Performance of Dutch energy-distribution operators

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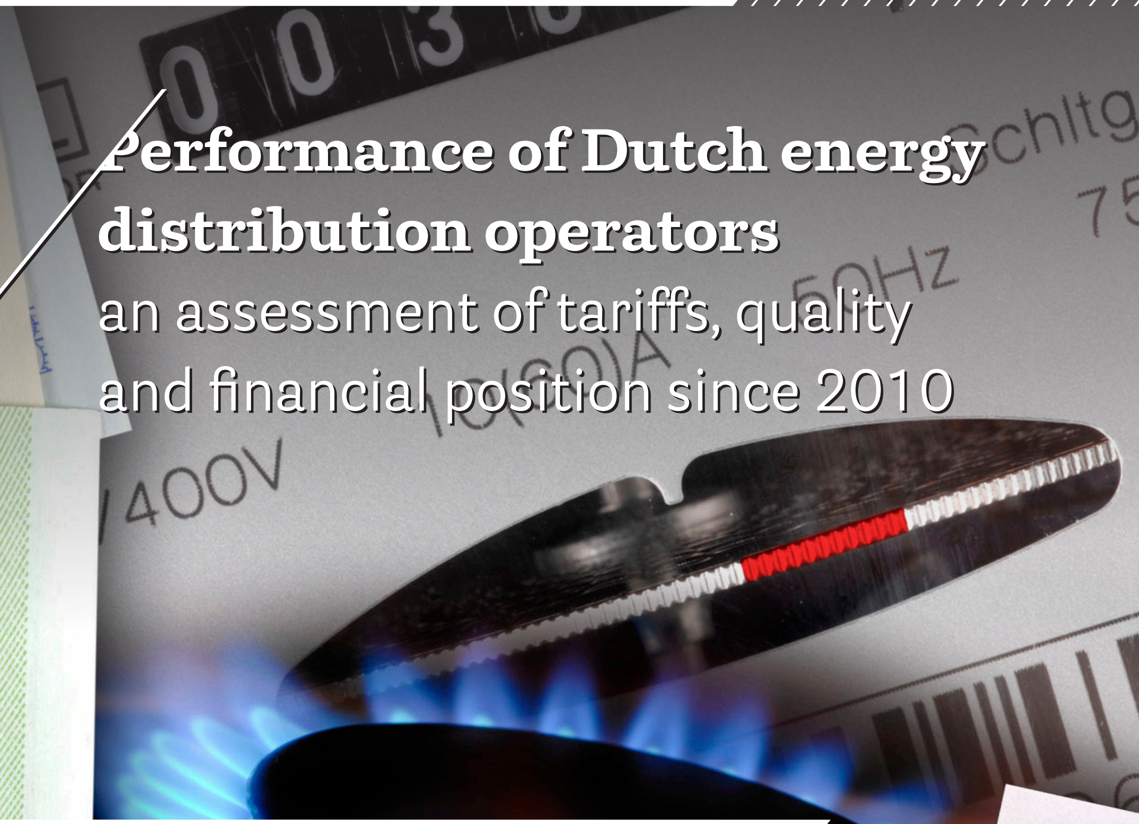
an assessment of tariffs, quality and financial position since 2010



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1. Introduction

1.1 Background and objective

In many countries, the operators of energy distribution networks are subject to sector-specific regulation. The network operators have regional monopolies on the distribution of gas and electricity, meaning that they are the single company that is active in the distribution without having any competitors doing the same in their region. This lack of competition could lead to productive inefficiencies in the operation of the networks while the companies could also charge above-competitive tariffs. The customers, i.e. the network users, would be disadvantaged as a result. Therefore, the objective of regulating the energy distribution operators is to cap the tariffs they may charge in order to stimulate them to operate as efficiently as possible and to prevent that network users pay too much. At the same time, the network operators have to realize a high quality of the services they provide. This condition requires that the network operators have sufficient financial resources to invest in the network when necessary.

In the Netherlands, the energy distribution operators are subject to regulatory overview for almost 20 years (Zijl et al., 2008). The precise implementation of this regulation has changed in various aspects since then. One of these changes is that the organization and the name of the regulator have changed. The current organization that is responsible for the regulation of Dutch energy markets is the Authority for Consumers & Markets (ACM). Despite these organizational changes, the main objectives of the network regulation have remained the same. These objectives are to foster the network operators to work as efficiently as possible, to let network users benefit from these efficiency improvements in the form of lower network tariffs and to maintain the quality of the network services (see ACM, 2017).

1.2 Research questions and method of research

The objective of this policy paper is to contribute to the transparency of the effects of regulation of the energy networks. Therefore, the development of the Dutch network operators is analyzed by assessing the costs for network users, the quality of the network services and the financial position of the network operators. Hence, the questions that will be addressed are:

a) What was the development of the costs per connection of using the gas and electricity distribution networks?
b) What was the development of the quality of the network operators?
c) What was the development of the financial performance of the network operators?

In order to answer these questions, we use publicly available data provided by the ACM and the network operators. Using this data, we first compute the average cost of using the gas and electricity network of each operator in each year. To control for inflation, these values are deflated. Afterwards, we calculate the weighted average costs on a sector level using the transported quantities of the network operators as weights. In the same manner, the quality of the network services is discussed using data on outage time. Finally, the development of the financial performance is examined by analyzing the annual reports of the network operators.

1.3 Outline of paper

The structure of this report is as follows. In Section 2, we first describe the institutional setting of the Dutch energy-distribution sector. In Section 3, we analyze the costs for network users of using the distribution networks, in Section 4, we analyze the quality of the network operators and in Section 5, the financial performance of the operators. Lastly, in Section 6 the answers on the research questions are summarized.

2. Institutional setting

2.1 Introduction

This section briefly introduces the energy-distribution operators in the Netherlands (Section 2.2) as well as the regulation imposed on these companies (Section 2.3).

2.2 Network operators after the ownership unbundling

The network operators have been established as independent companies after the Dutch government imposed ownership unbundling in the energy industry in 2007. This ownership unbundling means that the formerly vertically integrated energy companies were required to separate their network-operation activities from commercial activities in production and supply. This governmental intervention in the energy industry had as result that a number of new network operators were established. The network activities of the energy company Essent moved to the new network company Enexis, while the network activities of the energy company Nuon moved to the new network operator Liander. Moreover, the operation of the network of Delta in the south-west of the Netherlands was transferred to the new network company Delta Netwerk Bedrijf (DNWB), later renamed in Enduris. More recently, this network company was acquired by Stedin, which is the operator of the network formerly operated by the vertically integrated energy company Eneco. Furthermore, in the north-east of the country, two relatively small independent network operators were established: Cogas, later renamed as Coteq, and Rendo Netbeheer. Finally, in the western part of the country, a network operator with a relatively small area, Westland Infra Netbeheer, exists in the region which used to be dominated by the horticulture-under-glass industry, which industry belongs to the largest users of gas in the Netherlands. As a result, this operator is relatively strongly oriented on the distribution of gas, as can be seen in Table 2.1. From this table also appears that Enexis and Liander both have a market share of about 1/3, while Stedin has a share of about 1/4.

The total volume of gas distributed by these operators was about 20 billion m3 in 2017, which was about ½ of the total Dutch gas consumption. This indicates that a significant portion of this consumption is done by residential users and small companies, like the horticulture under glass. The total volume of electricity distributed by these operators was about 87 TWh in 2017, which was about 3/4 of the total Dutch electricity consumption.

Table 2.1. Volumes of transported gas and electricity, per network operator, 2017

	Gas			**Electricity**			**Total**	
	Mm3	**PJ**	**%**	**GWh**	**PJ**	**%**	**PJ**	**%**
Coteq	502	18	3%	359	1	0%	19	2%
Enduris	464	16	2%	1909	7	2%	23	2%
Enexis	6194	218	32%	33544	121	38%	339	34%
Liander	6228	219	32%	29959	108	34%	327	33%
Rendo	276	10	1%	310	1	0%	11	1%
Stedin	4401	155	23%	19984	72	23%	227	23%
Westland	1178	41	6%	1678	6	2%	47	5%
Total	19243	677	100%	87743	316	100%	993	100%

Figures 2.1 and 2.2 show the regional presence of the companies operating the Dutch networks for the distribution of gas and electricity.

Figure 2.1 Regions of the gas-distribution operators, 2019

Source: https://www.gaslicht.com/energie-informatie/netbeheerders

Figure 2.2 Regions of the electricity-distribution operators, 2019

Source: *https://www.gaslicht.com/energie-informatie/netbeheerders*

2.3 Regulation of the energy-distribution operators

The distribution network operators are subject to sector-specific regulation. This regulation, which is executed by the Authority for Consumers & Markets (ACM), is directed at the maximum tariffs these operators may charge as well as the quality of the services they provide to network users. The tariff regulation is meant to protect network users from too high tariffs as well as to give the network operators incentives to operate as efficiently as possible.

This regulation is implemented through yardstick regulation, which means that the targets for tariffs and quality are based on the average performance of all distribution-network operators. As a result, the network operators have an incentive to operate more efficiently and provide higher quality, as their revenues are related to the extent they deviate from the average on group level.[1]

The process of setting the tariffs for the individual network operators consists of three steps. The first step is the determination of the level of the efficient costs per operator, which is based on the outcome of the yardstick analysis. The second step is, using the information on the level of efficient costs, to determine the level of allowed revenues for each year of the regulatory period. This step results in regulatory decisions regarding the so-called x-factor. The third and final step is the determination of the tariffs per operator.

In this final step, each network operator submits a proposal of the tariffs they want to charge in the following calendar year in the month of September of the preceding year. The ACM evaluates this proposal by checking whether the resulting revenues do not exceed the allowed level of revenues which was determined in the previous step. In order to make this analysis, the ACM makes an estimate of the future utilization of the network. These estimates result in so-called 'calculation volumes' which are multiplied with the proposed tariffs in order to obtain an estimate of the future revenues. When these expected revenues, using the proposed

1 For more information on the design of this regulation, see ACM (2017).

tariffs and the above calculation volumes, are below the allowed level of revenues, the regulator approves the maximum tariffs the network operator is allowed to charge.

Regarding the quality of the services provided by the network operators, the ACM has implemented a so-called quality regulation, which includes, amongst others, financial incentives for the operators to offer the optimal quality. These financial incentives are given through a bonus-malus system in the tariff regulation (for electricity networks) as well as rules imposing financial consequences for the operators if the quality of these networks is below certain thresholds.

In this publication, we report on the performance of the network operators on these dimensions (tariffs and quality) as well as the financial strength of the network operators. In order to so, we only use publicly available data, published on the websites of the network operators and the ACM. In Appendix F, we give an overview of the data sources. Therefore, we do not mention the data sources below each table or figure anymore, as all information is derived from these sources.

3. Costs of using the network for network users

3.1 Introduction

This section analyses how the costs of using the network for users of the distribution grids have developed. We first discuss the methodology for calculating these costs. Then, we present the results both on the level of individual networks as for the group of networks.

3.2 Method and data

In order to investigate the level of the costs for network users for using the distribution networks, we use the annual ACM reports presenting the annual tariff decisions from 2012 until 2019. These tariff decisions refer to the maximum gas and electricity tariffs for every network operator. To take inflation into account, the consumer price index is used to deflate the average costs and express all financial values in euros of 2015. Below, we first explain the calculations of the average costs of using the gas network, subsequently, we do this for the electricity networks.

In the regulation of the tariffs of using the gas-distribution network, the ACM distinguishes three groups of users: residential users, industrial users and users with distance metering. In the first two groups, the users are connected to the same type of network (i.e. the low-pressure grid) and, as a result, they face the same tariffs. In the latter group, however, the users can be connected to the low-pressure or the high-pressure grid. In order to calculate the average network costs for this group of users, we calculate the weighted average costs. In this calculation, the weights are based on the share of the so-called calculation volumes in the total volume.

For all groups hold that the costs of using the gas-distribution grid depend on two types of tariffs: a fixed tariff per user per year and a fixed tariff per year that depends on the size of the capacity (i.e. a capacity tariff). Hence, the average nominal costs of using the gas network are calculated as follows:

$$network\ costs\ (nominal) = fixed\ tariff + capacity\ tariff * capacity \quad [3.1]$$

To take inflation into account, the average costs of using the network are deflated on the basis of the annual changes in the CPI compared to the year 2015:[2]

$$network\ costs\ (2015\ euros) = network\ costs\ (nominal) \times \frac{CPI_t}{CPI_{t\,=\,2015}} \quad [3.2]$$

As an example, Table 1 shows the regulated tariffs for using the gas-distribution network of Rendo Gas by users with distance metering in 2013. The source of this data is the ACM website, where all annual tariff decisions published for Coteq, Enduris, Enexis, Liander, Rendo, Stedin and Westland are used.[3]

2 The CPI values are as follows, 2010:91.6; 2011:93.7; 2012:96.0; 2013:98.4; 2014:99.4; 2015:100; 2016:100.3; 2017:101.7; 2018:103.4 and 2019:106.2. Source: CBS.

3 These tariff decisions can be found at the ACM's website (https://www.acm.nl/nl/publicaties) under Publications, subsequently decisions and then energy as subject.

Table 3.1 Example: regulated tariffs for using the gas-distribution network for users with distance metering, Rendo 2013

Distance metering clients (< 16 bar)	Calculation volume (#)	Tariff	Unit
Fixed charge per year	91	687.00	EUR/year
Capacity-dependent tariff per unit contracted capacity per year (low pressure)	3,855	38.05	EUR/year/m3/hour
Capacity- dependent tariff per unit contracted capacity per year (high pressure)	26,109	27.66	EUR/year/m3/hour

Source: ACM - Annual tariff decision Rendo Gas 2013

For the costs of using the electricity-distribution network, we focus on the residential users with a connection to the low-voltage grid which is not higher than 3* 25 Ampere, as this is the largest group. Similar to the tariffs for the gas-distribution networks, the tariffs here also consist of two components: a fixed tariff per connection per year and fixed tariff per year which depends on the size of the connection. Hence, the costs of a connection to an electricity network are calculated in a similar way as above.

We calculate the average costs of using the electricity and gas distribution networks on both the level of individual network operator and on the level of the group of operators. For the latter case, we use the amount of transported quantities per network operator as weights (see Table 2.1 for the weights in 2017). When in a year data of some operators, is missing, we just calculate the weighted average on the basis of the data that is available.

3.3 Results[4]

3.3.1 Residential users gas network

Figure 3.1 shows the average network costs of using the gas network in the category of residential users. Panel A presents these results in euros per network operator, while Panel B presents the deviation to the sector average in percentage.

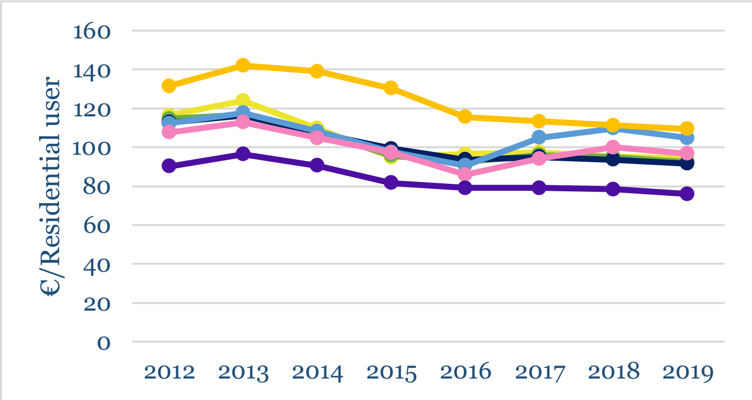
From this figure follows that the network costs of users of the Rendo network are high in comparison with the other six network operators, while the average costs of Westland are the lowest. The average network costs of Rendo were 30 percent higher than the sector average in 2015, while the tariffs of Westland are continuously about 20% lower than the sector average.

Another observation is that almost all the rates have decreased, only Liander's network costs have increased. Also, the rates of Stedin have shown a little increase in 2018.

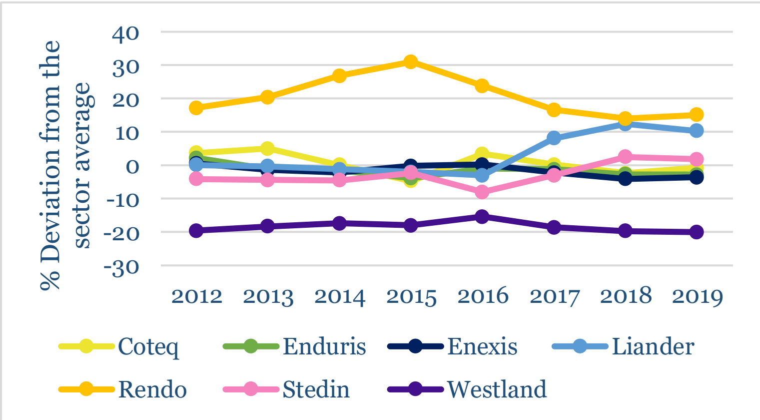
4 In the Appendices, we present the data that are used to make the graphs.

Figure 3.1 Average costs for residential users of using the gas distribution network, per network operator, 2012 – 2019

Panel A: in euros of 2015

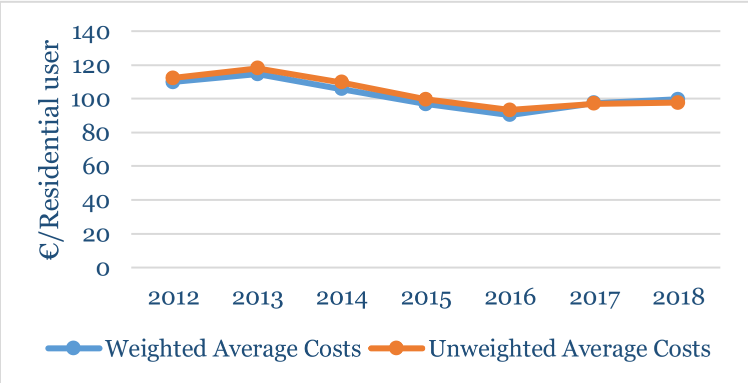


Panel B: in percentage from the sector average



On a sector level, we see that the average costs for residential users have declined with about 20% in the period 2013-2016, In the full period, the average annual decline is 1.6% (see Figure 3.2). This figure demonstrates the unweighted and weighted average costs of using the gas network in the category residential users. It shows that the unweighted and weighted average costs are almost the same. Another conclusion is that till 2016 the unweighted and weighted average costs have decreased. From 2016, there is a small increase in both the average costs.

Figure 3.2 Unweighted and weighted average costs for residential users of using a gas distribution network, 2012-2018, euros of 2015



*Note: As data is not available for all operators in each year, the number of operators that is taken into account varies between years.

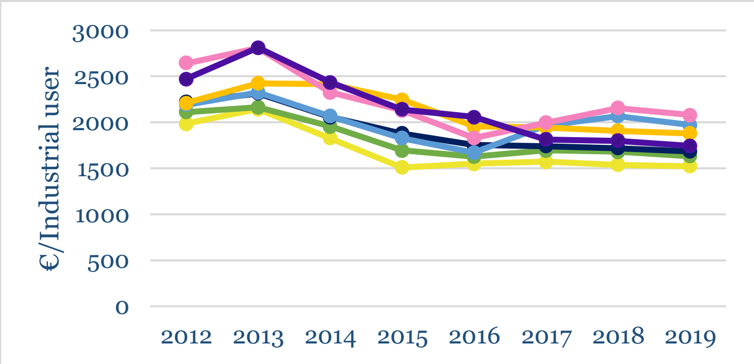
3.3.2 Industrial users gas network

Figure 3.3 shows the average network costs of using the gas network in the category industrial users, both in euros of 2015 and in percentage of the sector average. The figure shows, like Figure 3.1, that almost all the rates have decreased. There are again two exceptions: Stedin and Liander. Coteq has in this category the lowest rates, together with Enduris. The network operator with the highest network prices changed over time.

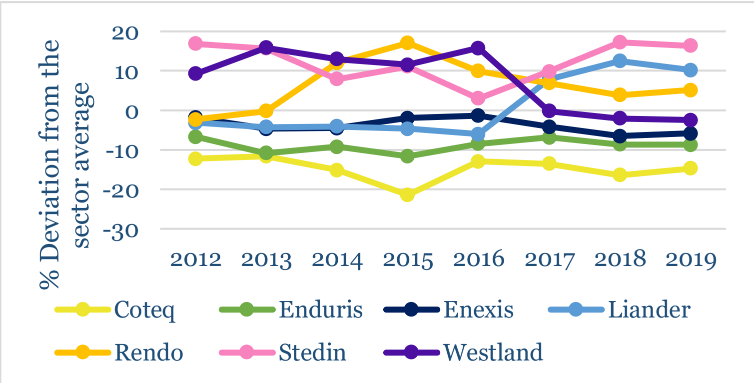
Stedin has the highest costs until 2013, until 2014 Westland. Subsequently, until 2015 Rendo had the highest rates, then until 2016 Westland again. Stedin has the highest network costs since 2017.

Figure 3.3 Average costs for industrial users of using the gas distribution network, per network operator, 2012 – 2019

Panel A: in euros of 2015

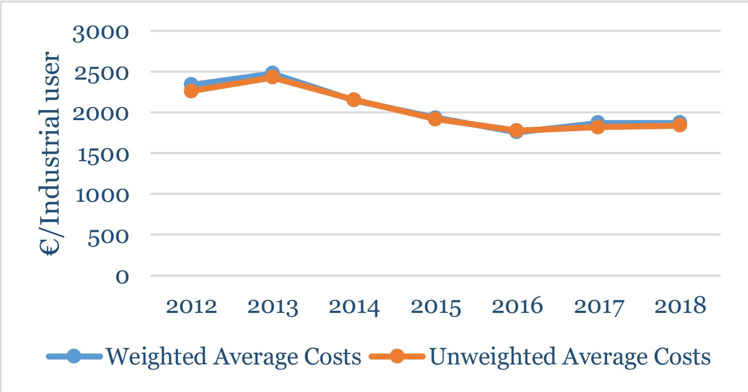


Panel B: in percentage from the sector average



On a sector level, we see that the average costs for industrial users of the gas-distribution networks have declined with about 20% in the period 2012-2016 (see Figure 3.4). Since 2016, the costs have increased slightly. In the period 2012-2018, the costs declined on average annually by 3.6%.

Figure 3.4 Unweighted and weighted average costs for industrial users of using a gas distribution network, 2012-2018, euros of 2015.



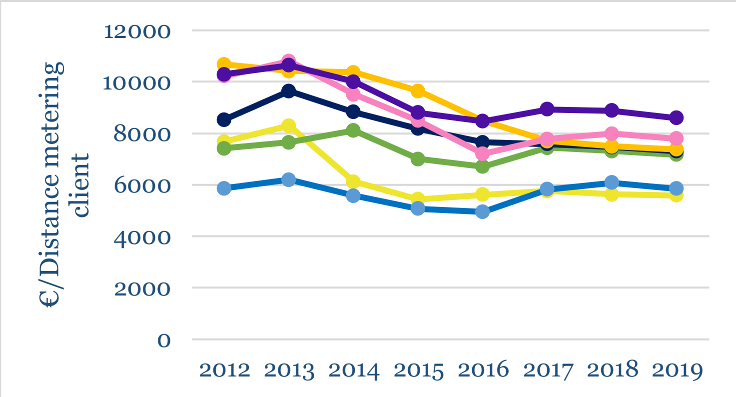
*Note: As data is not available for all operators in each year, the number of operators that is taken into account varies between years.

3.3.3 Users gas-distribution network with distance metering

Figure 3.5 shows the average costs of using the gas network in the category distance metering. It appears that Liander en Coteq had the lowest rates, while Rendo and Westland had the highest rates from 2014 until 2016.

Figure 3.5 Average costs for users with distance metering of using the gas distribution network, per network operator, 2012 – 2019

Panel A: in euros of 2015



Panel B: in percentage from the sector average

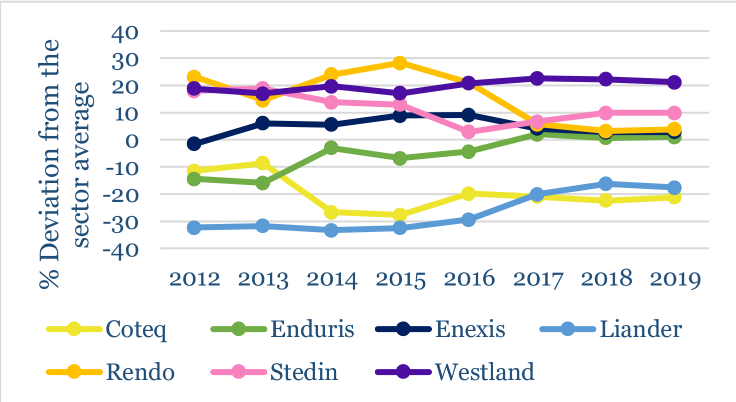
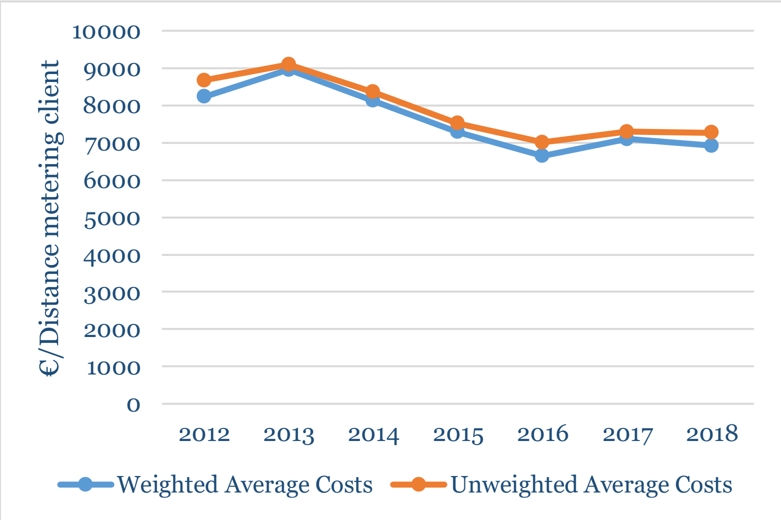


Figure 3.6 shows the unweighted and weighted average costs of using the gas network in the category distance metering. It appears that on a sector level, until 2016 the average costs decreased with about 20%. In the period 2012-218, the costs declined annually on average by 2.9%.

Figure 3.6 Unweighted and weighted average costs for users with distance metering of using the gas distribution network, 2012-2018



*Note: As data is not available for all operators in each year, the number of operators that is taken into account varies between years.

3.3.4 Residential users electricity-distribution network

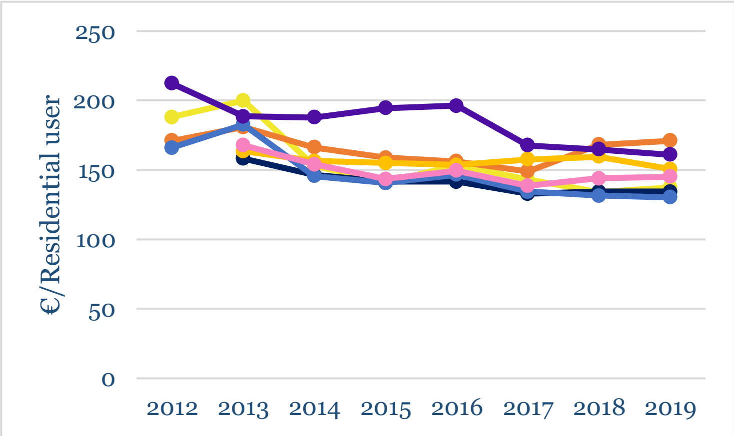
Figure 3.7 shows the costs of using the electricity-distribution grid for residential users.[5] It shows that most of the time, Westland has the highest network costs in this category. Enexis has the lowest rates, however, from 2017 Rendo has the lowest prices. For Coteq, Enduris, and Rendo there is an increase in costs for residential users from 2012 until 2013. After that, there is a decrease for these three network operators. Stedin, Coteq, Rendo, and Enexis demonstrate a small increase in 2016, with a decrease in costs for 2017.

On a sector level, the average costs for residential users have significantly declined (see Figure 3.8). The average annual decline is 2.3% in the period 2013-2018.

5 The tariffs refer to the group of residential users with a connection which is not higher than 3*25 ampere.

Figure 3.7 Costs for residential users of using the electricity distribution grid, per network operator, 2012-2019

Panel A: in euros of 2015



Panel B: in percentage from the sector average

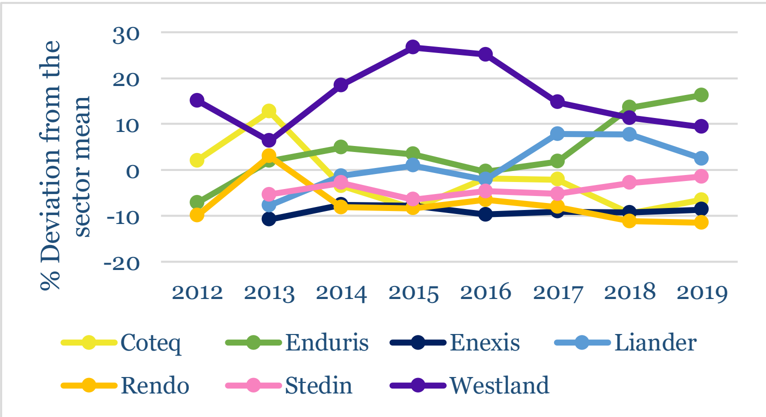
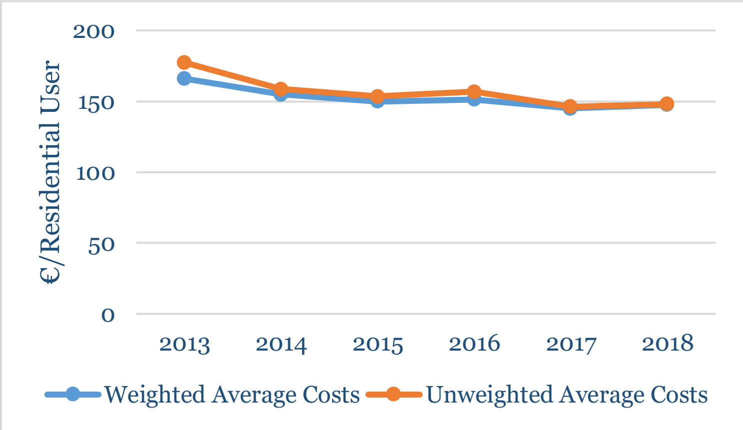


Figure 3.8 Unweighted and weighted average costs for residential users of using the electricity distribution grid, 2013-2018



*Note: As data is not available for all operators in each year, the number of operators that is taken into account varies between years

3.4 Conclusion

The results show a clear decline in the average costs in using the gas and electricity distribution networks since 2012. This decline may be due to a more efficient operation of the network operators. A factor that also likely has contributed to the decrease in network costs is the decline in the rate of interest, which made that the costs of capital strongly reduced over the past years.

4. Quality of the performance of the gas and electricity distribution networks

4.1 Introduction

As the functioning of the gas and electricity networks is of key importance to their users, the quality of the performance of these networks have to be assessed as well. In this chapter, we first briefly explain the methodology and data and then we will present the results through a number of figures. The chapter will be ended with our conclusions on the quality of network performance.

4.2 Methodology and data

A key measure for the quality of network performance is the outage time. Network operators publish the outage time annually in their annual reports.[6] All the annual reports are found on the website of the network operators. In some cases, also the quality and capacity document is used since this includes more detailed information about the quality of the networks. We have collected the available information from these reports and based on that, we construct figures to present the development per operator over time.

The weighted average outage time of the networks is calculated by using the amount of transported quantities to construct the weights (see Table 2.1 for the weights for 2017). The share of each network operator in the total amount of quantity transported is used and multiplied with the outage time of each network operator. By doing this, the average outage time is calculated by the share of the network operators. There is some

6 Unfortunately, not every network operator publishes this information for every year.

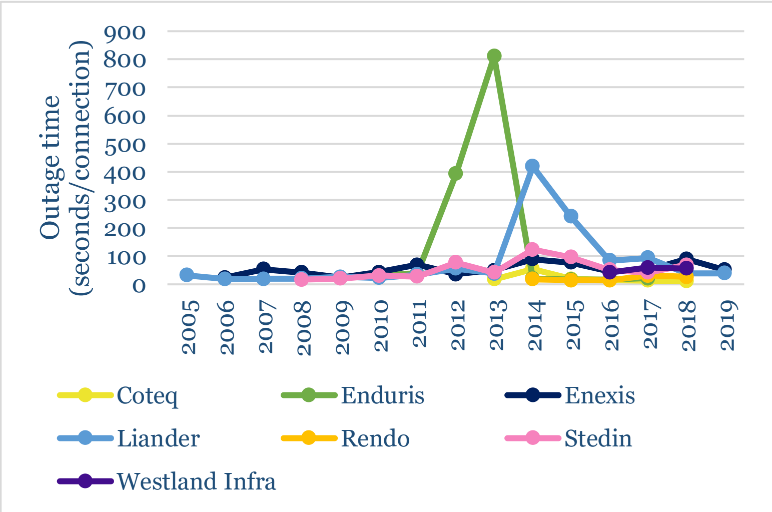
missing data, therefore, the number of network operators that is taken into account varies.

4.3 Results

4.3.1 Gas-distribution network

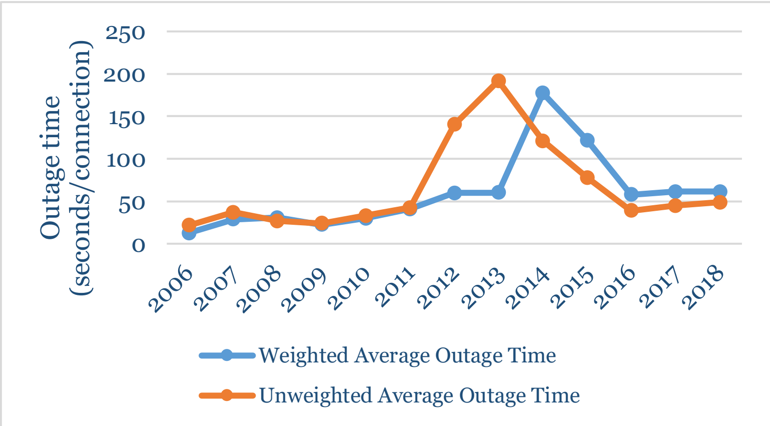
Figure 4.1 shows the outage time of the gas networks per operator since 2005. It shows a fairly low and constant pattern most of the time. There are a few exceptions: Enduris in 2012 and 2013, and Liander in 2014 and 2015. In 2012, a gas pipe of Enduris was damaged during maintenance work, leading to an interruption of gas for all the households in IJzendijke, Biervliet, Hoofdplaat and Turkeye in the province of Zeeland.

Figure 4.1 Outage time of the gas distribution networks, per network operator, 2005-2019 (in seconds per connection)



The exceptional value for Enduris in 2013 is due to a malfunction in a transfer station, which leads to an interruption of gas distribution for approximately 3000 households. The outlier of Liander in 2014 is due to a burst water pipe, which damages the gas pipe in Apeldoorn, 580 households are affected. In 2015, there was a gas interruption in Velsen-Noord since a gas pipe was damaged during work activities. Overall, a decrease in the outage time is shown by Stedin, Coteq, and Enduris. The outage times of the other network operators increase, mostly in the period 2016-2018.

Figure 4.2 Unweighted and weighted average outage time of the gas network, 2006-2018.



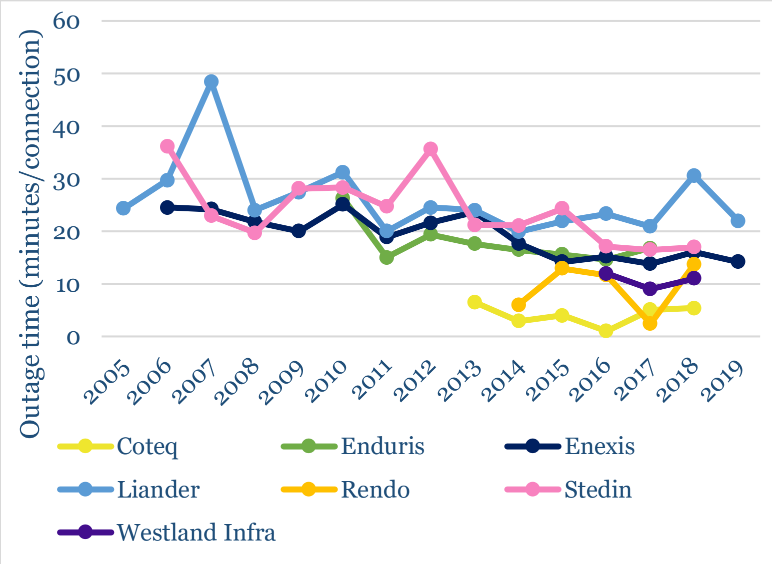
*Note: As data is not available for all operators in each year, the number of operators that is taken into account varies between years

Figure 4.2 shows the weighted and unweighted average outage time in the gas-distribution network on a sector level. Until 2011, both the averages are almost equal. In 2012 and 2013, the unweighted average is much higher than the weighted average, which can be explained by the high outage time of Enduris. Enduris is a relatively small network operator, implying that its weight on the weighted average outage time is relatively small. However, the figure shows the opposite in 2014 and 2015: then the weighted average outage time is higher than the unweighted average outage time. This time, the higher average outage time is caused by Liander, which is a relatively large network operator. Concluding from this figure, both the weighted and unweighted average outage time have increased in the past years. On average, the annual increase is 14%.

4.3.2 Electricity-distribution networks

Figure 4.3 shows the outage time of electricity networks of the seven different network operators. Overall, the figure shows that the outage time has decreased strongly in most case.

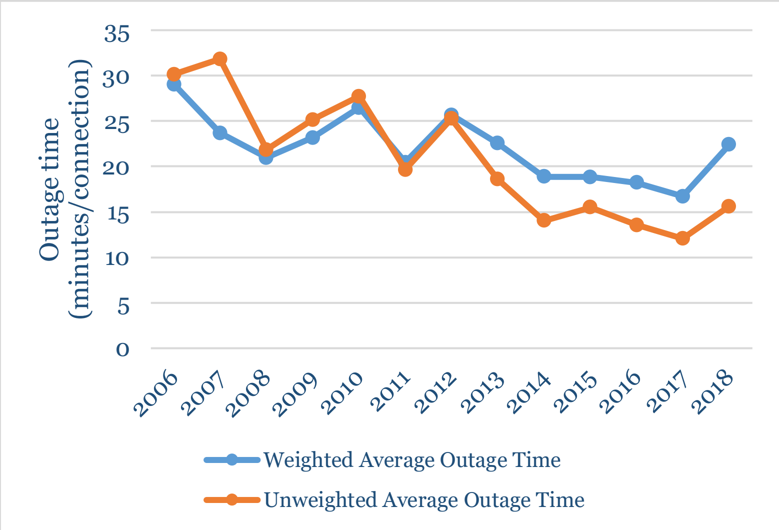
Figure 4.3 Outage time of the electricity distribution networks, per network operator, 2005-2019 (in minutes per residential connection)



When we look at the sector average (both the weighted and unweighted), we clearly see a reduction in the outage time (Figure 4.4). The weighted average outage has decreased from about 30 minutes per household in 2006 to about 23 minutes in 2018. On average, the annual decline was 2.1%.

From 2012, the weighted average outage time is higher than the unweighted average, which implies that the larger network operators have a higher outage time rate, which is also shown in Figure 4.3 as the outage times of Liander are relatively high. The outage time of the smaller network operators are relatively low, for instance, Coteq and Rendo.

Figure 4.4 Unweighted and weighted average outage time of the electricity distribution networks, 2006 – 2018 (in minutes per residential connection)



*Note: there is some data missing, resulting in the case that the amount of network operators used to find the weighted average outage time varies.

4.4 Conclusion

Concluding, the quality of the performance of the electricity grids have significantly improved since 2006, while the quality of the gas grids has strongly deteriorated, at least in relative terms, in the period 2006-2018.

5. The financial performance of the network operators

5.1 Introduction

In order to be able to continue their business and to maintain the quality of network performance, network operators need to have sufficient financial strength. In this chapter, we describe the financial revenues per unit of transported energy, the investments in the networks and the financial position measured through a number of financial ratios.

The structure of this chapter is as follows. We first describe the methodology before presenting the results We conclude by formulating our conclusions regarding the financial performance.

5.2 Methodology and data

In order to calculate the realized average tariff per PJ transported energy per network operator, the revenues of each operator are divided by the transported volumes in PJ of gas and electricity together. This metric measures the average revenue per unit of transported energy.

The investments refer, as far as possible, to the investments in fixed assets of the network. As financial ratios we use the following:

- *EBIT / interest coverage*, which measures to what extent the earnings (i.e. the Earnings Before Interest and Taxes) enable the firm to pay the interests on debt.
- *FFO / interest coverage*, which measures to what extent the cash flow from operational activities (i.e. the Funds From Operations) are sufficient to pay the interests on debt.
- *FFO / debt*, which measures to what extent the cash flow from operational activities (i.e. the Funds From Operations) are sufficient to repay the debt.

- *debt / capitalization*, which measures to what extent the firm is financed with debt.

We report the information on these financial variables for each operator, both in absolute values as in percentage deviation from the mean per network operator. In addition, we calculate these values on a sector level, both as weighted and unweighted average.

To control for inflation, the revenues are deflated by using the annual changes in the CPI with 2015 as base year.

The data on these financial aspects are found in the annual reports of the network operators.

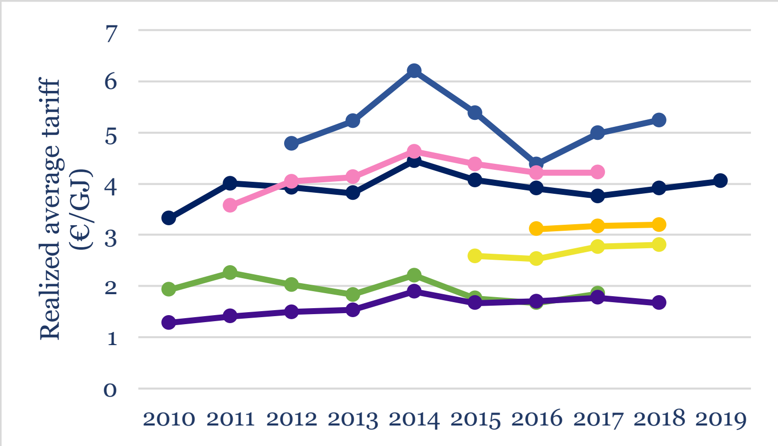
5.3 Results

5.3.1 Revenues per unit of transported energy

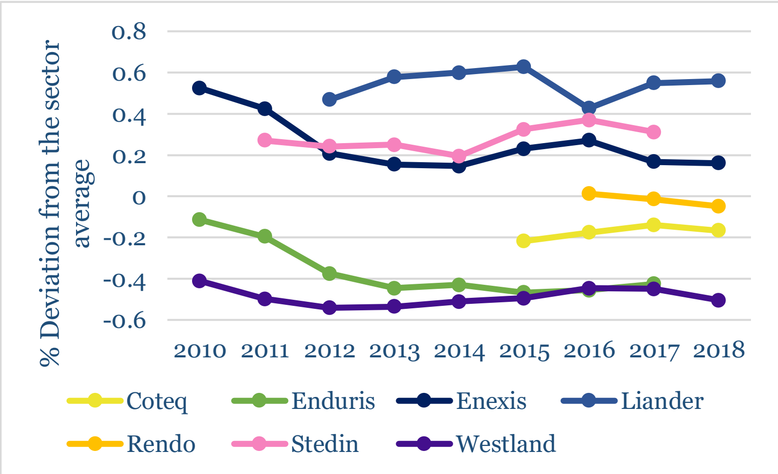
Figure 5.1 shows the deflated revenues in euros per transported energy in PJ per network operator. From this figure appears that Liander has the highest revenue per transported unit of energy. Panel B demonstrates the deviation from the mean. This figure shows that besides Westland, also the revenue per transported unit of energy from Enduris and Coteq is below the mean.

Figure 5.1 Revenues per unit of transported energy, per network operator, 2010-2019

Panel A: in euros of 2015 per GJ

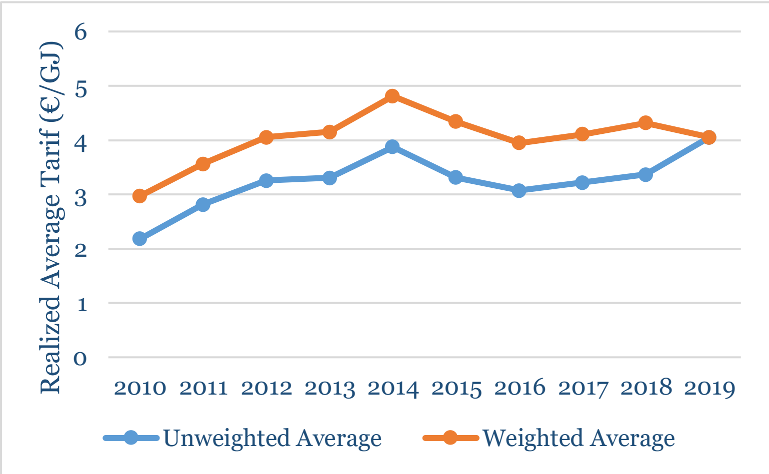


Panel B: in percentage from the sector average



On a sector level, we see that the average revenue (in euros of 2015) per unit of energy has increased since 2010 (see Figure 5.2). As the tariffs for network users (based on connections and capacity) have declined, which we have seen in Chapter 3, while the transported volumes of gas and electricity was fairly constant in this period (see Figures 5.3 and 5.4), implying that the network operators have realized more connections with network users.

Figure 5.2 Revenues per unit of transported energy by distribution operators, 2010-2019 (euros of 2015)



*Note: for some years, there is some data missing, resulting in the fact that the amount of network operators used to find the weighted average outage time varies.

Figure 5.3 Transported volumes of gas per operator, 2006-2019 (in million m3), 2006-2018

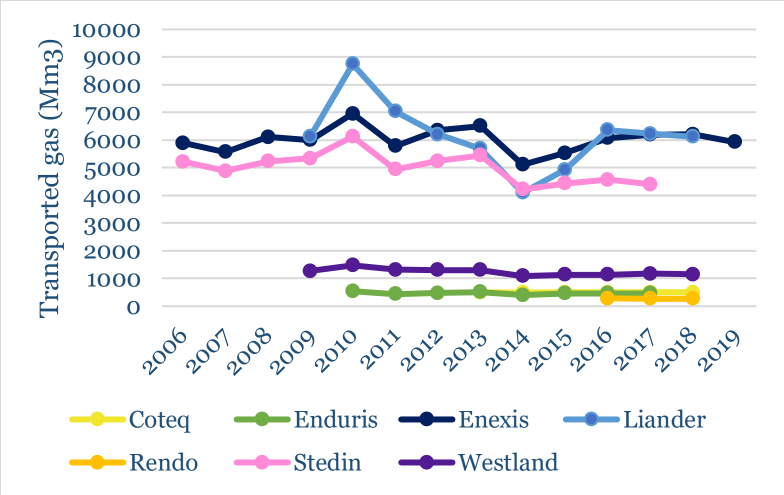
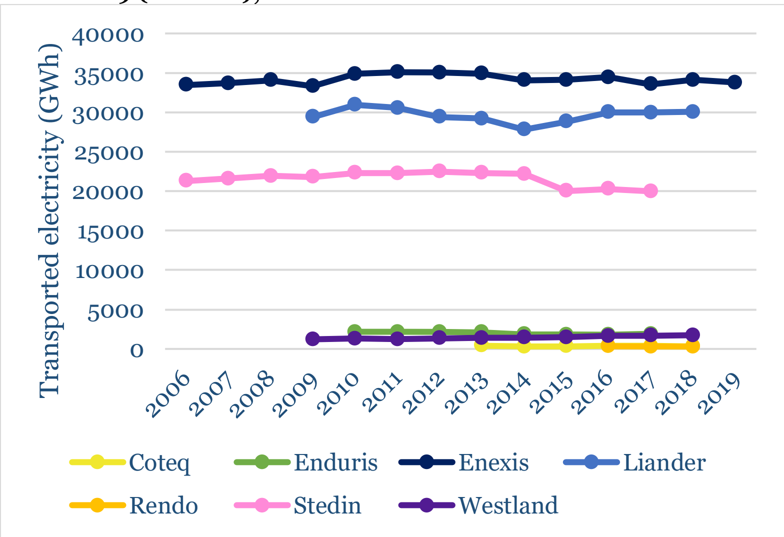


Figure 5.4 Transported volumes of electricity per operator, 2006-2019 (in GWh), 2006-2018



5.3.2 Investments in distribution networks

In line with the extension of the number of connections, we also see a growth in the annual network investments by a number of operators (see Figures 5.5 and 5.6)

Figure 5.5 Investments in million euros, per network operator, 2009-2019

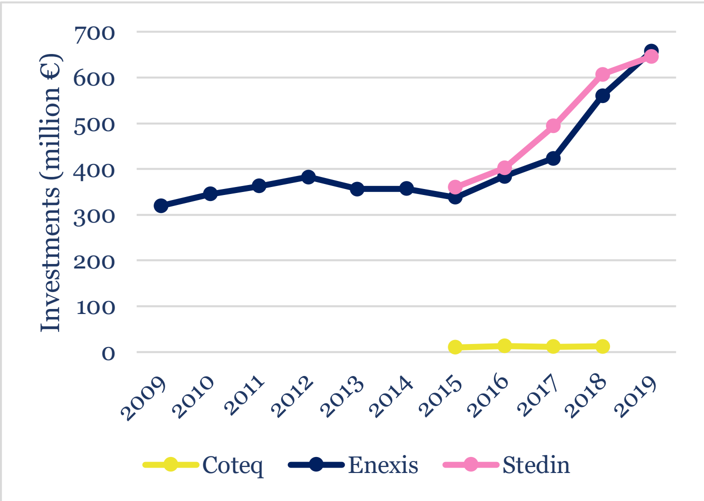
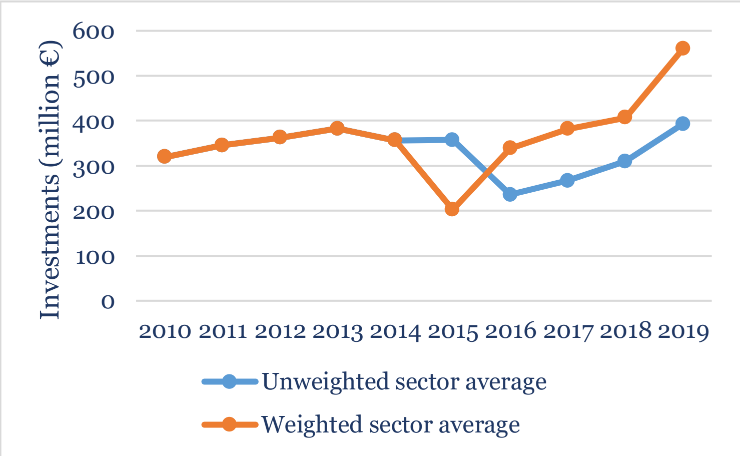


Figure 5.6 Investments in million euros by the group of distribution-network operators, 2009-2019



Note: there is some data missing, resulting in the case that the amount of network operators used to find the weighted average outage time varies.

5.3.3 Financial ratios of network operators

The financial strength of the network operators is measured through a number of financial ratios. Figure 5.7 shows the ratio EBIT/Interest coverage. This ratio measures to what extent a firm is able to pay the interests on debt. It appears that Rendo and Westland have the highest ratio. In addition, Liander has the lowest values of this ratio.

Figure 5.8 shows that on a sector level, this ratio has improved slightly in the most recent years. The network operators with the highest ratios are Rendo and Westland, which are relatively small network operators. which explains the difference between these averages.

Figure 5.7 EBIT / Interest coverage, per network operator, 2010-2019

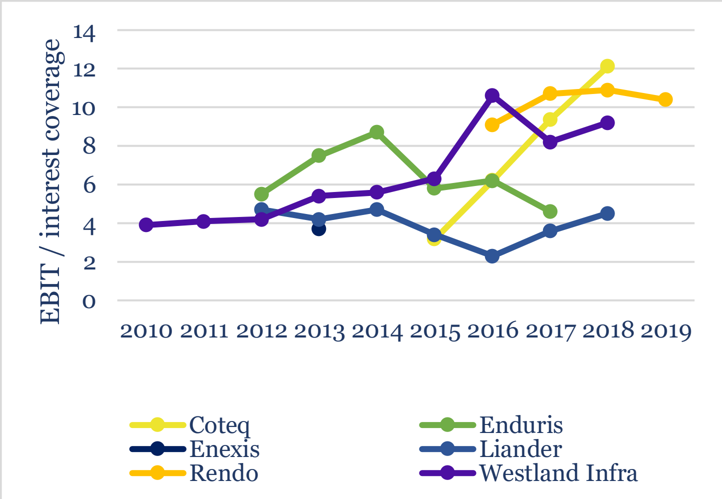
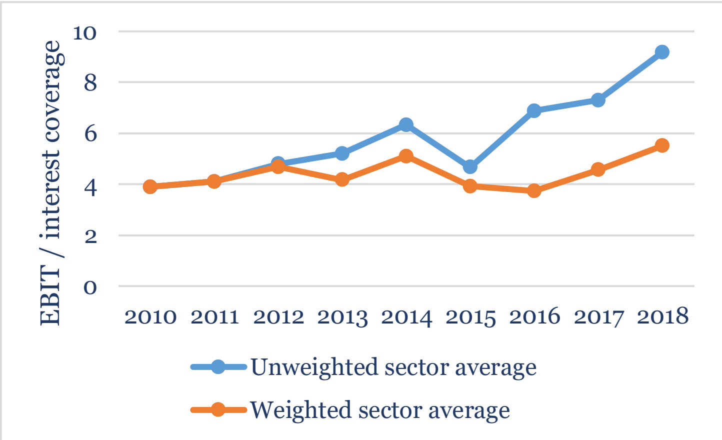


Figure 5.8 EBIT / Interest coverage, average of network operators, 2010-2019

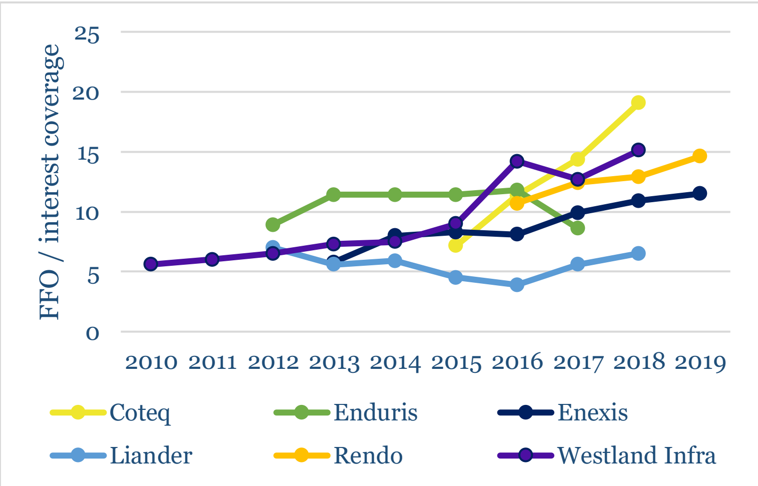


*Note: the data from Stedin is missing.

Figure 5.9 shows the ratio FFO/interest coverage. This ratio measures to what extent a firm is able to pay the interests on debt from the operational results. From this figure, it appears that Enduris has the highest rate until 2015. Afterwards, Coteq and Westland have higher rates. Again, Liander has the lowest rates.

Figure 5.10 shows that on average in the sector, the coverage of the interests had increased strongly. Until 2012, the weighted and unweighted averages were almost equal. From then, the unweighted average is again higher than the weighted average, which can be explained by the lower rates of Liander, which is a relatively large network operator, and the higher values of Coteq and Westland, which are relatively small operators.

Figure 5.9 FFO / Interest coverage, per network operator, 2010-2019



*Note: the data from Stedin is missing.

Figure 5.10 FFO / Interest coverage, on average per network operator, 2010-2019

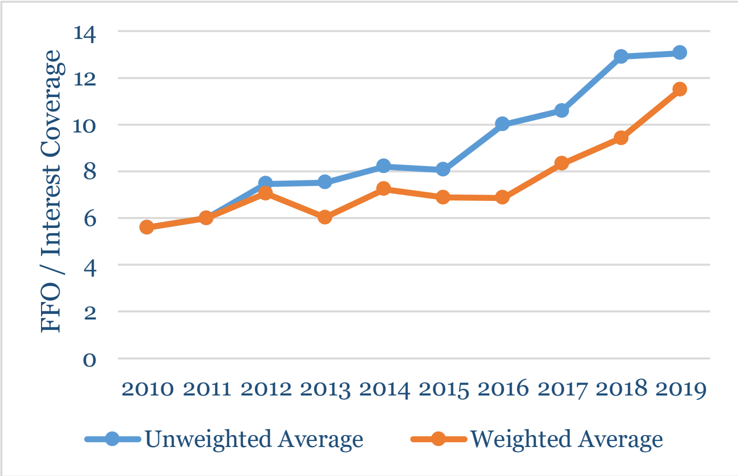


Figure 5.11 shows the ratio FFO/debt. This ratio measures the ability of a firm to repay the debt. The higher this ratio, the stronger this ability. From the figure, it appears that Westland has the highest values of this ratio. Liander and Stedin have relatively low values.

Figure 5.12 shows the unweighted and weighted average of this ratio. Both the averages are almost equal. Only during 2012, 2016 and 2017 the unweighted average is higher. The difference in 2012 can be explained by a higher peak of Westland in 2012. Also, in 2016 and 2017 the rates of Westland show a peak. Since Westland is a relatively small network operator, the unweighted average is thus higher than the weighted average.

Figure 5.11 FFO / Debt (%), per network operator, 2010-2019

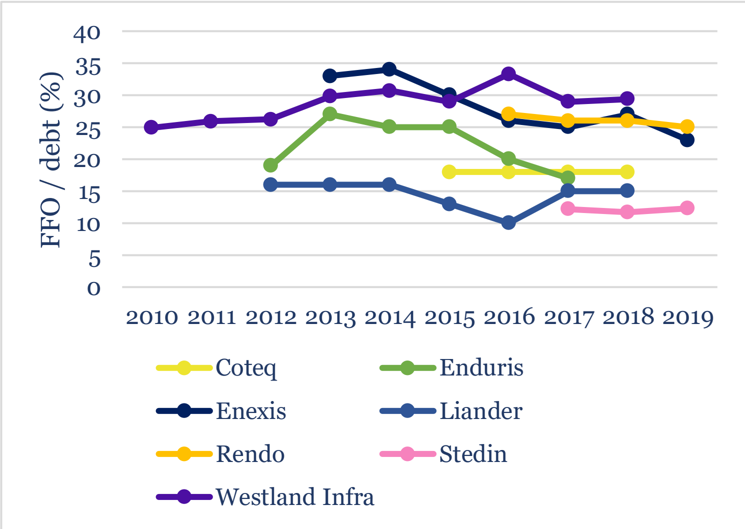


Figure 5.12 FFO / Debt (%), on average per network operator, 2010-2019

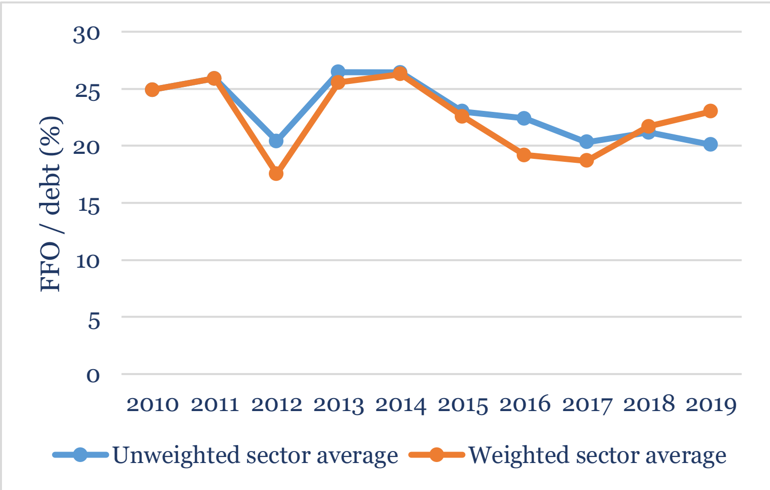
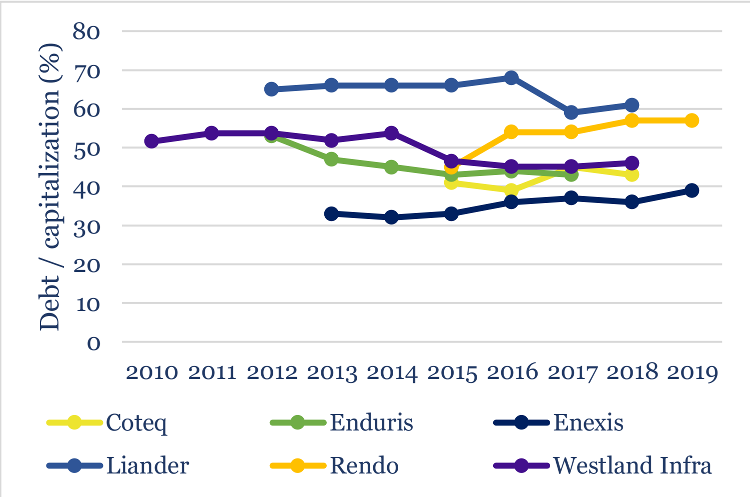


Figure 5.13 shows the ratio debt/capitalization. This ratio measures to what extent a firm is financed with debt. The lower this ratio, the stronger the financial position. The figure shows that the values of Liander are relatively high, while the values of Enexis are relatively low. Therefore, Enexis scores the best on this ratio.

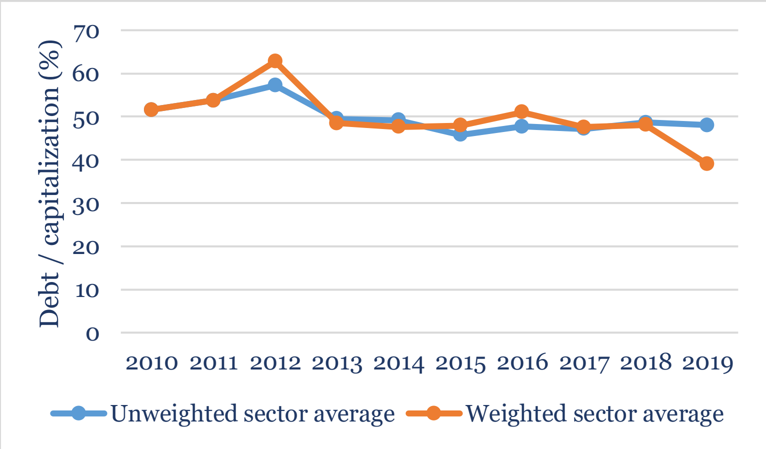
Figure 5.14 shows the unweighted and weighted averages of this ratio, which are almost equal. In 2012, the weighted average is only slightly higher than the unweighted average, which is due to a peak of Liander, a relatively large network operator. Over the full period, the figure shows that on average the share of debt in financing has slightly declined.

Figure 5.13 Debt / Capitalization, per network operator, 2010-2019



*Note: data from Stedin is missing.

Figure 5.14 Debt / Capitalization, on average per network operator, 2010-2019



*Note: there is some data missing, resulting in the case that the amount of network operators used to find the weighted average outage time varies.

5.4 Conclusion

The general picture coming forward from the graphs on the financial position is that network operators have realized higher revenues per unit of energy that is transported, that they have invested more in the networks, that their ability to pay the interests on debt has improved, while the share of debt in the total financing has slightly decreased. Among the group of network operators, however, there are quite strong differences. For instance, Liander, a relatively large network operator, scores less on the financial ratios than the smaller network operators Westland and Coteq.

6. Conclusion

The operators of the networks for distributing gas and electricity play an important role in the economy and, therefore, it is important to know how well these operators function. As these operators are natural monopolies, they are subject to sector-specific regulation, which is executed by the Authority for Consumers & Markets (ACM) in the Netherlands. By describing the realized performance of these network operators, this policy paper hopes to contribute to the transparency about the effectiveness of this regulation.

Using publicly available information on the websites of the network operators and the ACM, this report has described the performance of these operators. For all Dutch energy distribution-network operators (Coteq, Enduris, Enexis, Liander, Rendo, Stedin and Westland), we describe the annual performance with regard to the costs of using the network for network users, the quality of the network operation and the financial strength. We conclude the following.

- The costs of using the electricity and gas networks have significantly declined. This holds for the various types of users. The costs for users declined annually on average by about 2%.
- The quality of the performance of the electricity network, measured in average outage time per connection, has strongly improved, while the quality of the gas networks, measured as average outage time per connection, has deteriorated.
- The average financial position of the network operators has improved, measured in terms of revenues per unit of transported energy, the ability to pay interest on debt and the share of debt in the total financing. It seems that in general the smaller network operators score better on the financial ratios than the larger ones.

References:

ACM (2017). Incentive regulation for the gas and electricity networks in the Netherlands; General information about the method of regulation of the system operators of natural gas and electricity in the Netherlands by the Netherlands Authority for Consumers and Markets. https://www.acm.nl/sites/default/files/old_publication/publicaties/17231_incentive-regulation-of-the-gas-and-elektricity-networks-in-the-netherlands-2017-05-17.pdf.

Zijl, G. Haffner, R. and M. Mulder (2008). Energiemarkten beter laten werken: een onvoltooide missie. In Trust en antitrust: beschouwingen over 10 jaar Mededingingswet en 10 jaar NMa, NMa Netherlands Competition Authority

Appendices

Appendix A. Annual costs per type of network user of using the gas distribution grid per network operator, 2012-2019, in euros of 2015

Table A.1 Residential users

Operator	2012	2013	2014	2015	2016	2017	2018	2019
Coteq	116	124	110	95	96	97	95	94
Enduris	115	117	108	96	92	96	95	92
Enexis	113	116	107	99	94	95	94	92
Liander	112	118	108	98	91	105	110	105
Rendo	131	142	139	130	116	113	111	109
Stedin	108	113	105	97	86	94	100	97
Westland	90	96	91	82	79	79	78	76

Table A.2 Industrial users

Operator	2012	2013	2014	2015	2016	2017	2018	2019
Coteq	1985	2145	1830	1508	1548	1572	1537	1525
Enduris	2111	2165	1957	1696	1627	1694	1679	1632
Enexis	2220	2314	2059	1881	1754	1743	1719	1683
Liander	2191	2325	2069	1829	1671	1962	2067	1971
Rendo	2211	2424	2416	2246	1954	1944	1909	1879
Stedin	2644	2809	2327	2132	1831	1996	2155	2081
Westland	2472	2813	2436	2141	2058	1814	1800	174

Table A.3 Users with distance metering

Operator	2012	2013	2014	2015	2016	2017	2018	2019
Coteq	7672	8300	6126	5433	5615	5757	5635	5594
Enduris	7417	7647	8109	6999	6707	7438	7313	7167
Enexis	8529	9641	8827	8181	7648	7589	7464	7304
Liander	5866	6202	5575	5070	4951	5826	6084	5848
Rendo	10678	10417	10362	9646	8477	7703	7497	7374
Stedin	10229	10803	9514	8493	7209	7776	7984	7798
Westland	10295	10640	10000	8799	8467	8935	8879	8600

Appendix B. Annual costs per residential user of using the electricity distribution grid, per network operator, 2012-2019, in euros of 2015

Operator	2012	2013	2014	2015	2016	2017	2018	2019
Coteq	188	200	153	141	154	143	134	138
Enduris	171	181	166	159	156	149	168	171
Enexis	-	158	146	142	142	133	134	134
Liander	-	164	156	155	154	158	160	151
Rendo	166	183	146	141	147	134	132	130
Stedin	-	168	154	144	150	139	144	145
Westland	212	189	188	194	196	168	165	161

Note: the costs refer to the residential users with 3*25A and all 1-fase connections

Appendix C Outage time gas distribution networks, per network operator, in seconds per connection, 2005-2019

Tabel C.1 period 2005-2012

Operator	2005	2006	2007	2008	2009	2010	2011	2012
Coteq	-	-	-	-	-	-	-	-
Enduris	-	-	-	-	-	35	38	393
Enexis	-	24	54	42	24	43	69	36
Liander	32	19	20	21	27	23	35	56
Rendo	-	-	-	-	-	-	-	-
Stedin	-	-	-	17	21	31	28	77
Westland	-	-	-	-	-	-	-	-

Tabel C.2 period 2013-2019

Operator	2013	2014	2015	2016	2017	2018	2019
Coteq	18	54	19	16	13	12	-
Enduris	811	21	17	17	22	-	-
Enexis	50	90	78	45	50	90	51
Liander	38	419	241	85	94	39	40
Rendo	-	18	1	14	31,7	27	-
Stedin	42	124	97	52	42	69	-
Westland	-	-	-	42	60	56	-

Appendix D Outage time of electricity distribution networks, per network operator, in minutes per connection, 2005-2019

Tabel D.1 period 2005-2012

Operator	2005	2006	2007	2008	2009	2010	2011	2012
Coteq	-	-	-	-	-	-	-	-
Enduris	-	-	-	-	-	26	15	19
Enexis	-	25	24	22	20	25	19	22
Liander	24	30	48	24	27	31	20	25
Rendo	-	-	-	-	-	-	-	-
Stedin	-	36	23	20	28	28	25	36
Westland	-	-	-	-	-	-	-	-

Tabel D.2 period 2013-2019

Operator	2013	2014	2015	2016	2017	2018	2019
Coteq	7	3	4	1	5	5	-
Enduris	18	17	16	15	17	-	-
Enexis	24	18	14	15	14	16	14
Liander	24	20	22	23	21	31	22
Rendo	-	6	13	12	2	14	-
Stedin	21	21	24	17	16	17	-
Westland	-	-	-	12	9	11	-

Appendix E. Financial data

Table E.1 Revenues per unit of transported energy, per network operator, 2010-2019 (euros of 2015 per PJ)

Operator	2010	2011	2012	2013	2014
Coteq	-	-	-	-	-
Enduris	1,93	2,26	2,03	1,83	2,21
Enexis	3,32	4,00	3,93	3,82	4,44
Liander	-	-	4,78	5,22	6,20
Rendo	-	-	-	-	-
Stedin	-	3,57	4,04	4,13	4,63
Westland	1,28	1,41	1,49	1,53	1,89

Operator	2015	2016	2017	2018	2019
Coteq	2,59	2,53	2,77	2,81	-
Enduris	1,76	1,67	1,85	-	-
Enexis	4,07	3,91	3,76	3,91	4,05
Liander	5,38	4,38	4,99	5,24	-
Rendo	-	3,11	3,17	3,2	-
Stedin	4,38	4,21	4,22	-	-
Westland	1,67	1,70	1,77	1,67	-

Table E.2 Investments in gas and electricity network, per network operator, 2009-2019 (in million euros of 2015)

Operator	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Coteq	-	-	-	-	-	-	10	13	12	12
Enduris	-	-	-	-	-	-	-	-	-	-
Enexis	320	346	363	382	357	357	338	384	423	560
Liander	-	-	-	-	-	-	-	-	-	-
Rendo	-	-	-	-	-	-	-	-	-	-
Stedin	-	-	-	-	-	-	360	402	494	607
Westland	-	-	-	-	-	-	-	-	-	-

Table E.3 EBIT / Interest coverage, per network operator, 2010-2018

Operator	2010	2011	2012	2013	2014	2015	2016	2017	2018
Coteq	-	-	-	-	-	3,2	6,2	9,36	12,1
Enduris	-	-	5,5	7,5	8,7	5,8	6,2	4,6	-
Enexis	-	-	-	3,7	0	-	-	-	-
Liander	-	-	4,7	4,2	4,7	3,4	2,3	3,6	4,5
Rendo	-	-	-	-	-	-	9,1	10,7	10,9
Stedin	-	-	-	-	-	-	-	-	-
Westland	3,9	4,1	4,2	5,4	5,6	6,3	10,6	8,2	9,2

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Table E.4 FFO / Interest coverage, per network operator

Operator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Coteq	-	-	-	-	-	7,15	11,35	14,37	19,06	-
Enduris	-	-	8,9	11,4	11,4	11,4	11,8	8,6	-	-
Enexis	-	-	-	5,8	8	8,3	8,1	9,9	10,9	11,5
Liander	-	-	7	5,6	5,9	4,5	3,9	5,6	6,5	-
Rendo	-	-	-	-	-	-	10,7	12,4	12,9	14,6
Westland	5,6	6	6,5	7,3	7,5	9	14,2	12,7	15,1	-

Table E.5 FFO / Debt (%), per network operator

Operator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Coteq	-	-	-	-	-	18	18	18	18	-
Enduris	-	-	19	27	25	25	20	17	-	-
Enexis	-	-	-	33	34	30	26	25	27	23
Liander	-	-	16	16	16	13	10	15	15	-
Rendo	-	-	-	-	-	-	27	26	26	25
Stedin	-	-	-	-	-	-	-	12,2	11,7	12,3

Table E.6 Debt / Capitalization (%), per network operator

Opera tor	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Coteq	-	-	-	-	-	41	39	45	43	-
Enduris	-	-	53	47	45	43	44	43	-	-
Enexis	-	-	-	33	32	33	36	37	36	39
Liander	-	-	65	66	66	66	68	59	61	-
Rendo	-	-	-	-	-	45	54	54	57	57
Westland	52	54	54	52	54	47	45	45	46	-

Appendix F Information sources

For the analysis of the performance of the energy-distribution operators, we have used the following sources from the websites of the respective organisations:

1) Annual Reports of network operators:

Coteq:	Annual Reports 2016-2018
Enduris:	Annual Reports 2012-2018
Enexis:	Annual Reports 2009-2019
Liander:	Annual Reports 2009-2018
Stedin:	Annual Reports 2009-2018
Rendo:	Annual Reports 2014-2018
Westland:	Annual Reports 2017-2018

2) Quality and Capacity Documents of a number of Network Operators.

3) Tariff decisions regarding the gas and electricity distribution operators, published by the ACM.

The Dutch energy-distribution network operators have been subject to sector-specific regulation for about two decades. The objective of the regulation of these firms, which have regional monopolies, is to stimulate them to operate more efficiently, while the users of their networks should have access to the networks at reasonable conditions and the quality of the performance of the networks should remain at a high level.
Although the regulator as well as the operators publish about the performance of the network operators annually, a systematic long-term overview of this information is lacking. The objective of this policy paper is to provide this overview, and by doing so, to contribute to the transparency about the effectiveness of the regulation of the energy-distribution network operators.

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