Performance of drinking water companies in Belgium, England and the Netherlands: a quick scan

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June 21, 2007

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Summary and conclusions

At the request of The Association of Dutch Water Companies (Vewin), SEOR-ECRi has compared the main performance indicators of drinking water companies in England (and Wales), Belgium and the Netherlands. The most important findings of this ‘quick scan’ can be summarized as follows.

- With respect to general indicators, the first observation is that the average number of connected properties per company is highest in England and lowest in Belgium. By contrast, the average number of employees per connected property is highest in Belgium and lowest in the Netherlands. The percentage of metered properties is highest in Belgium and the Netherlands, England companies lag in this respect clearly behind.
- As far as financial indicators are concerned it turns out that, after correcting for a relatively high groundwater tax imposed in the Netherlands, the average water bill is highest in England, followed by Belgium. The average price per m^3 of drinking water is highest in Belgium and lowest in the Netherlands. As for individual cost items, cost of capital and depreciation are higher in England compared with the Netherlands. The average investment level in euros per m^3 is clearly lowest in Belgium, while water companies in England invest more than the Dutch companies. Although differences are minor, solvability is on the average highest in Belgium and lowest in the Netherlands.
- Concerning water quality, it seems that England and the Netherlands do not differ much: in both countries, almost all tested samples meet the prescribed norms. With respect to infrastructure it is important to notice that leakages in England are significantly higher than in the Netherlands or – to a lesser degree - in Belgium.

Although as a result of differences in definitions and country-specific, exogenous conditions the above comparison must be treated with caution, the results seem to confirm earlier findings in this area. In our view, one can therefore draw a *tentative* conclusion that the Dutch drinking water companies perform relatively well as compared to companies in England and Belgium. However, given the inevitable limitations of this ‘quick scan’, more detailed research is required. Important topics which should in any case be considered are: the possible impact of (exogenous) country- and company specific factors affecting the costs of water companies, analysis of the investment level in relation to the quality of infrastructure, the measurement of quality and finding more reliable (cost) data for the Belgian water industry.

1. Introduction

This report compares, at a request of The Association of Dutch Water Companies (Vewin), the main performance indicators of drinking water companies in Belgium, England[1] and the Netherlands. This 'quick scan' has been carried out on the basis of publicly available information and own data sets of Vewin. The analysis refers to the year 2005 for England[2] and the Netherlands and 2004 for Belgium[3], unless specified otherwise. For England and the Netherlands the report generally uses data for all companies. For Belgium, only data for the thirteen largest companies are used. The reason is that many companies are very small and thus less suitable for an international comparison like this one.[4]

Before proceeding with the data, we want to stress that the comparison presented in this report must be treated with caution. Mainly as a result of (sometimes significant) differences in definitions and country-specific (exogeneous) factors, the comparisons are meant in the first place as a global indication of possible differences. For a more detailed comparison, further research is necessary.

Section 2 gives an overview of a number of general indicators. Section 3 focuses ons ome financial parameters. Section 4 pays deals with the differences in water quality and the condition of the infrastructure.

2. General indicators

Figure 1 shows the average number of connected properties per company, based on SEOR (2006) en Ofwat (2007a).[5] For the Netherlands, both the number of technical and administrative connections are known. This distinction is not made in England data. For that reason we chose to use technical connections only.[6] It turns out that the average number of connected properties is much higher in England than in the Netherlands. The largest company is even more than twice as large. By contrast, the smallest company is smaller than in the Netherlands. Belgian companies are even smaller. In spite of the fact that we used data on the 13 largest companies, the average as well as minimum and maximum are much smaller than in the Netherlands and England.

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[1] In this report England is in fact England and Wales.

[2] In England it is customary to work with reporting years running from April till March. Unless specified otherwise, the report uses data covering the period from April 1st, 2005 till March 31st, 2006.

[3] Data for Belgium come from publicly available annual company reports, unless specified otherwise.

[4] Belgian companies whose data has been used have at least 35,000 connected properties (half the smallest size of companies in England and the Netherlands). These thirteen companies encompass 93% of all connected properties and deliver 92% of all water in Belgium.

[5] Numbers from this source refer to the reporting year 2004-2005.

[6] For England, the definition of the number of properties connected as used by Ofwat resembles most the Dutch definition of technical connection. There are, however, some differences. For instance, multiple-household buildings are treated as single non-household buildings. In the Netherlands, the average number of administrative connections (605,000) is higher than the number of technical connections (517.000).

Figure 1. Connected properties (*1000)

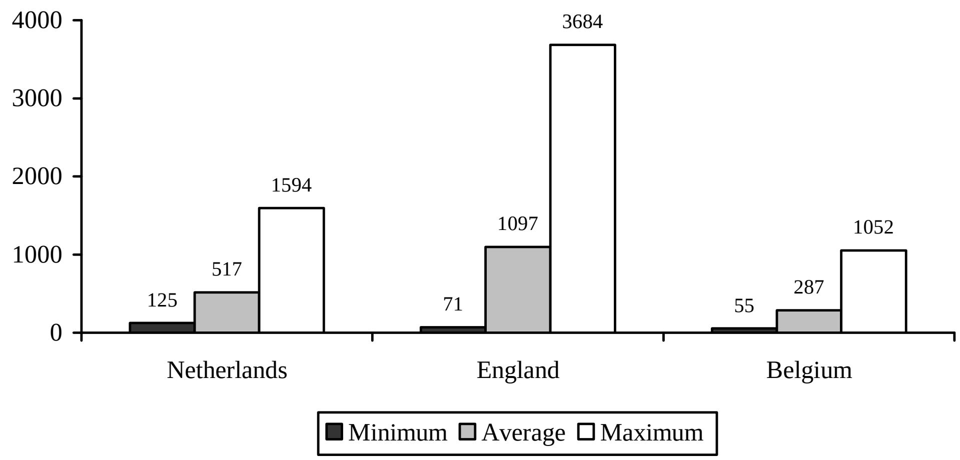


Figure 2. Employees per 100.000 connected properties.

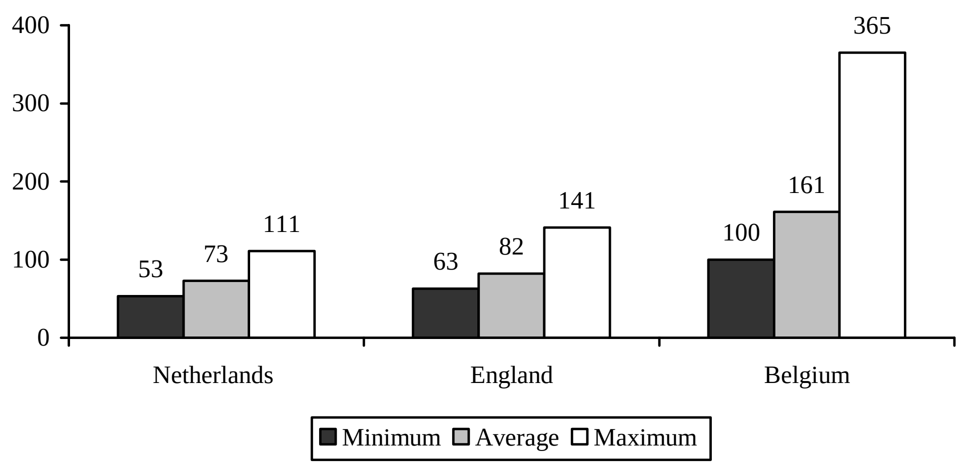


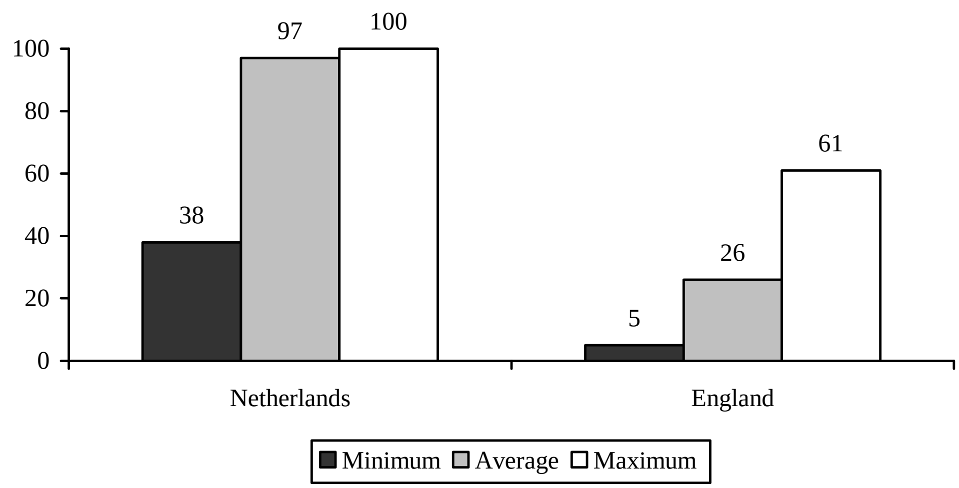
Figure 2 shows the number of employees per connected property, based on SEOR (2006) and Ofwat (2006a). On average, water companies have 5,287 employees. This means 73 employees (fte) per 100,000 connected properties. There is a large difference between companies with the highest (111) and lowest (53) number of employees. This difference could be explained by outsourcing policy, which makes this comparison between companies somewhat misleading. For instance, the company with the lowest number of employees has outsourced its invoicing completely. The number of employees in England is somewhat higher, with an average of 82 per connected property.[7] The minimum and maximum are also higher for England. In

[7] Two remarks have to be made here. First, the data for the Netherlands refer to full time equivalent (fte), while for England and Belgium it is not clear whether fte or the number of persons are involved. Second, England data refer to 'water-only companies' alone, as for the integrated water-and-sewage companies we

Belgium, the number of employees is much higher.[8] These findings confirm the conclusion of De Witte and Marques (2007) that the efficiency of drinking water companies is somewhat higher in the Netherlands than in England and that Belgian companies are least efficient. [9]

Figure 3 shows the percentage of metered households, based on SEOR (2006) and Ofwat (2007a). This percentage is much lower in England than in the Netherlands. Even the company with the highest proportion of metered properties (61% of technical connections) has a lower proportion than the average for the Netherlands. In Belgium almost all connected properties are metered, although exact data are not available. The Antwerpse Waterwerken is an exception. This company still has a relatively large proportion of non-metered properties, but it is catching up.

Figure 3. Percentage of metered properties



3. Financial indicators

Figure 4 shows the size of an <u>average annual bill</u> per household in euros, based on Ofwat (2006b), Vewin (2006) and own calculations for Belgium.[10,11,12] The average

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do not have data excluding sewage treatment. No data are available for four of the considered Belgian companies.

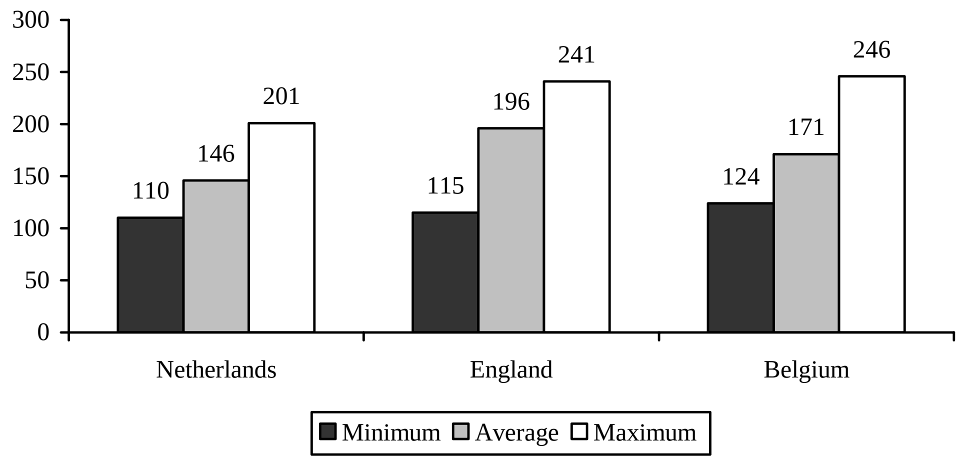
[8] In Belgium there is a noticeable tendency to take over sewage tasks from local municipalities. This is, however, a recent trend. Restricting attention to water-only companies does not lead to different conclusions about the number of employees per 100,000 of connections.

[9] The study does not carry out efficiency analysis on the basis of costs, but it compares the amounts of inputs (number of employees and the length of network) and outputs (volume of produced water and the number of connected properties).

[10] The amounts include cost-increasing taxes such as ground water tax and corporate income tax but exclude VAT, the Dutch water tax and Belgian (supra-)municipal sewage treatment contributions.

bill in England is higher than in the Netherlands. The Dutch and English companies with the lowest average bill are comparable, while the maximum is higher in England. The average bill in Belgium lies somewhere in between that in the Netherlands and England. The maximum and minimum are highest in Belgium.

Figure 4. Average houshold bill (euros per household)



In England, an increase in tariffs can be observed. Between 1990 and 2005, the average bill has increased by 34% in real terms. In the Netherlands, the tariff increase between 1990 and 2005 was lower. Tariffs rose here by 12% in real terms. Moreover, most of the increase took place in the first 5 years and since 1999 tariffs have been decreasing.[13] It is important to note that in England bills for metered housholds are lower than for unmetered households. The average difference is 43 euro (Ofwat, 2007b).

Figure 5 shows the price per connected property. This equals the household bill as shown in Figure 4, after subtracting cost-increasing taxes such as the ground water tax and the corporate income tax. In general, conclusions are similar, though the position of the Netherlands improves somewhat due to a relatively high level of taxes in the Netherlands. A striking observation is that the average bill of the most expensive

[11] For Belgium we had to make a number of assumptions, for instance about the average water use per household (102 m3 per year per household). Moreover, these data refer generally to 2006 or 2007. This implies that one should be cautious in interpreting the data.

[12] Obviously, the comparison with England depends on the adopted exchange rate. For that reason one must be cautious when making absolute comparisons. We have adopted the exchange rate of £1 = 1.46 euro. Another possibility is to use the so-called purchasing power parities, which take into account the differences in price level. For 2004 that would result in an exchange rate of £1 = 1.58 euro. This leads to the conclusion that the exchange rate we use is more likely to lead to under- than to overestimation of the actual costs in England.

[13] This has been calculated by multiplying the price of drinking water by the estimated average use and household size, and divided by the yearly increase of consumer prices (CPI), base don Vewin (2006).

English company is now substantially lower, reflecting the fact they it pays more taxes than other companies in England.

Figure 5. Price per connected property (euros)

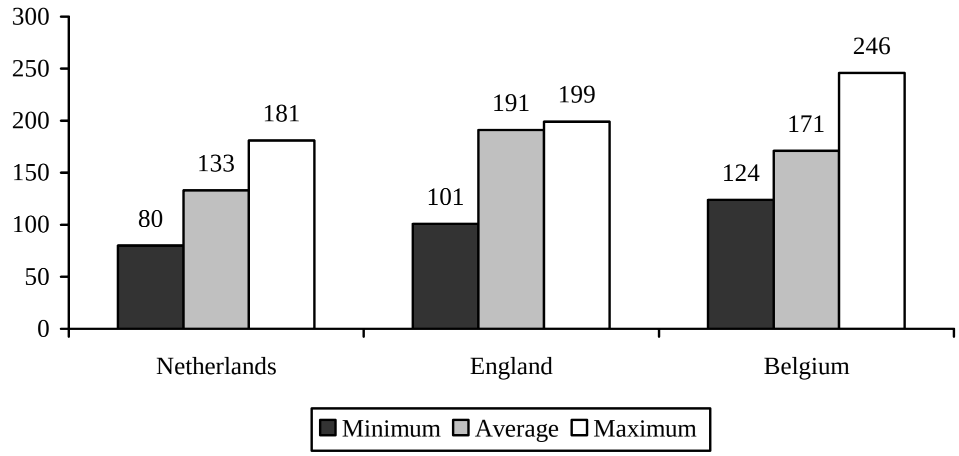
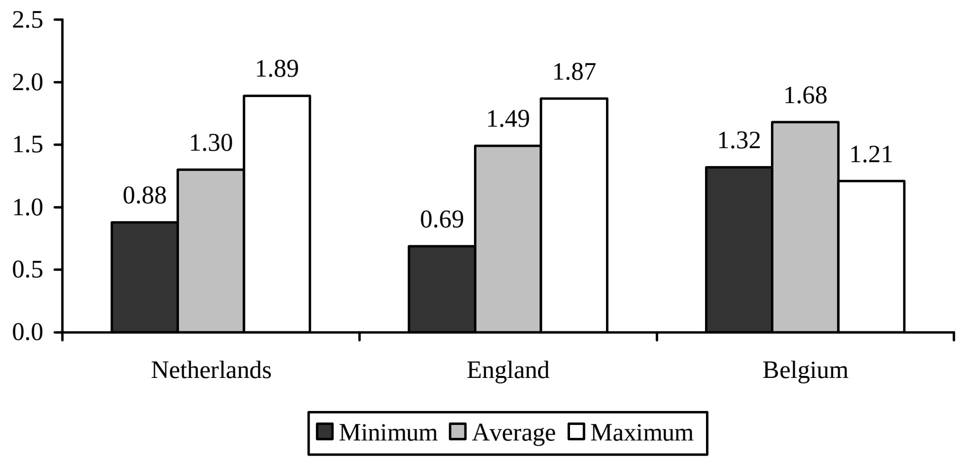


Figure 6 shows the price per m^3. This price is calculated by dividing the average household bill, excluding taxes, by the volume of delivered water (excluding non-billed use). An average household in England consumes 151 litres per person per day in metered households and 169 litres in unmetered households (Ofwat, 2007a). In the Netherlands and Belgium the average daily consumption is about 120 litres. This difference does not seem to be caused by difference in household size, as this is about 2.3 for all three countries. A high proportion of unmetered households in England can play a role here. It is also possible that there are some behavioural differences, e.g. with respect to lawn sprinkling. Since households in England consume more water, the price per m^3 is elatively lower when compared to the price per connected property. Now, England is no longer more expensive than Belgium. The Netherlands remains the cheapest country with the average price 13% lower than in England. Similarly, for determining the cheapest and most expensive company it matters whether we take the price per connected property or per m^3. In Belgium, for instance, the company with the highest bill per connected property has a lower price per m^3 than the company with the lowest bill. Apparently, this company had the highest bill because its water use per connected property was relatively high.

Figure 6. Price per m3 (euros)



Obviously, there are other factors, not included in this analysis, that have an impact on prices and bills. The countries differ in characteristics affecting the costs of water production, such as soil composition, raw water quality, infrastructure density, interest rates and wages. Future research, using more detailed cost data, is required to reveal whether such factors may provide an explanation for the observed price differences.

Table 1. Costs in euros

	Per m3		**Per connected property**	
	Netherlands	**England**	**Netherlands**	**England**
Taxes	0.14	0.04	22	5
Capital	0.27	0.32	43	67
Depreciation	0.27	0.38	42	74
Operations	0.63	0.53	98	105
Total	1.31	1.27	204	251

Sources: Ofwat (2006c, 2007c) and Vewin (2004).
Note: Data for the Netherlands refer to 2003.

Looking at various individual cost items, one observes that in particular the cost of capital and depreciation are higher in England, probably due to the fact that private owners require a higher rate of return (capital cost) and because there has recently been much investment in the water network (depreciation). In addition, different methods of asset valuation can play an important role. In the Netherlands, depreciation is calculated on the basis of historic costs, while in England current (replacement) costs are used. This alone may cause depreciation costs to be 44% higher in England.[14] Moreover, in England firms' assets have been re-valued when

[14] This number is based on the depreciation ratios calculated on the basis of current and historic costs. A more detailed analysis is needed to determine the precise consequences of these accounting differences.

price regulation was introduced. Finally, differences in depreciation periods matter as well.

The costs of operations, in euros per connected property, are comparable. In euros per m^3 delivered the cost is lower in England, due to a higher use per property. There is no ground water tax in England, but companies have to pay corporate income tax. Companies in England pay on the average substantially less tax than Dutch companies, both per m^3 as per connected property. In total, cost per property is higher in England, but cost per m^3 of delivered water is comparable to that in the Netherlands. We do not have comparable information on costs for Belgium.[15]

The costs per process type for the Netherlands and England are not completely comparable, since the cost allocation as well as the definitions of process types, differ. For the Netherlands one can make the following division of the operational costs in 2003 (Vewin, 2004):

Production:	24%
Distribution:	20%
Support:	11%
Sales: :	15%
General	31%

For England the operational costs can be divided into the following items (Ofwat, 2007a):[16]

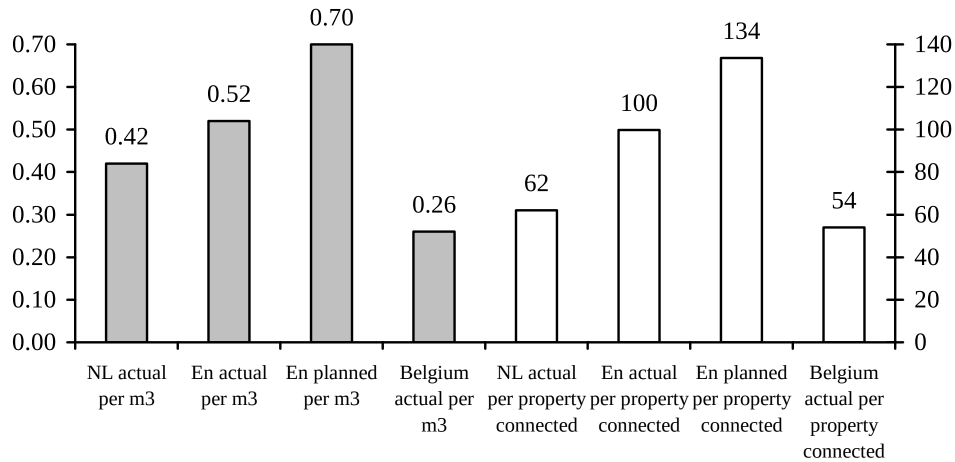
Water resources and Treatment:	33%
Distribution	33%
Business Activity	33%

Taking into account differences in definitions and the possible impact of exogenous factors, one cannot draw an unambiguous conclusion that the production and distribution cost in England and Wales are higher than in the Netherlands, while the other costs are lower. For Belgium there is no information available on the division of costs of operations among process types.

[15] In Belgium it is more common than in other countries that water distribution companies buy drinking water from specialised production companies. For that reason, the division of costs found in company reports is distorted. Operational costs are higher, while the capital and depreciation costs are lower than in England or the Netherlands.

[16] For the division of costs it does not matter much whether one considers costs per m^3 or per connected property. The data used are for the reporting year 2004-05.

Figure 7.Investment in euros



As has already been mentioned earlier, the investment level in England is higher than in the Netherlands (see figure 7). Drinking water companies in the Netherlands invested in 2005 459 million euros (Vewin, 2006), and in England 2,406 million euros (Ofwat, 2006c). Investments in England are 37% higher per m^3 of delivered water, and as much as 59% higher per connected property (see 'En actual' in the figure). This is most likely caused by the bad state of the network in England (Water UK, 2007): 50% of total investment was spent on asset maintenance. In addition, 25% was spent on restoring the balance between supply and demand, given that substantial parts of England suffer from water shortages. Looking at the underlying processes we see that the companies in England invested most (65%) in water distribution, compared to 33% in the Netherlands. One should also keep in mind that the planned investments in England are 34% higher than actual investments. This difference is mainly caused by delays. In Belgium, where the thirteen analyzed companies invested in total 194 million (Annual company reports Belgium, 2005), the level of investment is lower than in the Netherlands.[17]

Solvability, defined as the ratio of equity capital to total assets, is equal to approximately 29% on the average in the Netherlands (see figure 8).[18] In England the average is significantly higher: 42% (Ofwat, 2006c).[19] One has to keep in mind here that due to the differences in asset valuation described earlier, solvability is not directly comparable either. Solvability in the Netherlands would rise if the same asset valuation method were used as in England, because that would increase the value of

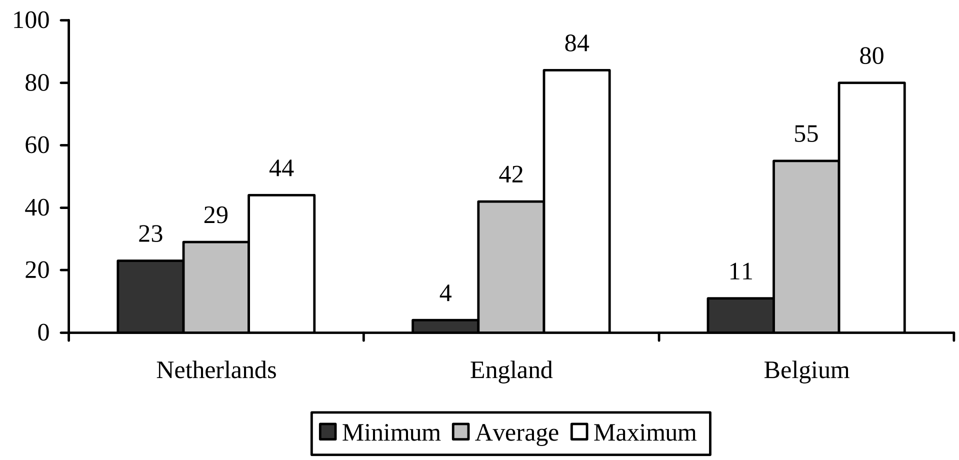
[17] One should treat these data with caution, given that company reports are not always clear on that issue. For instance, investments are often not mentioned separately, but they are combined with acquisitions and re-valuations. This has been dealt with as well as possible.

[18] Data on basis of company reports for 2005. When the item 'contributions of third parties' is included in the equity, then the average solvability increases to 34%.

[19] Solvability is defined in England as 1 minus the 'net debt' (calculated as 'short term debt' plus 'long term debt' minus 'cash & cash equivalents'), divided by the so-called 'regulatory capital value' (RCV).

equity as compared to debt. Dispersion of solvability is much higher in England than in the Netherlands. For six companies, the share of equity capital was lower than 25%. Although water companies in England and Wales are completely privately-owned and listed on the stock exchange, this low solvability does not lead to problems with the financing of investments (Ofwat, 2006d). In recent years there has been a clear trend to make more use of debt. For instance, in 2001 solvability was equal to 49%. By contrast, in the Netherlands the opposite trend is visible. There, solvability in 2003 was equal to approximately 20% (Vewin, 2004). Even the company with the lowest solvability has a higher score in 2005.[20] In Belgium, the level of solvability, defined as equity capital divided by total assets, was in 2005 on the average higher than in the Netherlands or in England.[21] The numbers are, for as much as possible, corrected for differences in asset valuation methods between Belgium and the Netherlands.[22]

Figure 8. Solvability



4. Water quality and the condition of the infrastructure

As for <u>water quality</u>, 99.96% of samples in England satisfied the prescribed norms (Ofwat, 2007b). For the Netherlands, this number equals to 99.91%, calculated as the

[20] We abstract here from the exceptional situation of Waternet, which in 2005 was completely financed by the Amsterdam municipality.

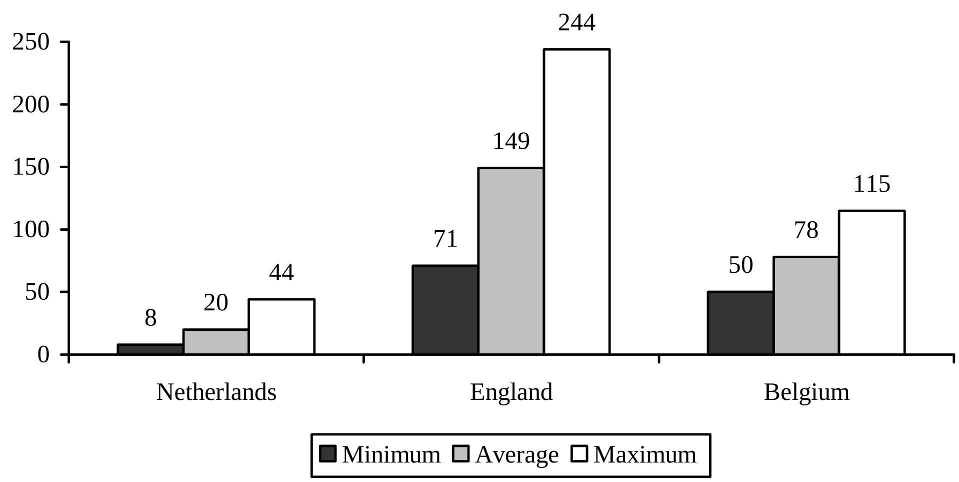
[21] For four (relatively small) companies out of thirteen no data are available. .

[22] At present, depreciation in Belgium is calculated on the basis of historic cost. However, until 2003, assets were yearly revalued using replacement cost method. For this reason, the book value of assets is higher than in the Netherlands. The revaluation reserves, created in the past, are in many cases still present and thus we have subtracted them from both the equity capital and total assets.

unweighted average of all parameters except the saturation-index[23] (VROM, 2006).[24] The saturation norm is most often exceeded: including this parameter, the total percentage of samples exceeding the prescribed norms is 0.4%. Belgium has adopted the European maximum allowed values. Supervision is delegated to water companies themselves. The Flemish Environmental Association (Vlaamse Milieumaatschappij, VMM) is responsible for controlling drinking water quality. We do not know of any publicly available information on this topic.

The average yearly number of bursts per 1,000 km of water supply network in England is equal to 229 (Ofwat, 2007d).[25] This number is equal to 80 for the company with the lowest number of bursts, and 468 for the company with the highest number of bursts. No information on this quality item is available for the Netherlands or Belgium.

Figure 9. Leakages (litres per property connected per day)



The leakage per property connected is shown in figure 9. Data originate from Ofwat (2006e) and from Vewin. It is not clear how the different definitions of leakages are related to one another. For England, Ofwat reports numbers of litres of water actually defined as leakages. For the Netherlands and Belgium, the data refer to 'unbilled use'. This definition is generally broader, since it includes not only leakages but also water

[23] Note that these are not European norms for water quality and that the norm is not based on health considerations. The saturation index (SI) is a measure of water aggressivity towards the material from which the pipelines are made. A low SI, frequently encountered in ground water, can damage pipelines.

[24] Obviously, norms can differ between countries. Within the scope of this research it was impossible to correct for this structurally. A comparison of ten available norms for both countries (on the basis of VROM, 2006 and DWI, 2006) shows that in six cases norms are the same (clostridia, iron, colour, manganese, nickel and turbidity), in one case the norm is more strict in England (broom dichloromethane) and in three cases the norm is more strick in the Netherlands (ammonium, chloride, nitrite).

[25]There has been no decreasing or increasing trend in the last thirteen years. The average over this period is 217 bursts per 1,000 km.

used by e.g. fire service and water that is used but which cannot be billed for technical reasons. For this reason, leakage in Belgium and the Netherlands is probably lower than the presented data suggest. The company with the worst score in the Netherlands has still a leakage lower by 37 litres than the company with the best score in England. The worst scoring company in England has a leakage of as much as 244 litres per connected property per day. This much higher leakage is not caused by a longer network in England (on the average 14 metres per connected property in England, 16 metres in the Netherlands and 21 metres in Belgium). One should note here that leakage in England has been reduced by 35% since 1989 (Ofwat, 2007b). In Belgium, leakage is somewhere between the Netherlands and England.[26]

[26] Two companies with an exceptionally high share of business customers have been excluded, because a relatively low water use by households results in unrealistically high leakages per property connected.

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