com

- **Pauline Pasquier**
  - Associate
  - +33 1 44 20 67 18
  - pauline.pasquier@spglobal.com

- **Renata Gottliebova**
  - Associate Director
  - +33 1 44 20 67 18
  - renata.gottliebova@spglobal.com

## Ireland
- **Emeline Vinot**
  - Associate
  - +33 1 44 20 67 18
  - emeline.vinot@spglobal.com

- **Renata Gottliebova**
  - Associate Director
  - +33 1 44 20 67 18
  - renata.gottliebova@spglobal.com

## Netherlands
- **Claire Mauduit-Le Clercq**
  - Director
  - +33 1 44 20 73 07
  - claire.mauduit@spglobal.com

- **Pauline Pasquier**
  - Associate
  - +33 1 44 20 67 18
  - pauline.pasquier@spglobal.com

- **Massimo Schiavo**
  - Director
  - +33 1 44 20 67 18
  - massimo.schiavo@spglobal.com

- **Renata Gottliebova**
  - Associate Director
  - +33 1 44 20 67 18
  - renata.gottliebova@spglobal.com