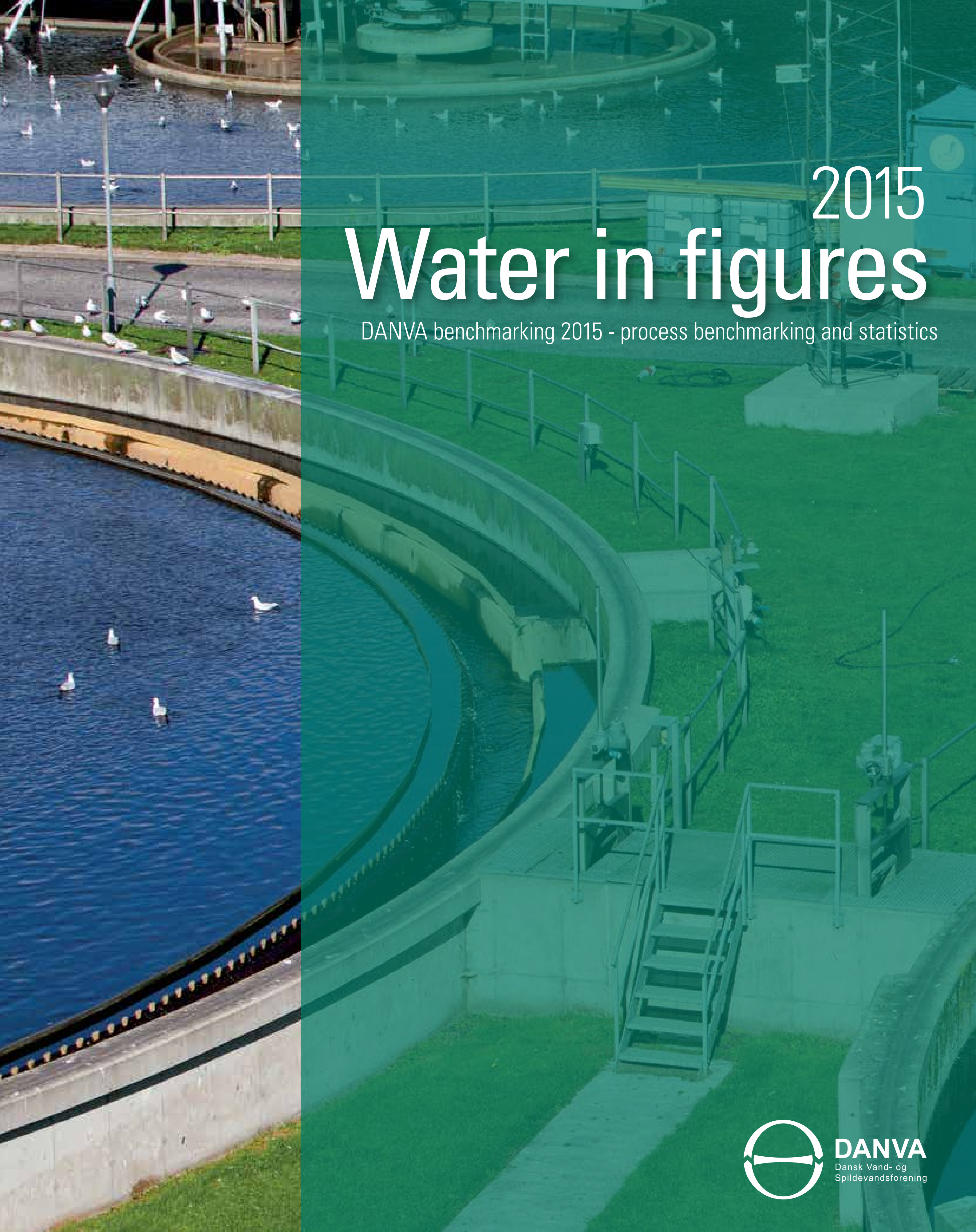


2015

# Water in figures

DANVA benchmarking 2015 - process benchmarking and statistics

DANVA
Dansk Vand- og
Spildevandsforening

# Water Utilities
## letting investment flow, keeping prices low

Danish water companies are looking to the future with an eye on new legislative conditions. The results are impressive as costs remain low and efforts to develop upgrades continue. DANVA's latest key figures and ratios for the water sector, "Water in figures 2015", demonstrates this accomplishment.

DANVA's members have accepted responsibility in areas of health, the environment, climate adaptation, reliability of supply and technological development. At the same time they are investing billions of Danish crowns into society, creating jobs in the water sector in particular, employing consultants, entrepreneurs, suppliers and others. The water companies' efforts to achieve more efficiency advances their mission from the 00s to lower costs as much as possible, whilst undergoing renewal, growth and development. A comprehensive plan to keep costs low, implement efficiency enhancement and optimisation—by their own initiative rather that state-mandated—deserves credit for these achievements.

"Water in figures 2015" shows that the average price of water rose on average a mere 0.9% in 2014 compared to the previous year, a rate just slightly above inflation.

Operating costs for drinking water companies fell 5.2% versus 2013, whilst investment jumped 15%. Investment in infrastructure, has especially increased due to construction of several new water works around the country.

Operating costs for water water companies fell 2.9% over the previous year and, just like drinking water companies, investment increased by 15%.

Total consumption in 2014 by households, corporations and organsiations and including losses was 65.41$m^3$ per person per year. This represents an increase of more than 3% and can be accounted for by businesses growing consumption as Danish households continue to use less.

In the last 10 years, Danish households have used 15% less water, corresponding to an average individual rate of 38.8$m^3$ per year per year or 106 litres per day. Household consumption accounts for 64% of total amount of water sold.

The companies included in DANVA benchmarking together manage 1,853 water abstraction shafts, 242 water works, 533 treatment plants and nearly 100,000 km of supply and sewerage pipelines. It's enough to encircle the earth twice.

Utilities are one of the most important foundations of our society's structure. This responsibility has not diminished since the separation of authority and operation in 2010. The water companies participating in the DANVA benchmarking system show that, with targeted and effective controls, they fully satisfy the expectations of citizens, authorities and legislators.

DANVA's members have striven to utilise the opportunities that today's changing reality have made available.

Have a good read.

*Carl-Emil Larsen,*
*Managing Direktor DANVA*

### Benchmarking for efficiency

Benchmarking is a tool for identifying performance and optimising working processes and methods by learning from 'best practices'. A total of 131 drinking water and waste water companies have participated in DANVA's 2015 benchmarking work, using data from 2014. These companies supply approximately 55% of the Danish population with clean drinking water and treat waste water from approximately 78% of the population.

### Key figures

- The average price of one litre of water is DKK 0.063.
- Average household water consumption is 106 litres per person per day.
- The drinking water companies' average operating costs were DKK 4.39 per $m^3$. Investments totalled DKK 6.2 per $m^3$.
- The waste water companies' average operating costs were DKK 10.35 per $m^3$. Investments totalled DKK 22.21 per $m^3$.
- The electricity consumed in respect of 1,000 litres of tap water supplied, treated and discharged to the receiving environment is 1.88 kWh. Of this, 0.44 kWh is used for the production and supply of drinking water, and 1.44 kWh used for transporting and treating waste water. This electricity usage corresponds to approx. 1.0 kg $CO^2$.

*(Data for 2014)*

# Information
## about the price of water

### What is the price of water?
This depends on the water company you have. Contact your local water company to find out more about prices. On average, water costs DKK 0.063 per litre.

### How to we arrive at this price?
The price of water is derived from five elements:
- A fixed contribution for drinking water
- The drinking water price per cubic metre
- A fixed contribution for waste water processing
- The price of waste water treatment per cubic metre
- VAT and other taxes

### Why does the cost of water vary?
There is a big difference between the lowest and the highest prices charged by water companies. The reason for the difference in water prices is due to a number of factors.

### Structural differences:
- Supplying water-consuming industries can be relatively cheap when compared to the cost of supplying small customers, for example holiday cottages.
- Geological factors can make it more expensive to pump water up in some places than in others.
- In some areas, investments have had to be made in new well-drilling spots, due to contamination.
- The intensity of waste water treatment depends on the receiving environment.
- Decentralised waste water treatment is more expensive than central waste water treatment.
- The older the waterwork, the more maintenance required.
- Environmental circumstances may vary.

### Politically determined differences:
- Different companies pursue different investment policies. At the moment, many companies are investing in new sewers in order to be able to address the consequences of climate change.
- Several drinking water companies are investing considerably in groundwater protection.
- Service levels may vary.
- There may be differing degrees of reliability supply.

# What is the price of water?

”What does water cost?” This is a good question and one we at DANVA often get asked. Another questions is: "why does water cost what it does?" Answers to both these interesting questons will hopefully be provided in the following article.

The price of water is not the same everywhere in Denmark. The price of water depends on the amount consumed. The reason for the disparity in pricing based on volume is due to price components, which can vary from one utility company to the next. Some companies have choosen to charge a fixed annual contribution for water and/or waste water and a price per cubic meter for water consumed, whilst others charge only for the water used.

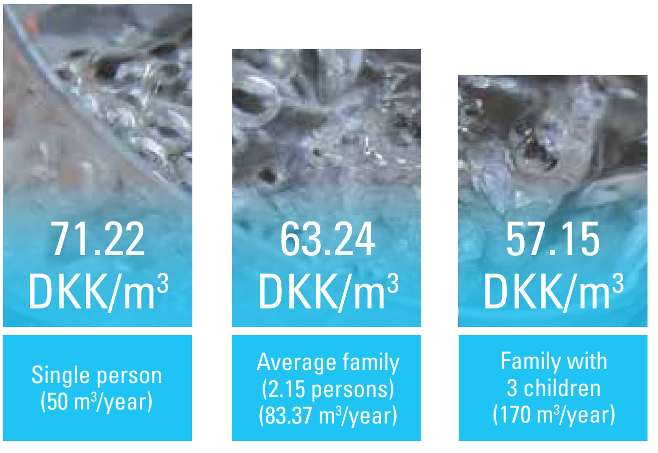
The average price of water therefore depends on average consumption. Because fixed annual groundwater tariffs are calculated by household (rather than per person, for example) it is practical to use the average price a typical household pays.

The average household consumes around 83.4 m$^3$ water each year (equal to 106 L per person per day), yielding an average price of DKK 63.24 per m$^3$ water. We can discern from this that water costs a Danish household on average almost DKK 5,300 a year. This is equal to DKK 0.063 for every litre of water.

For a person living alone the average price for water is slightly higher at DKK 71.22 per m$^3$ based on consumption of 50 m$^3$ of water per year, while the price is lower for a family with 3 children at DKK 57.15 per m$^3$ based on a year’s consumption of 170 m$^3$.

If the company charges solely on the basis of usage, the price will be the same in all three examples. The average price for a typical family increased 0.9% over the previous year.

Average water price based on consumption, 2014, DKK/m$^3$




Average compiled from 214 water supply companies and 96 waste water companies. The price includes VAT and other taxes.

# Why does water cost what it does?

To discover why water costs what it does, you need to know what you pay for the water you use. One pays for the water one uses; in other words, the water drawn from the tap, used in the shower, to flush the toilet, etc. From the bill paid by the consumer, waste water companies receive about half, the state gets around 30% in the form of VAT and other taxes; drinking water companies take the roughly 20% that is left.

The money we pay for water is distributed to both supplying clean drinking water as well as to the treatment of water we send back through the sewer systems. The money is also used to treat rainwater that falls on our roofs and is collected on public roads and other areas: it is the waste water companies that manage this task. Finally, some of the income from our water bills go to the state in the form of VAT and other taxes.

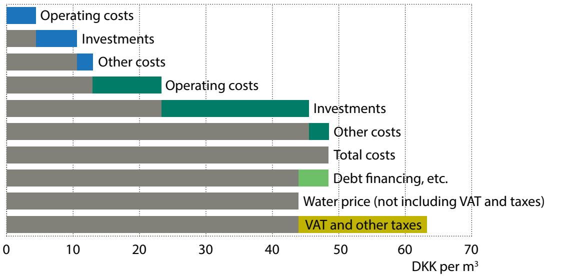
Both drinking and waste water companies use revenue to cover costs and to finance investment. In actual fact these companies require less money then they use because they borrow capital to finance some of their investments held in banks. Utilities do this to prevent violent fluctuations to the cost of necessary investments.

Herein lies one of the reasons why water is priced differently in different regions of the country. There is, in fact, quite a difference in operating costs for supply and transport of potable and waste water for different companies. There can be several reasons for this: there could be structural factors at work like geological or geographical; the number of water intensive companies in a locality; and the number of local waterworks and treatment plants. Political decisions will also affect pricing. The ladder model of pricing, for example, provides rebates for large companies but higher prices for households in addition to a different service level and reliability of supply.

Furthermore, different levels of investment also impact pricing. The amount a particular company has leveraged its investments will, too, affect what it bills. The age of a company's assets or the need to adapt to climate legislation like building separate sewer infrastructure will equally incur price changes. It is worth noting, finally, that financing of investments alter pricing. As a company borrows from its own assets, consumers' payments are spread out over time instead of having to imposes tariffs on customers to finance development.

There are obviously several other factors that affect the price of water set by a particular provider. In the following piece we have attempted to flesh out the most relevant ones.

## Configuration of water prices

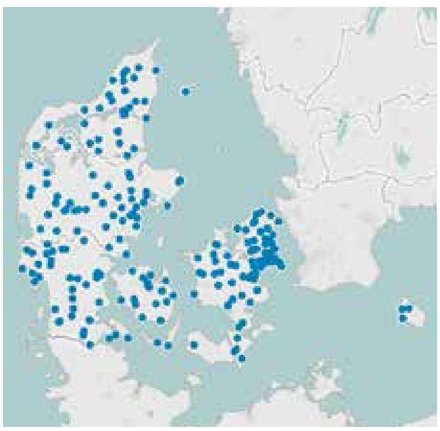



The average price of water including VAT and other taxes is 63.24 DKK/m³ for a typical household. When viewing the figure from left to right it is illustrated how water is priced at 63.24 DKK. First, 4.39 DKK/m³ go to operating costs for supplying clean drinking water (the blue column shows drinking water and the green represents waste water). Next, 6.2 DKK/m³ to finance drinking water companies and other costs (interest payments on debt, for example) amounting to 2.35 DKK/m³. Operating costs for treatment of waste water accounts for 10.35 DKK/m³, while 22.21 DKK/m³ is spent on investments. Waste water companies claim 2.97 DKK/m³ for other costs.

All things being equal it costs 48.46 DKK/m³ to supply clean drinking water and to treat waste water. Of that sum, 4.51 DKK/m³ is financed by deferring debt and deficits to the following year (represented by the light green column). The price of water, excluding VAT and other taxes (those that cover the collective operative costs minus the financing of debt) is, thus, 43.95 DKK/m³, of which 44% or 19.29 DKK/m³ are VAT and taxes claimed by the state. In this way, the total price of water, including VAT and taxes, adds up to 63.24 DKK/m³.

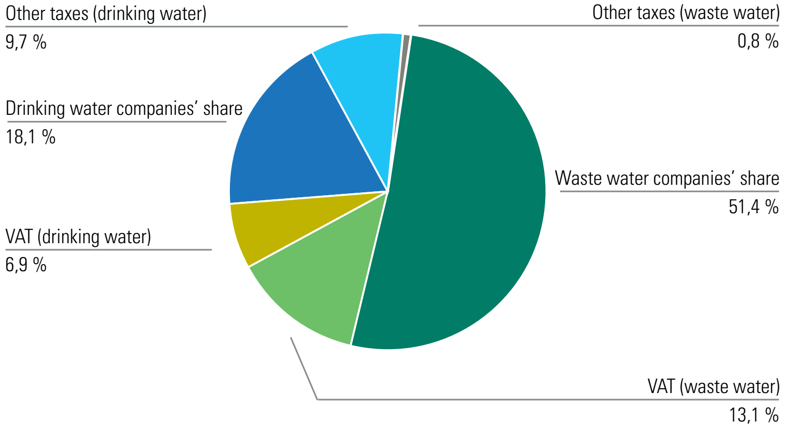
# Water prices in **Denmark**

An interactive map can be found on DANVA's website illustrating water pricing by the utilities, subject to the Danish Water Sector Act (Vandsektorloven). The map offers examples for the price of water for typical households 50m³, 83m³ and 170m³, showing both drinking water and waste water prices. The map can be found by searching for "Vandpriser på danmarkskort" at www.danva.dk.



# Configuration of water prices

Configuration of water prices, 2015



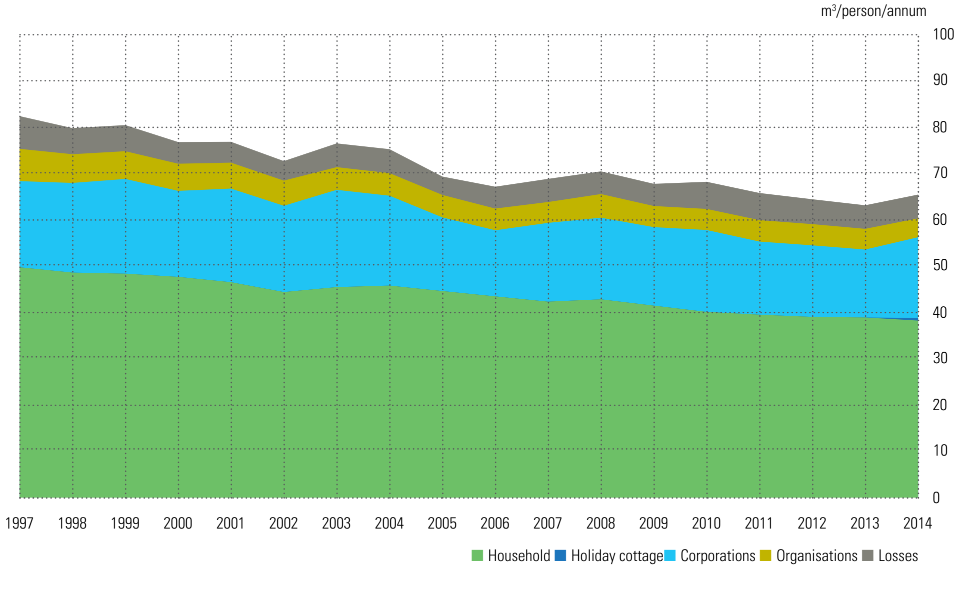

Of the total water price, 18.1% is paid to the drinking water company, 51.4% to the waste water company and 30.5% to the state in the form of VAT other taxes. The average water price can be split into the price of treating and supplying clean drinking water; and the price of collecting and treating waste water and returning it to the environment. Processing and the supply of clean drinking water comprises groundwater protection, pumping, processing and the supply of clean water which totals DKK 21.97, corresponding to 34.7% of the total price. Collecting water in sewers, treatment and discharge totals DKK 41.27, corresponding to 65.3% of the total price. The prices include VAT and other taxes. Income from water sales is made up of fixed contributions (33%) and variable usage (67%). For the waste water companies, 11% of their income stems from fixed contributions and 89% from vari-able contributions.

# Increase in water usage by businesses

In 2014, the total average water consumption by households, corporations and institutions, including losses, was 65.41m³ per person per year. This corresponds to an approximately 3% increase on 2013 usage. The increase stems from commercial consumption, whereas household usage continues to fall.

Households account for 64% of total water volumes sold. Each person uses an average of 38.8m³ per year in the household, or 106 litres a day. Over the past 10 years, household water usage has fallen by 15%. Since 2014, "holiday cottage" has become a new category of consumption, adding to calculations for total household usage.

Development in water usage, 1997-2014

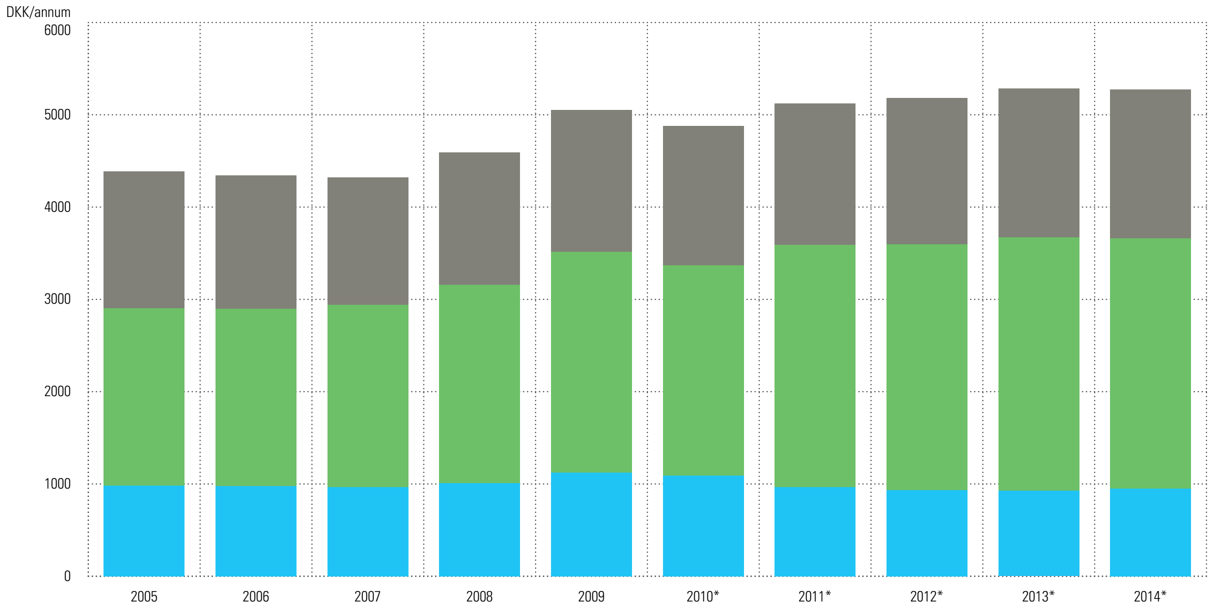


# Water costs
# in the domestic budget

For a little more than DKK 5,000 a year, an average family of 2.15 people can be supplied with fresh, clean and monitored drinking water from the tap, whilst also having its waste water collected, treated and returned responsibly to the environment. Some of these costs also go towards climate adaptation.

After a slight increase in customer water prices from 2013 to 2014 coinciding with a slight fall in average per person usage of water, the total water bill for an average family is 5,272, or a decrease of DKK 14 compared to the previous year.

### An average annual household's annual water bill (2014 prices)




*New method for calculating water prices

# Work areas of the water companies

Danish water companies manage the majority of the water system's daily operations. This includes groundwater recovery, distribution of clean drinking water to the public, conveyance and sanitation of waste water to prevent runoff into lakes, streams, the ocean, as well as the treatment of rainwater.

In the last few years water companies have been investing heavily into climate adaptation. These upgrades include waste water reservoirs to catch and contain stormwater to prevent spillage until treatment plants regain capacity. Rain water reservoirs are another example of solutions to cope with extraordinary amounts of rain and to prevent sediments from seeping into rivers and lakes. Rainwater can thus be harvested locally and reintroduced into the ground by direct application.

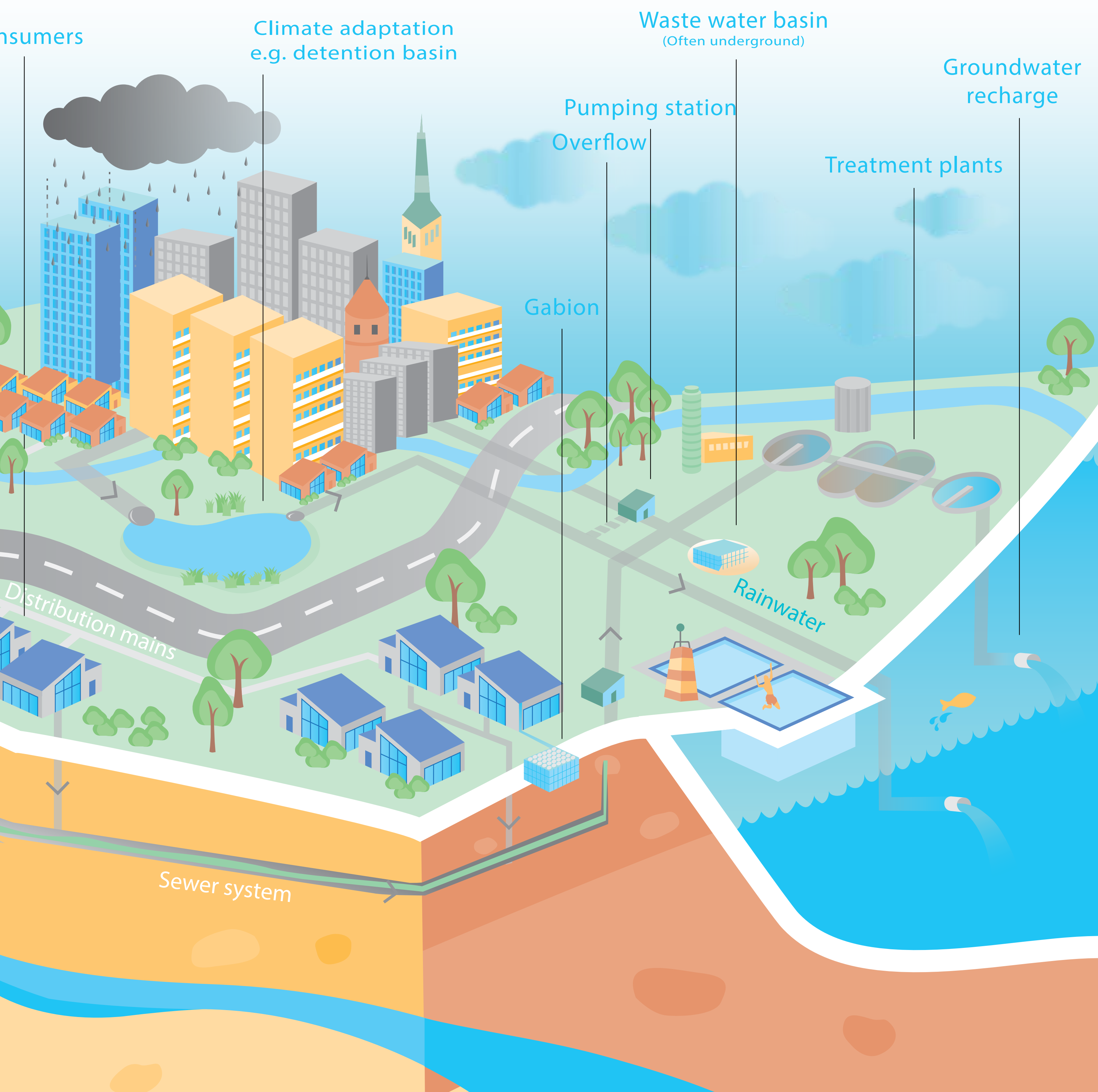
The water industry by numbers, for companies governed by the Danish Water Sector Act looks like this: (volume of water >200.000 m³ - data from 2014).

| Drinking water | |
|---|---|
| Number of companies* | 220 |
| Abstracted water volume (m³) | 283,992,050 |
| Number (quantity) | 1,124,698 |
| Clean water piping (km) | 44,083 |
| Meters (units) | 1,226,843 |

* Statistics used apply to 211 drinking water companies

| Waste water | |
|---|---|
| Number of treatment plants | 674 |
| Incoming water volume (m³) * | 703,993,508 |
| Rate of organic load (Person equivalent, PE) | 8,427,104 |
| Sludge (tonnes) | 128,363 |
| Number of companies | 111 |
| Number of household pumps (units) | 17,920 |
| Pumping stations (units) | 16,393 |
| Rain water reservoirs (units) | 4,985 |
| Waste water reservoirs (units) | 1,825 |

* These values are estimates gleaned from average PE per m³ (incoming)
Source: Supply Secretariat, Results Oriented Benchmarking 2016, Appendix 2 and 3.


nsumers
Climate adaptation
e.g. detention basin
Waste water basin
(Often underground)
Groundwater
recharge
Pumping station
Overflow
Treatment plants
Gabion
Rainwater
Distribution mains
Sewer system

# Drinking water companies
## included in DANVA benchmarking

In 2015, 58 drinking water companies carried out DANVA benchmarking. The figures stated relate to the year 2014. Together, the companies manage 1,853 water abstraction shafts, 242 water works, approximately 27,800 km of supply pipelines and approximately 716,000 service pipes. Participating companies represent approximately 206 million m³ of abstracted water and supplied at least 3.1 million people. Their total costs excluding taxes totalled approximately DKK 2.4 billion. (See an overview of the participants' key figures at the end of this publication).

### Drinking water companies' operating costs continue to fall

Figures for drinking water utilities show a cost of DKK 4.39 for each cubic meter of water sold, which represents a 5.2% decrease over the previous year. Operating costs are subject to efficiency requirements according to the Danish Water Sector Act and they form the basis for benchmarking the efficiency of the companies. Operating costs are not including VAT and other taxes, 1:1 costs, environmental and service goals, associated activities and depreciation and amortisation. The operating figures show a DKK 0.81/m³ or a 15.5% fall between 2010 and 2014.

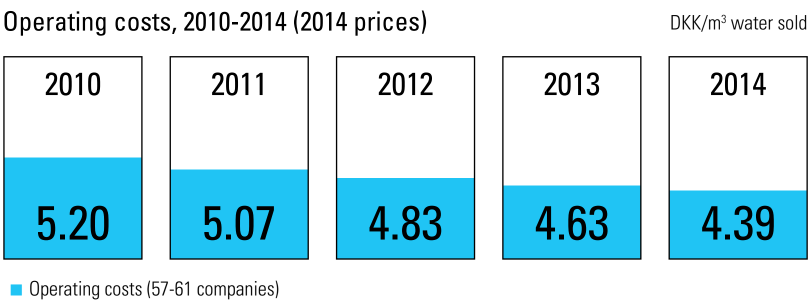
### Investment continues to rise

Figures for drinking water companies show they invested DKK 6.2 for each cubic meter, which represents a 15% increase over last year. There is a trend of steady investment between 2010 and 2014, one which is expected to continue in the coming year.

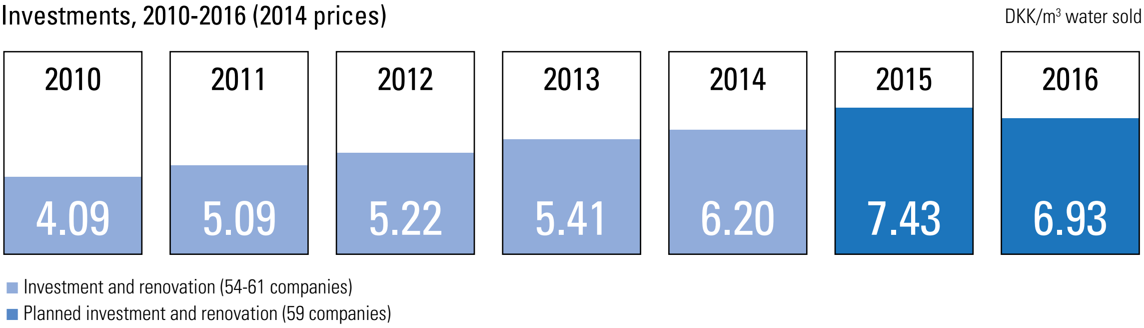
### Breakdown of costs and investment

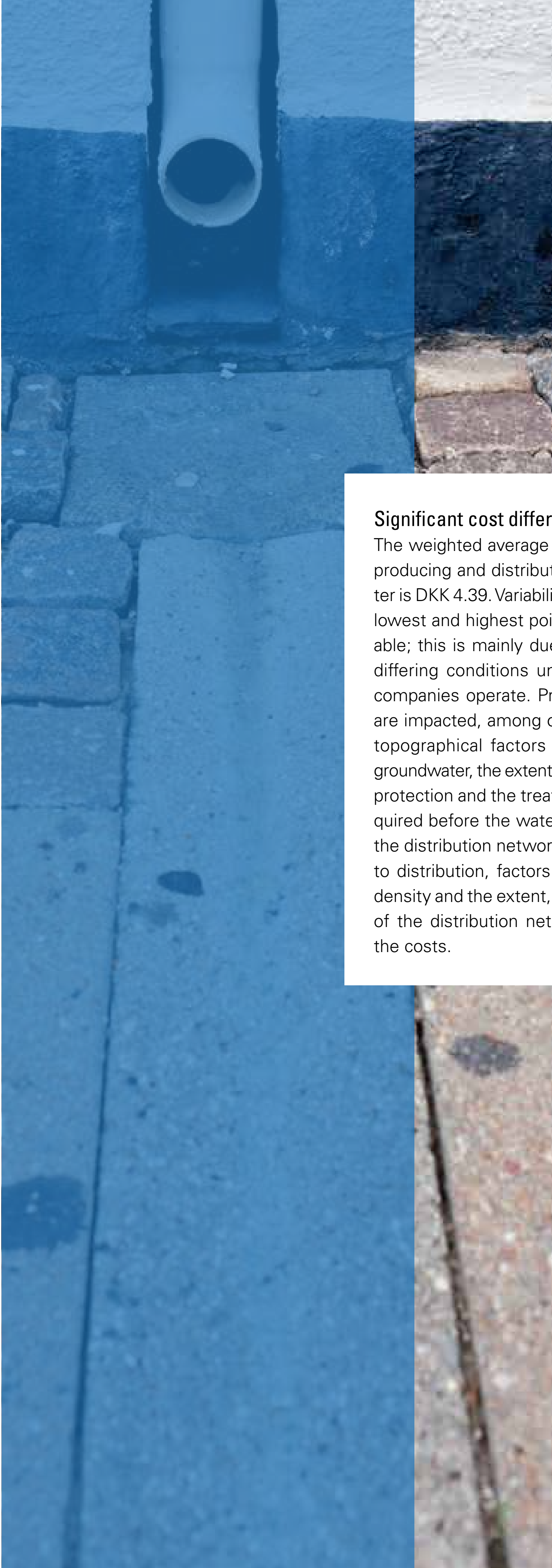
Drinking water companies spent 47% of operating costs on the production of clean water and 39% on distribution to customers. They allocate 14% of operating costs to customer service. Investment is divided between investment in and renewal of the distribution network (62%) and boreholes and production facilities (32%). The remaining 6% goes to other investments. The rate of investment in drilling and production facilities jumped from 19% to 32% due to the construction of new water works.

Operating costs, 2010-2014 (2014 prices)




Investments, 2010-2016 (2014 prices)

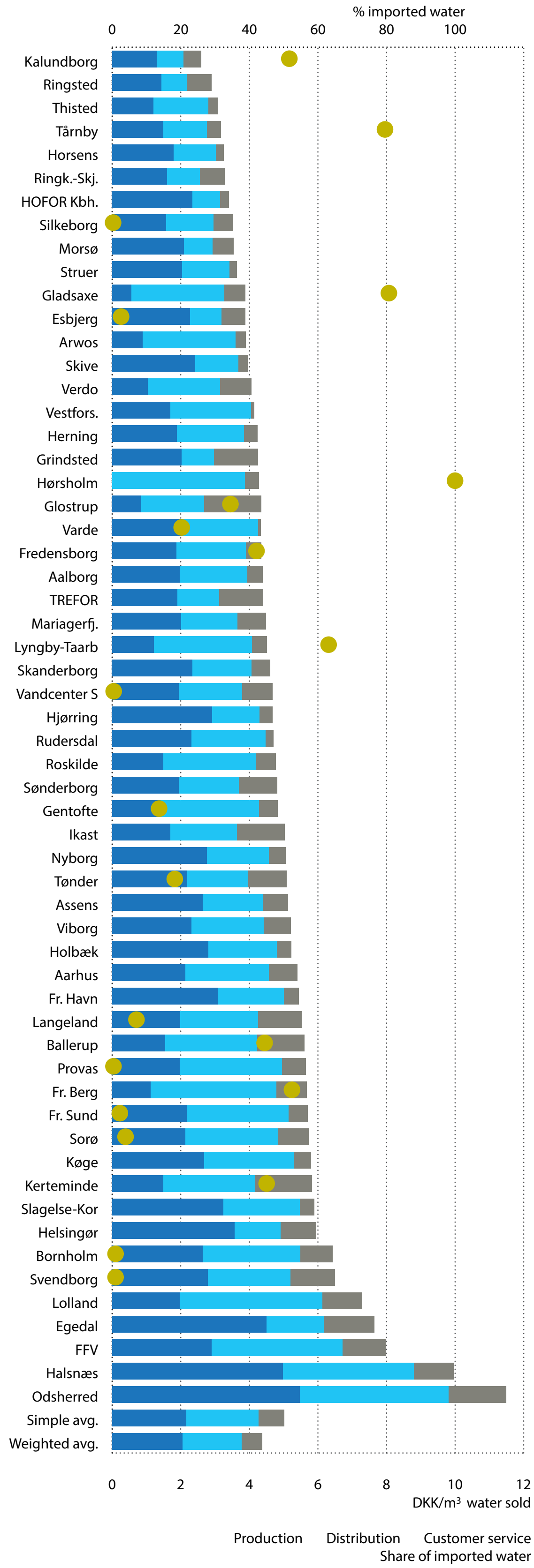




## Significant cost differences

The weighted average of the costs of producing and distributing 1m³ of water is DKK 4.39. Variability between the lowest and highest points is considerable; this is mainly due to the widely differing conditions under which the companies operate. Production costs are impacted, among other things, by topographical factors and access to groundwater, the extent of groundwater protection and the treatment steps required before the water is pumped to the distribution network. With respect to distribution, factors such as urban density and the extent, quality and age of the distribution network influence the costs.

### Operating costs, 2014



# Waste water companies
## included in DANVA benchmarking

In 2014, 73 waste water companies carried out DANVA benchmarking.The figures stated are for 2014.These waste water companies together operate 533 treatment plants, which treat more than 613 million m³ of waste water, a load corresponding to more than 7.4 million person equivalents (PE). They supply approximately 4.4 million people with water collection services via approximately 67,400 km of sewers which corresponds to an area of more than 260,000 hectares. Total costs without taxes totalled DKK 8.4 billion (see general key figures for the participating companies near the end of this publication).

### Waste water companies' operating costs continue to fall

Figures for waste water companies' operating costs reveal a cost of DKK 10.35 for each cubic meter sold, a decrease of 2.9% compared to last year. Operating costs are subject to efficiency requirements according to the Danish Water Sector Act and they form the basis for benchmarking the efficiency of the companies. Operating costs do not include VAT and other taxes, interest payments, 1:1 costs, environmental and service goals, associated activities, investments, depreciation and amortisation. The operating figures show a fall of 13.5% between 2010 and 2014, equal to a DKK 1.61/m³  decrease.

### Investment continues to rise

Figures for waste water companies in 2014 show they invested DKK 22.21 for every cubic meter of water sold in the catchment area of the treatment plant, representing a 15% annual increase. A steady annual increase in investment experienced between 2010 and 2014 is expected to continue in the following years.

### Breakdown of costs

On average, waste water companies spend 36% of their operating costs on the transport network and 58% on operation of the treatment plants. They allocate 6% of operating costs to customer administration. Figures for investments and renovation show that 84% of these are for the improvement and extension of the transport network, whilst 12% are spent on treatment plants. The remaining 4% go towards other investments.

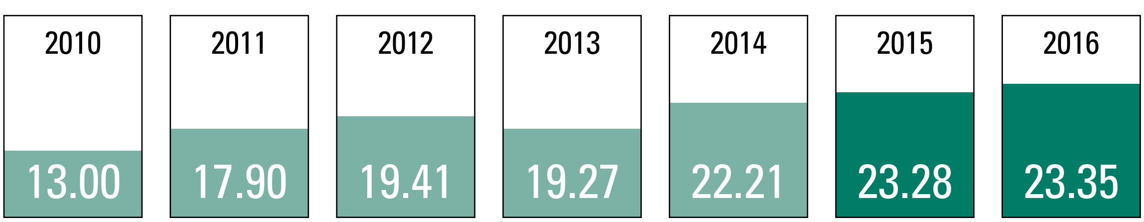
Operating costs, 2010-2014 (2014 prices)

DKK/m³ water sold


■ Operating costs (62-74 companies)

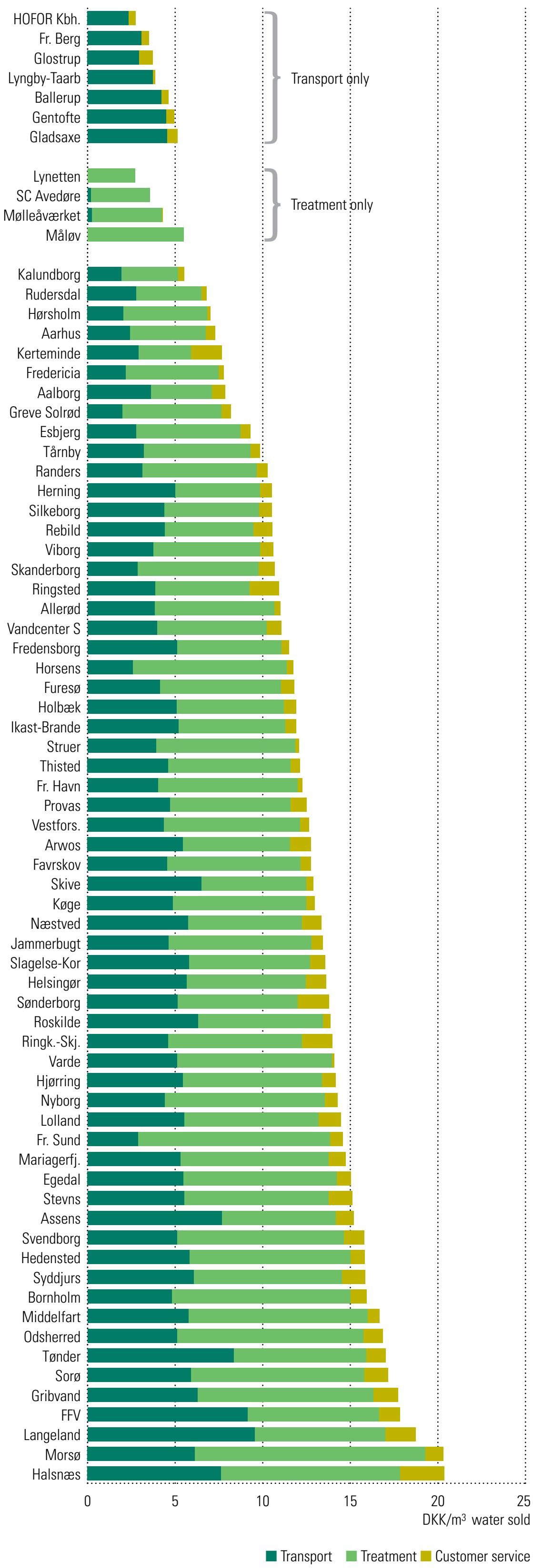
Investments, 2010-2016 (2014 prices)

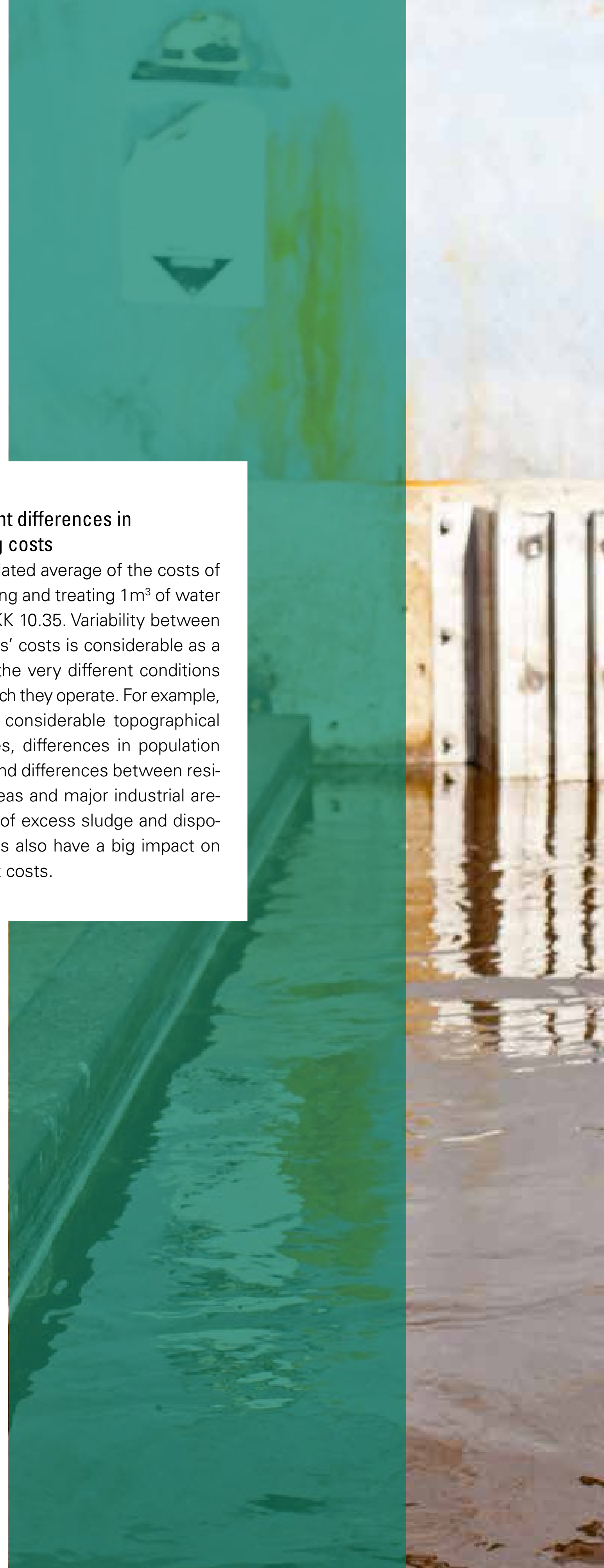
DKK/m³ water sold




■ Investment and renovation (66-73 companies - Investment and renovation)
■ Planned investment and renovation (73 companies - investment and renovation)

## Operating costs, 2014



### Significant differences in operating costs

The calculated average of the costs of transporting and treating 1 $m^3$ of water sold is DKK 10.35. Variability between companies' costs is considerable as a result of the very different conditions under which they operate. For example, there are considerable topographical differences, differences in population density, and differences between residential areas and major industrial areas. Types of excess sludge and disposal options also have a big impact on treatment costs.


# Price is a misleading indicator of e

It is tempting to believe that if one ranks the Danish drinking and waste water companies in order based on the price they charge to supply clean drinking water and to collect and treat waste water, that such a list would show the most efficient companies. It is not, however, that simple.

It seems reasonable to assume that when a water company becomes more effective, the cost of its services decreases while those same services improve in quality. The corollary to this assumption, that the cheapest utility is also the most efficient, does not hold water.

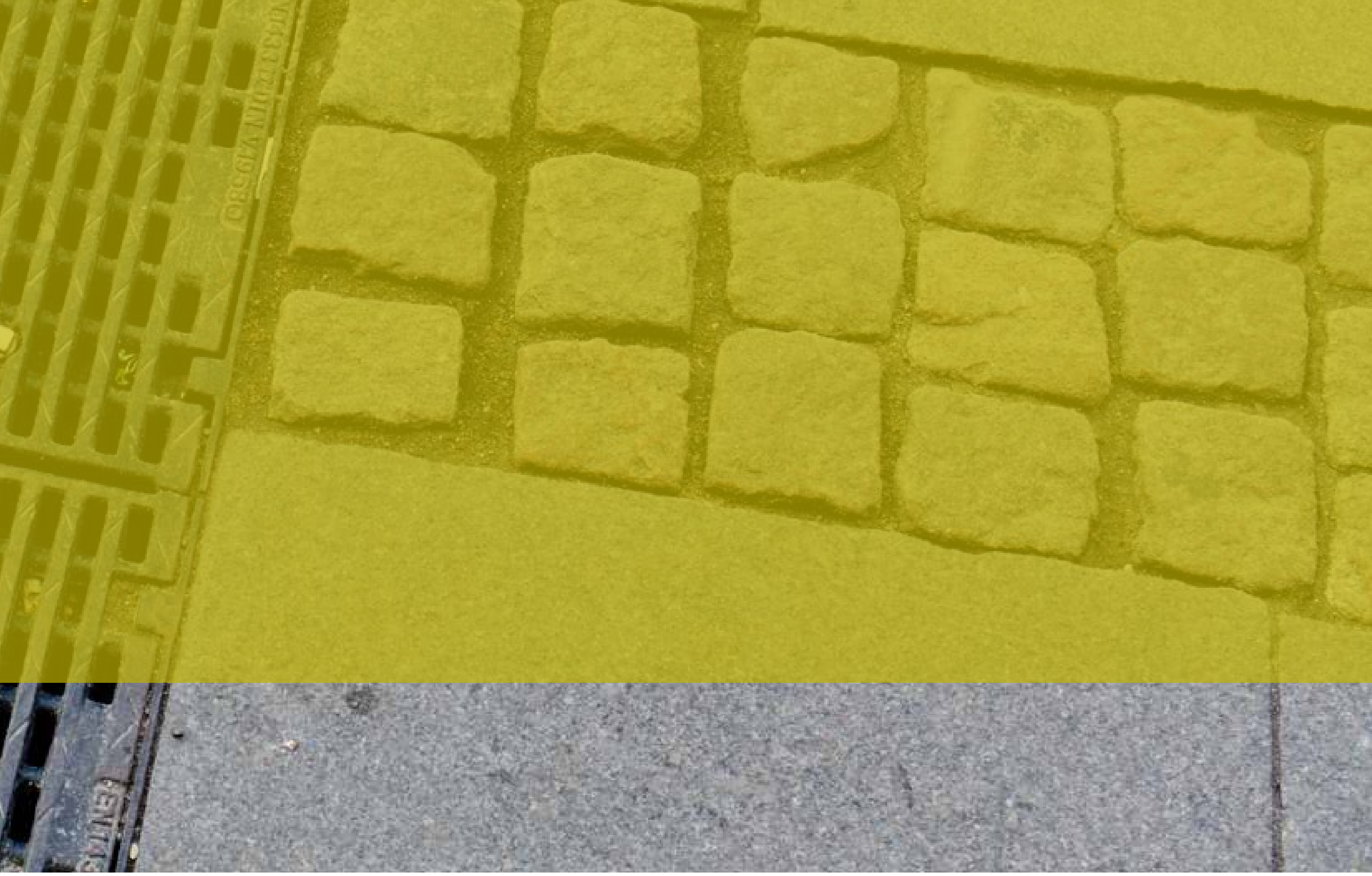
DANVA has, through its benchmarking research, documented that the water sector, in fact, shows no correlation between efficiency and price. In cases where there is an apparent connection, DANVA has proven this to be a false positive.

## Analysis

Currently, the best way to estimate a company's efficiency is DANVA's net volume benchmarking model, which measures water companies' actual operating costs in relation to individual water company's net volume (read more about net volume in the fact box). DANVA's benchmarking model calculates water companies' potential for enhancing their economic efficiency. The more efficient a company is, the lower their potential for efficiency enhancement.

As many water companies have a price structure with fixed annual rates plus a per litre cost for the water taken from the tap, this presents an average price for a typical household that uses about 84m³ of water a year. This makes it possible to compare the different prices for the supply of clean drinking water as well as the treatment of waste water across the spectrum of companies and price structures.

DANVA has documented a disconnect between efficiency and price through a comparison of the individual water companies' efficiency potential with their price. It would be all too easy to believe in a correla-



# efficiency

tion between the two. Logic suggests that high efficiency potential (with unredeemed efficiency) translates into a higher price. But this is not so. DANVA's analysis reveals that there is no correlation between efficiency and price. Research by DANVA further clarifies that water companies' operating efficiency influences a mere 2% to 8% of price variation between utilities.

Should the same analysis proceed with attention to efficiency potential and operating costs calculated after a company's price ceiling, or on the basis of economic efficiency potential that accounts for level of investment, the conclusions are the same.

## Conclusion

There is no correlation between price and efficiency. Neither the potential for efficiency enhancement, based on actual operating costs or price ceilings, nor the total economic efficiency potential can fully explain the reason for different prices set by drinking water and waste water companies for supply of fresh water and treatment of waste water.

This is not to say that efficiency does not influence price, but that it is merely one of many factors that have a larger impact. In other words, a water company's price cannot be used to analyse its efficiency vis-à-vis other companies.

In DANVA's assessment, the most germane components affecting variations in price are:

1) Structural conditions like population density in target areas, the number of holiday homes in that area, legacy of decisions affecting infrastructure and planning
2) Level of investments
3) The share of a utility's assets that have been leveraged.

### Fact

The Danish Water Utility Regulatory Authority calculates net volume targets for water companies. The net volume target determines the operating costs a company can be expected to have if it is to match the average level of efficiency.

# Clean water today – and tomorrow

**Although our water resources can be strained from time to time, we will not experience any shortage of drinking water in Denmark. However, chronic drought and high temperatures can result in aquifers and lakes drying up.**

Over the last two years Los Angeles has poured 96 million black plastic balls into its largest reservoir to combat the 13.6 billion litres of water lost to evaporation each year.

Four years of drought has pushed California's water resources to its breaking point. According to NASA researcher, Jay Famiglietti, the state could possibly run out of water within a year. The so-called shade balls, are just one of many desperate attempts to counteract what is happening.

The shortage of water in California is a terrifying scenario created not exclusively by climate change, sharing the blame with ageing water infrastructure and with social and political factors. Can Denmark end in the same pickle and one day run the risk of turning on the tap without any water flowing out?

"Probably not," according to the calming analysis by the GEUS institute's Lisbeth Flindt Jørgensen, geologist.

"Denmark has been endowed with substantial water resources replenshed over time, compared to other areas of the planet where rainfall is declining and resulting in acute shortages, or other regions where rainfall is too great, creating flooding and other natural catastrophes," the geologist explains.

There remains though a significant regional disparity in available groundwater, as resources are first and foremost subject to amounts of rainfall a particular area gets as well as sun and wind, both of which are not the same across the country.

"There is, for example, about twice as much rainfall in West Jutland than on Southern Zealand and Lolland-Falster. Topography also affects how much rainfall seeps into ground water reserves. Overall, the layers of soil in West Jutland are more sandy for example, which is more conducive to forming groundwater, compared to Zealand for example, which has typically more impermeable layers of soil. Meaning a lot of rain and a lot of sand are equally important to the formation of groundwater," Lisbeth Flindt Jørgensen says.

## We are good at conservation

Over time, Danes have also become something of a role model when it comes to curtailing water use. This fact is apparent in many homes where environmentally friendly efforts in the form of water saving dishwashers, washing machines and showers are prevalent.

Danes have been very good at conserving water, and it shows as we went from using somewhere around 1500 million cubic metres a year in the middle of the 80s to about half that amount, even though we have about a million more people in Denmark," adds Lisbeth Flindt Jørgensen. Consumers have also had plenty of incentives not to waste water, as Danish water is among the most expensive in Europe due to prices that reflect the actual costs associated with the use and treatment of water.

"Pricing has really impacted consumption," according to DANVA's water and environment consultant Claus Vangsgård.

The utility companies have also shown aptness in reducing waste water.

"They have had a strong focus on reducing amounts of water loss due to leakage. Partly because the state levied a tax on water loss amounting to 10% for a utility," Claus Vangsgård points out.

## Strain on resources

Although it is very unlikely that we will end up as bone-dry as California, it does not mean that our water resources here are not strained. It's happening around our larger cities where there are a lot of people with a correspondingly large need of water. Because Denmark does not have a history of conveying water over longer distances through pipelines, we need to pump quite a bit of water up from the ground within a maximum radius of 50km.

"Copenhagen, Aarhus and Odense are located in areas with a relatively limited groundwater formation due to a lack of boreholes and geological conditions. This stretches water resources thin by abstraction efforts to produce sufficient drinking water; and this pressure can increase as cities absorb more inhabitants," explains Lisbeth Flindt Jørgensen.

As recovery increases in a particular area, the water table will fall and have an impact on a significant area of our wetland nature, in danger of drying up during droughts as they rely on groundwater inflows. Several dry seasons in a row can also put a strain on water resources in the agricultural industry. So, although we probably won't experience a situation where we don't have enough water for our household needs, we can reach a time when all of our needs can't be met. If we are to live up to the stringent demands of the EU Water Directive, there are several areas in the country where groundwater abstraction in future should be significantly curtailed compared to today's rate because of how it affects the wetlands ecosystem.

"The reality of it is that we humans are here and have a need for water, the consequences of which we are trying to contain through planning so we can, as much as possible, meet the existing demands. If we end up in a situation like the one California is experiencing this year with declining rainfall and high temperatures, it will lead to an increased need to water crops in agriculture. Let's imagine that farmers maximise their watering several years in a row whilst rainfall decreases. We'll certainly see the impact on water flows and lakes and that's also a kind of water shortage," Lisbeth Flindt Jørgensen points out and concludes that one can never save too much water.

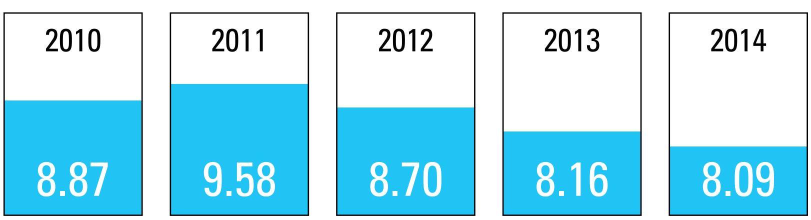
# The water table is dropping

The Danish water industry is known to have a very low loss of water in its pipeline network. Water loss can be reported in several different ways, including as a percentage, water loss per kilometre of pipeline or by the more complex infrastructure leakage index which compares actual water loss.

Water loss, expressed either as a share of produced water or as cubic metre per network length, is measured as the difference between the water volume pumped out to the pipeline network and the water volume registered as used by customers. In addition, calculating water loss also takes into account the volume of water not lost, but used in the distribution network. This can be, for example, water used to flush the pipelines after repairs, water used to extinguish fires as well as water used illicitly. The infrastructure leakage index (ILI) calculates real annual water loss that seeps out into the earth against "unavoidable" real water loss, which is calculated from the plant size and water pressure. For the 48 water companies included in DANVA benchmarking over the last five years, there is a noticeable decrease in the share of water lost since 2012. This is despite the fact that continued decline in water consumption would mean increasing water losses. The reason for the decrease is due to tremendous efforts by utilities, which continue to use more resources on leakage loss, where pipelines need to be continuously monitored and repaired for "holes" where water can seep out.

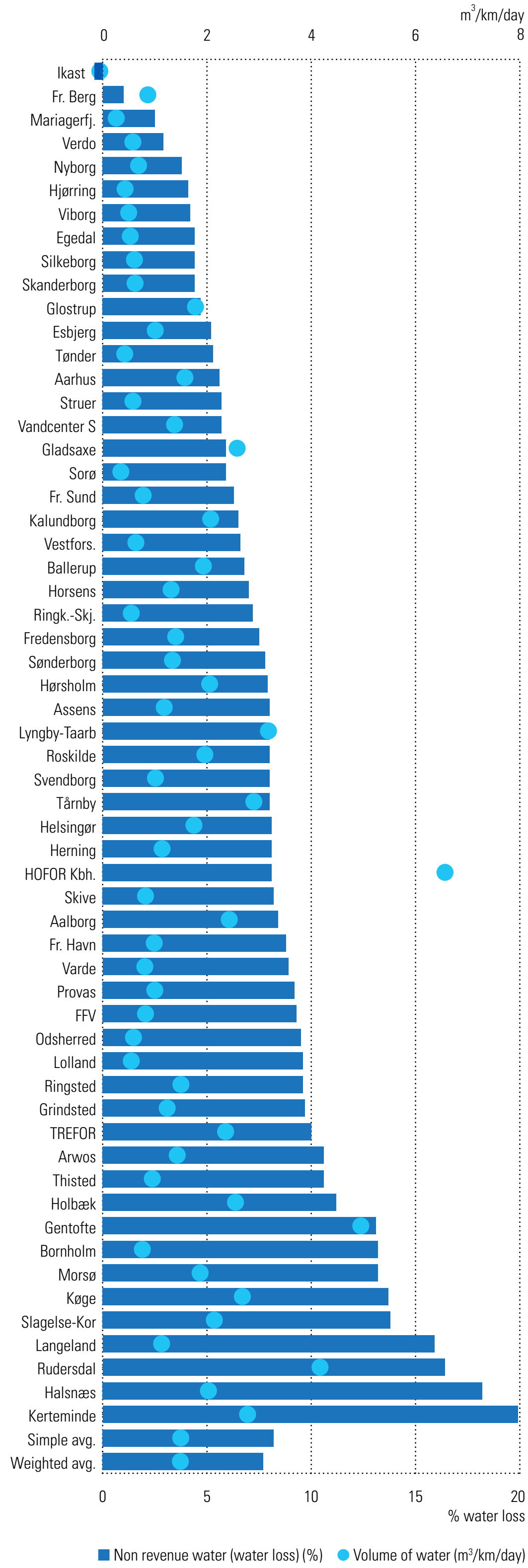
At the end of the 90s, standards were implemented regarding water meters for all consumers at the same time fines would be issued to the companies with a water loss of more than 10% (measured as the difference between abstracted and sold water volumes). These initiatives made great strides for the Danish water industry, helping it become the "world champion" in containing water loss today.

Non revenue water (water loss), 2010-2014




Average of 48 companies participating in DANVA benchmarking over the last 5 years.

Non revenue water (water loss), 2014



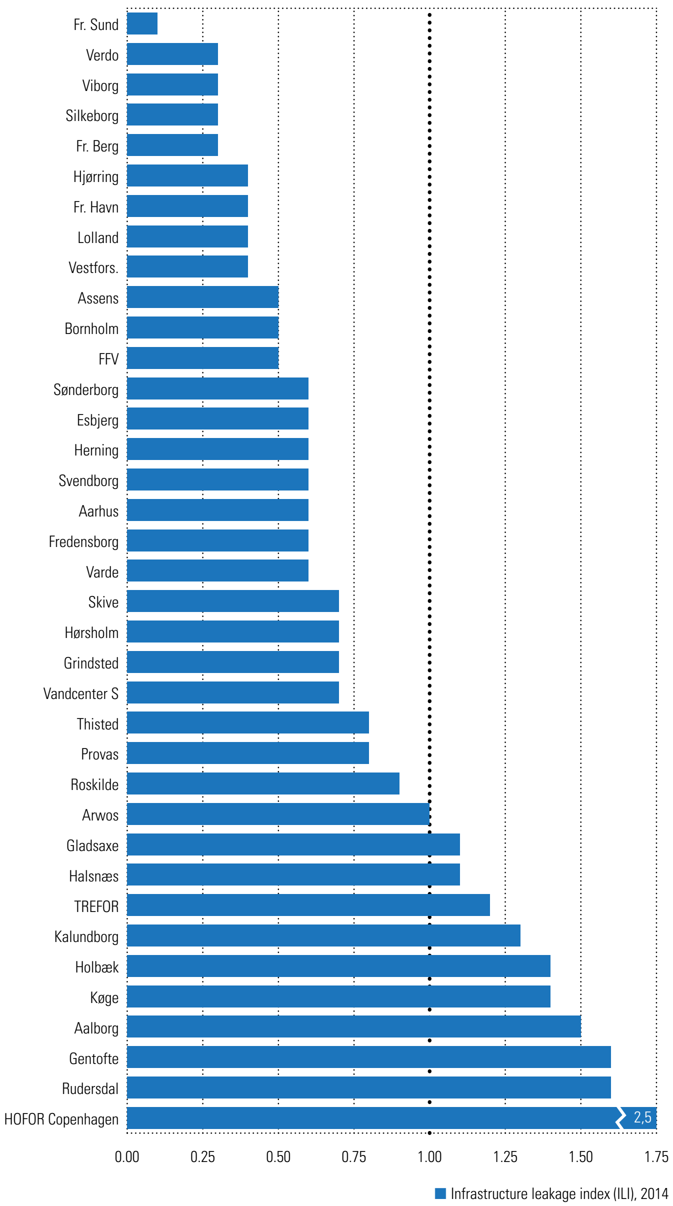

Note:
The measurement does not include any adjustments of water loss made due to approved volumes used to flush out contamination, etc. This means that there can be a small discrepancy in the water loss on the graph and the water loss reported by companies.

Ikast Vandforsyning a.m.b.a. reported a negative water loss in 2014 of -0.4% due to delayed reporting of its financial statements. Ikast Vandforsyning had earlier sent water reading forms to its customers in the beginning of December and received the completed forms during the following month. In the last couple of years water meters that can be remotely read were installed and sent the annual reading on December 31, which still postponed accounting and resulted, as in 2014, in a negative water loss.

## Water loss (non revenue water)

Drinking water companies' calculation of "non revenue water", or "water loss" in every day parlance, shows a dichotomy between various utilities based on percentage or after specific water loss measured by 0/km/day. Companies with vast pipeline networks but modest water usage perform comparatively better in specific water loss categories; whereas companies with higher consumption of water and small networks perform better based on percentage. Companies' internal measurements can fluctuate from year to year without any explanation, but switching out water readers in consumers' homes or at abstraction facilities can cause a swing in numbers.

## Infrastructure Leakage Index (ILI), 2014



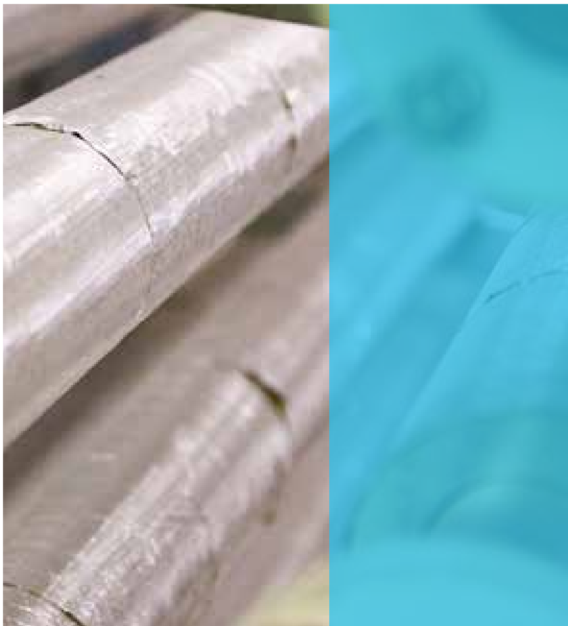

## Infrastructure Leakage Index

This year DANVA made the decision to use the Infrastructure Leakage Index, or ILI. ILI is an international water loss model established by the International Water Association (IWA) that makes it possible to compare current real water loss and "unavoidable" real water loss as it occurs within the various drinking water companies as well as between countries.

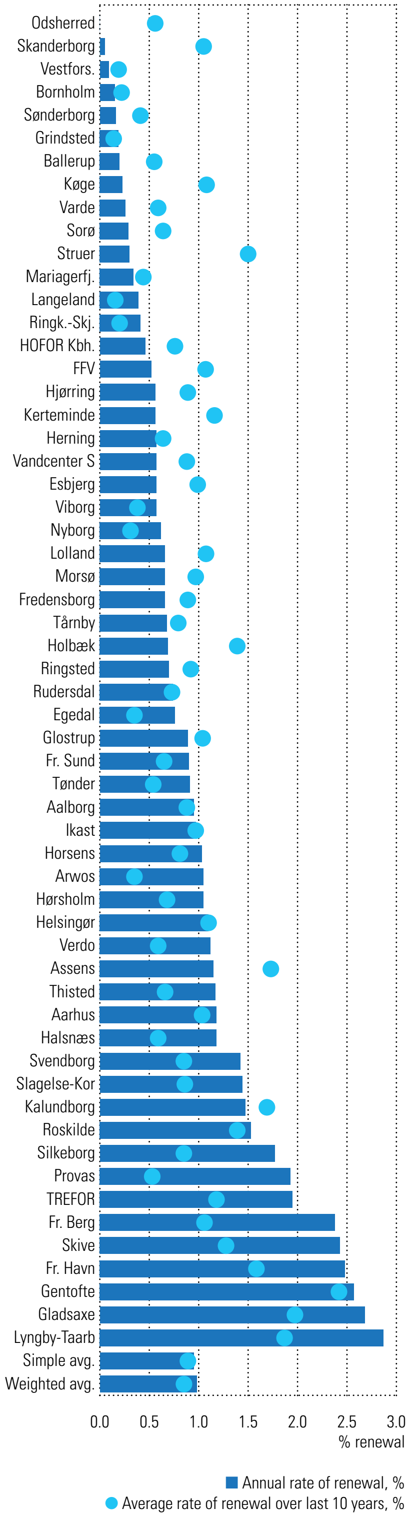
ILI compiles data on actual, physical water loss and the "unavoidable" water loss. Actual, physical water loss is the difference between sold water volume and the amount abstracted from the ground minus estimated water used to flush recently repaired pipelines and to extinguish fires as well as any other authorised unbilled use and metering inaccuracies. "Unavoidable" water loss is a measurement standard utilised by newer, operationally sound networks of a certain size with a particular water pressure to calculate minimum water loss based on acceptable economic principles. Real annual water loss is, and the ILI itself, can be decreased by, for example, improving the speed and quality of repairs, implementing proactive leakage monitoring and applying asset management to renovation strategies.

A report presenting the ILI for more than 71 European drinking companies can be found on the webpage: www.leakssuite.com under the menu "Global ILIs/European ILIs". This data shows 6 companies with an ILI under 1, 21 companies with an ILI under 2, 17 companies with an ILI under 3, the remaining 27 companies posting an ILI over 4.

Note:
ILI measurements are partly based on the following components: the length of private pipes, the average pressure of the network mains along with the amount of water used for flushing the lines. Metering inaccuracies are not incorporated into Danish calculations.



## Supply network's rate of renewal, 2014




## Upgrading the distribution network

The distribution network is constantly being renewed in order to maintain high standards, with low water loss and excellent reliability of supply. There are many factors that determine when a distribution network is renewed. For example, materials, geological conditions, surface wear and age. Network renewal shows the share of the distribution network that is replaced each year compared to the annual average over the last 10 years. The participating companies' distribution networks are 36 years old on average.

## Wide differences in frequency of bursts

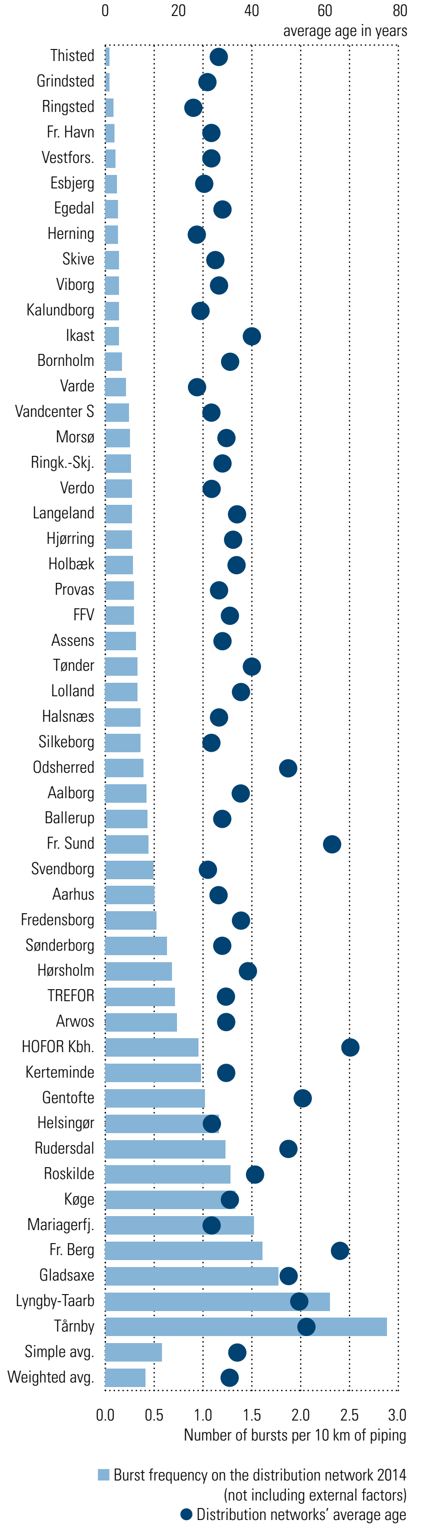
The occurrence of interruptions, measured by ruptures per each 10 kilometres of pipeline, differs widely amongst the participating companies. Interruptions are registered in 2 categories:

- Spontaneous interruption where ageing pipelines, tubing, drilling harnesses, topography or work quality is often the reason for breaches.
- Fractures due to external factors like excavation damage caused by construction firms.

The graph shows spontaneous fractures for each 10 kilometre stretch of pipeline, excluding breaks due to external factors and those occurring in service pipes.

A report with data from 2014 shows 16 companies collectively registered 1,056 cases of spontaneous interruptions with 43% occurring on the distribution network, 36% on the service pipelines and 21% on yard taps. It is likely that the number of yard tap ruptures can be significantly higher as companies often discover the problem after the owner has exhausted attempts to repair the breach and subsequently seeks advice from the water company or hopes that they will assume responsibility for the repair.

## Frequency of disruptions to the network, 2014 (excluding external factors)

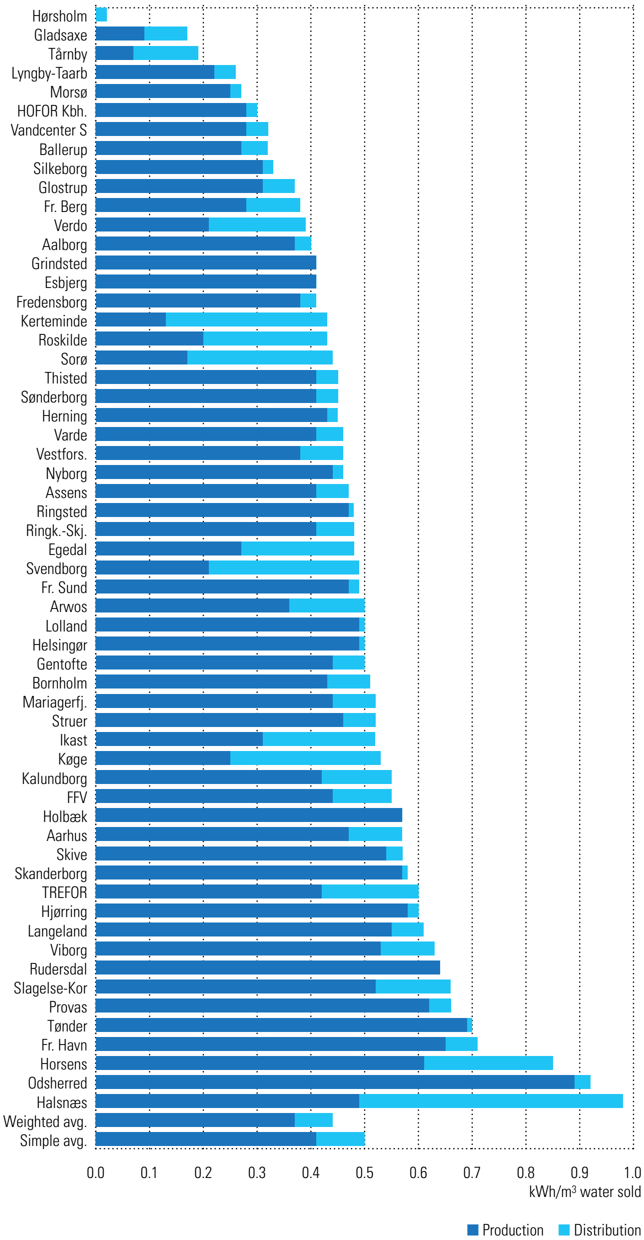


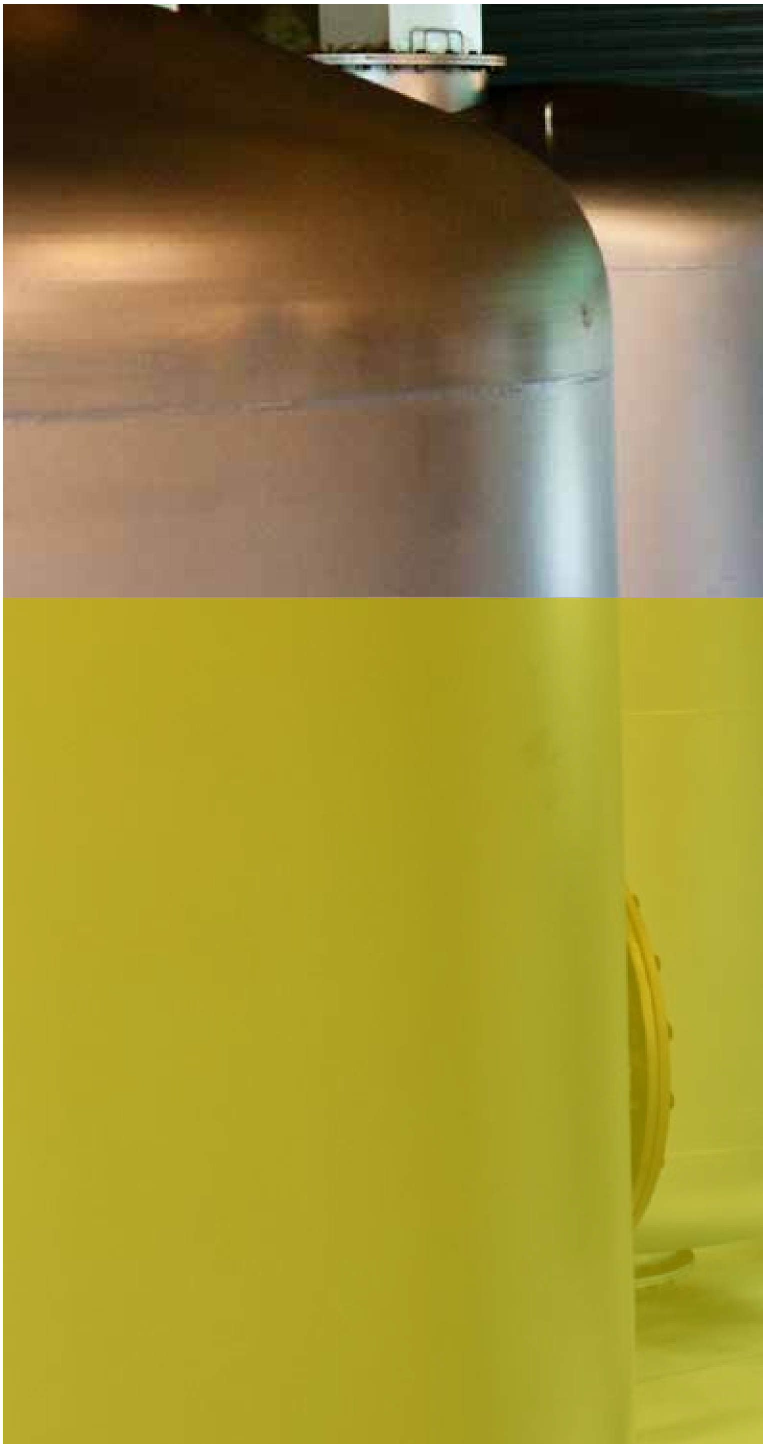
## Electricity usage by drinking water companies

There are large differences in electricity used for the production and distribution to customers of 1m³ pure water. Weighted average electricity usage for the production of drinking water is 0.44 kWh/m³ sold.

Electricity consumption is divided into electricity used for wells and water works, categorised as production, and electricity consumption applied to the distribution network from water works to the customer, referred to as distribution. Whether abstraction pumps are located in areas of production or distribution impacts figures, which makes it reasonable to compare water utilities based on their total electricity consumption. Disparities in electricity usage stem from energy intensive deep drilling, the import of treated water, topographic conditions affecting the network mains or an energy intensive distribution network. The last several years have witnessed a particular focus on energy savings with new technologies applied to abstraction pumps and pressure boosters in addition to attempts to better calibrate drill hydraulics, which ought to cause a drop in energy demands.

### Drinking water companies' electricity usage, 2014



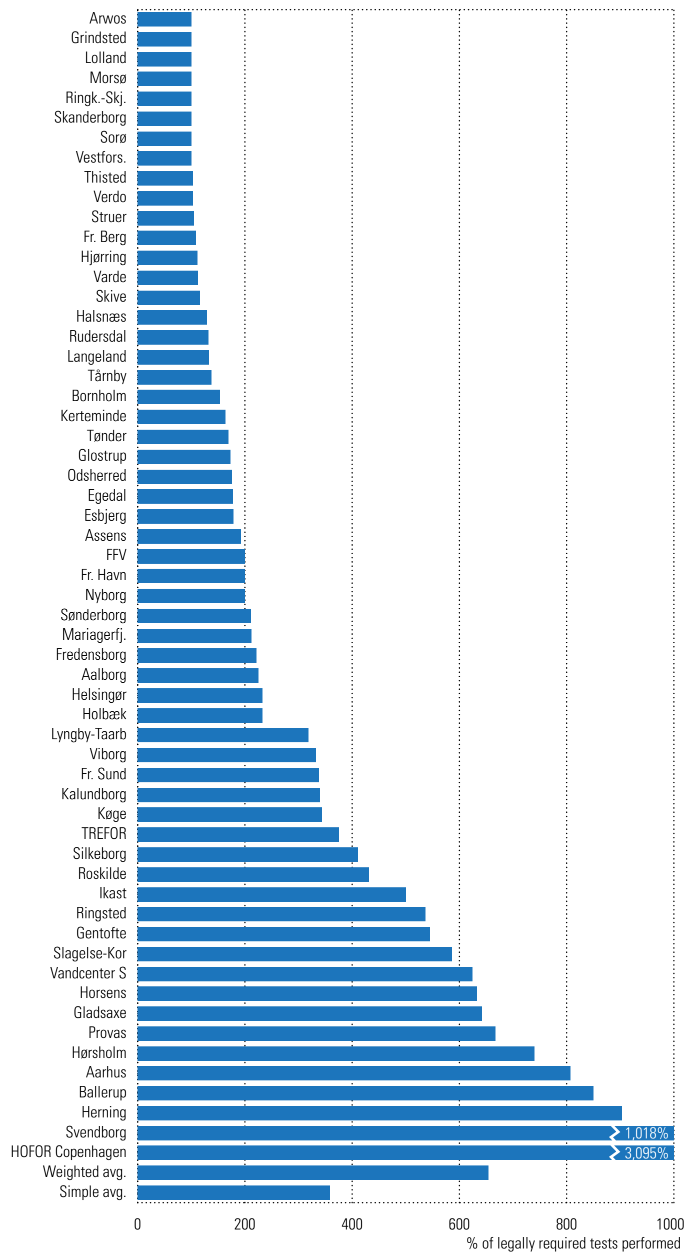



## Statutory microbiological tests

All drinking water companies carry out tests on water before it is delivered to customers. These are performed both at the water works and on the distribution network. Around half of the 58 drinking water companies taking part in DANVA benchmarking take twice as many tests to check for microbiological contamination as are required by the law.

It is up to the drinking water company to decide on the number of tests they perform over and above legal demands. The results of analyses show that 97% of the microbiological control tests taken conform with all the quality requirements. If a single analysis parameter for a water test fails to meet quality requirements, the sample will be registered as 'failed'. This does not necessarily mean that the water is harmful to health; usually it simply means that conditions must be investigated further. In 2014, two companies were obliged to issue a public notice to boil water, covering a total of 828 meters, due to a failure to meet microbiological parameters.

Statutory microbiological tests, 2014



# Danish water workers take fewer sick days

Data from DANVA benchmarking show employee absence in the Danish water sector has remained stable at about 3-4% since 2010. Compared to other sectors this is quite low. For example, the average for municipal and regional public sectors between 2010 and 2013 is between 8% and 9%, while the private sector average lies somewhere between 4% and 5%, according to Statistics Denmark.

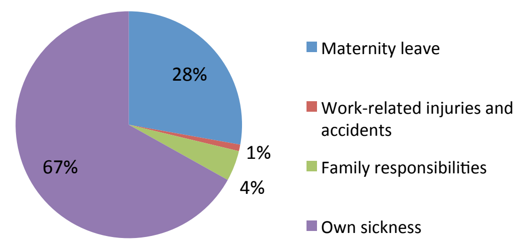
One of the primary reasons for the low absenteeism is the composition of workers in the sector. Only 16% of employees in the water sector are women and just 2% of workers in the industry are women between the ages of 20 and 39. Comparatively, 18% of all women employed in Denmark are in the 20 to 39 age group. This anomaly results in a lower number of employees taking maternity leave.

When an employee is on leave from their job it leads to lost productivity, but the effect is still difficult to measure as the real consequences are too complex to measure. That's why DANVA, in the fall 2014, published a report on the effect caused by absence in the water industry, which shows an average cost of DKK 20,000 per percentage of absence per employee. About 20% of this cost can be directly associated to the actual absence, which is the average reimbursement of salary. Furthermore, 80% of the expense goes to indirect consequences of the absence such as replacement workers' pay, slowdown in productivity because of the employee's stoppage, contingency planning as well as other incidental effects not directly measurable.

The main cause of absence in the Danish labour market is own sickness, which is responsible for 67% of all stoppage. Maternity takes a 28% share while sick days for one's child and work place accidents claim 4% and 1% respectively.

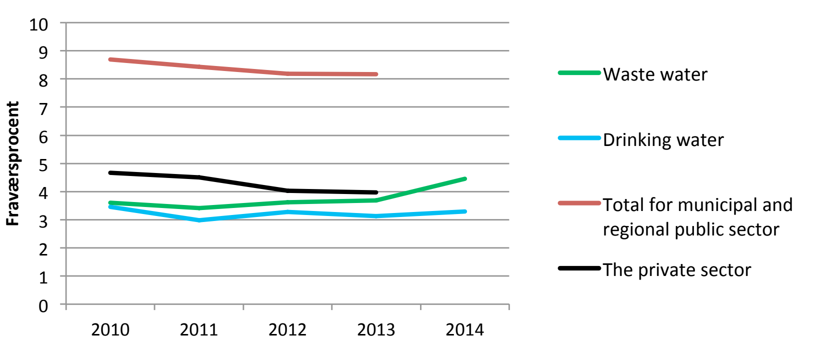
In 2014 DANVA researched the causes that lead to absence. 35 drinking water companies and 44 waste water companies have divided absence into the underlying causes. As figure 3 illustrates, own sickness in the water industry is split between short (45%) and long (26%) periods of work stoppage. The overall le-

Figure 2 - Cause of absence - Total for Danish corporations and organisations




Source: Statistics Denmark: FRA033: Employee absence rate, total for corporations and organisations. Data from 2013.

Figur 1 - Employee absence as a share by sector



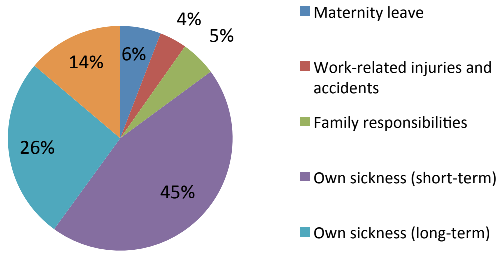

Source: Statistics Denmark: FRA033: Employee absence rate, Total for Danish corporations and organisations.

vel of absence from the sector is less than other sectors, ostensibly because maternity leave claims such a small share of work stoppage in the industry. The 6% share that maternity leave represents of overall absence helps explain why water utilities have a lower rate of work stoppage.

Beyond that it is worth noting that own sickness as a share of causes of absence is slightly higher than average in the Danish labour force. Precisely an employee's health is the cause of stoppage that is often the easiest influenced by an active effort to reduce the overall absence.

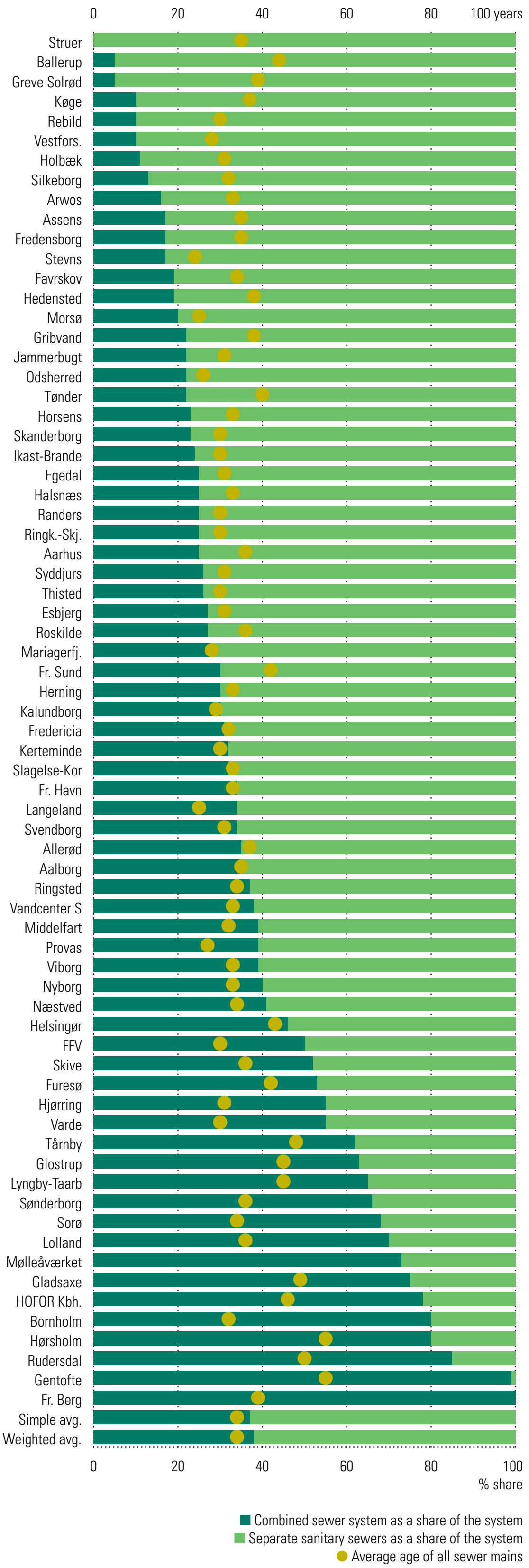
Due to its significant economic impact, it makes sense for many companies to maintain standards and continue to treat work stoppages seriously. Furthermore, it's worth figuring out how much work stoppage is due to short-term and long-term illness, work place accidents or other reasons. This stems from the fact that attempts to reduce absence is very dependent on the mitigating factors. Research, though, points to several common elements that can be brought to bear in an effort to contain stoppages due to sickness. Decisive leadership and a collective responsibility over initiatives to counter sickness can form the framework to improve workplace milieu and well-being (especially preventative measures and thorough interviews) and can accordingly have a positive impact.

Figure 3 - Causes of absence - the water sector




Source: DANVA

## Area breakdown showing combined and separate drainage, 2014




## Combined and separate drainage

There is considerable divergence on the question of separate drainage systems amongst the benchmarked waste water companies. Some companies use combined waste water systems almost exclusively, whilst for others there is a predominance of separate systems for effluent and surface water. The reason for this is the significant investment required in replacing combined systems with separate systems, since the former are often found in town and city centres.

## Separate drainage

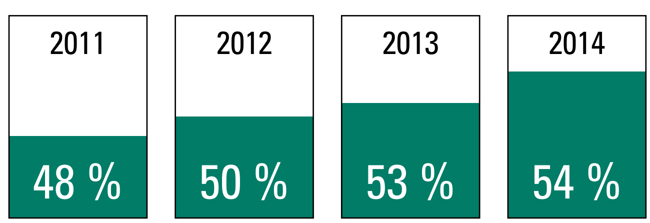
In recent years, the Danish population has experienced several instances of very heavy downpours which have caused flooding on roads and railways, and in cellars and shops. Besides the fact that it is very expensive for society to clean up after a flood, there is of course an effect on the people whose homes have had untreated waste water in their cellars.

There are two main methods for tackling these issues. Enlargement of existing sewers and waste water basins so that they can manage heavy rainfall; or the separation of rainwater and waste water. The first method is usually far more expensive than the second, unless the siting of sewers is in closely built up town centres, where it is technically difficult to separate surface water and effluent.

The two main methods for separating run-off and waste water are: 'Local collection of rainwater run-off' whereby rainwater is collected in dry wells, fascines in gardens, or larger retention basins; and separate drains which collect all rainwater in a buried pipe that is separate from the sewer system and which is not sent to a treatment plant.

The figure illustrates the increasing proportion of separate sewers. The rise in separate drainage systems is a direct consequence of several heavy rainstorms; it is also one of the reasons why waste water collection has become more expensive in recent years for Danish consumers. Separate drainage systems are a relatively costly investment.

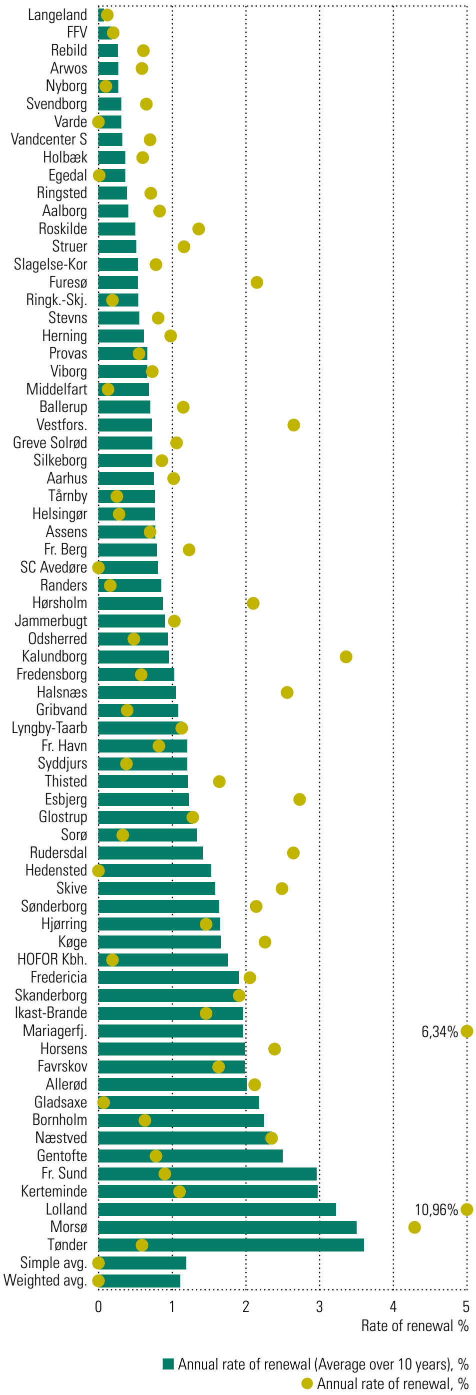
## Development in separate drainage systems, 2011-2014

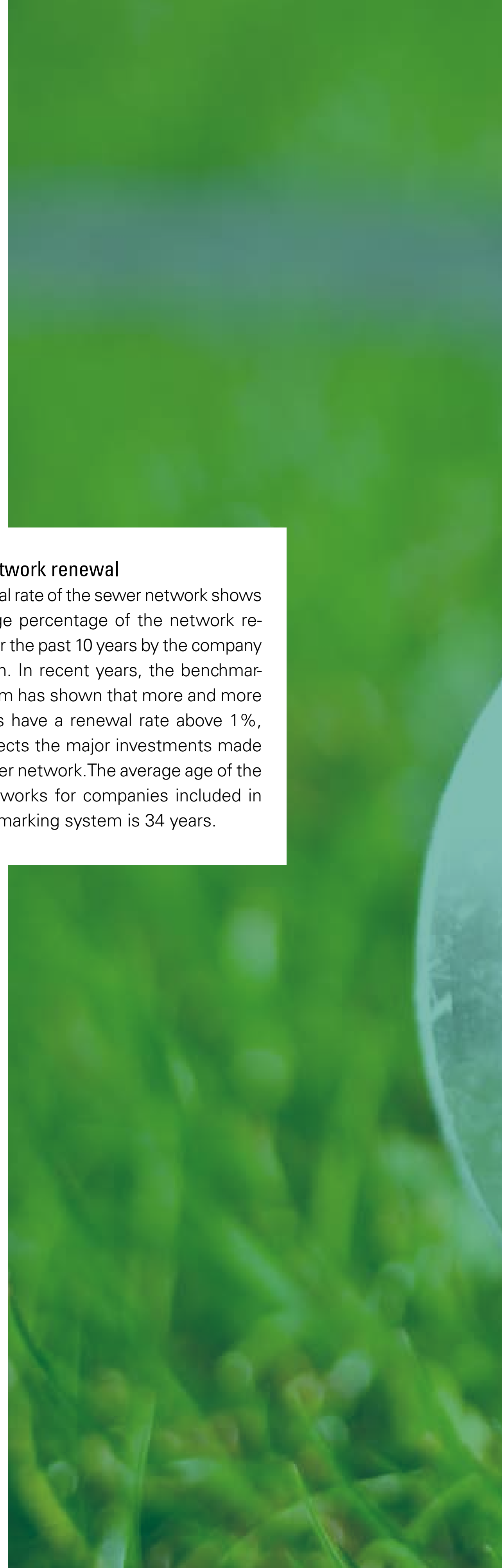



22 waste water companies included over all four years.

■ Calculated in km of separate drainage system in relation to total km of waste water pipeline, excl. intercepting sewers

## Waste water network renewal, 2014

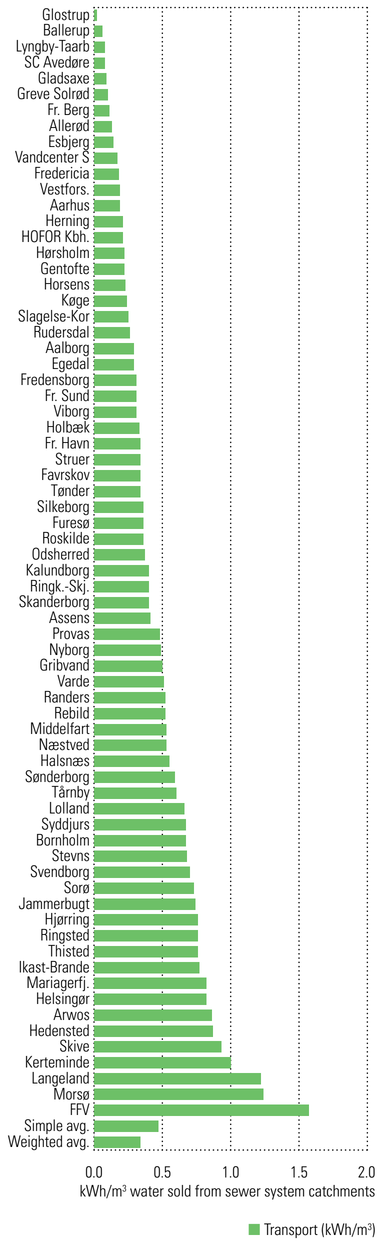


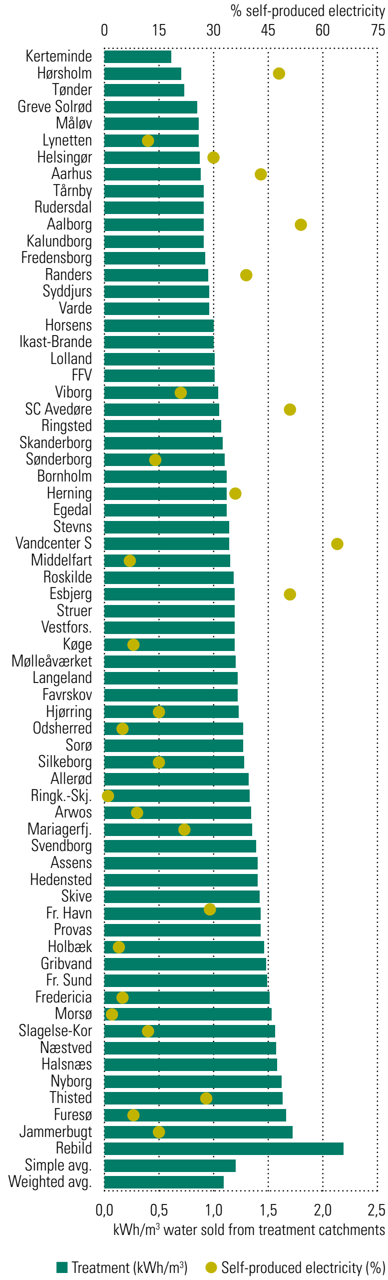
### Sewer network renewal

The renewal rate of the sewer network shows the average percentage of the network replaced over the past 10 years by the company in question. In recent years, the benchmarking system has shown that more and more companies have a renewal rate above 1%, which reflects the major investments made in the sewer network. The average age of the sewer networks for companies included in the benchmarking system is 34 years.

### Waste water companies' electricity consumption for transport, 2014




### Waste water companies' electricity consumption for treatment, 2014




### Electricity usage by waste water companies

There is still a wide divergence in the amount of electricity used by waste water companies for each cubic metre of treated water. One reason for this is the diffence in water quality, which means that electricity usage for oxidation differs for each treatment plant. Another important factor is the amount of water being pumped. A large transport network's pumping needs are more expensive than a network where waste water can largely drain off by itself. For some time, there have been initiatives focusing on optimisation, in particular with respect to aeration systems: this helps reduce electricity consumption. Weighted average electricity consumption for each treated cubic metre sold is 1.44kWh. The 34 waste water companies with their own source of electricity collectively produce 28% of their own energy needs.

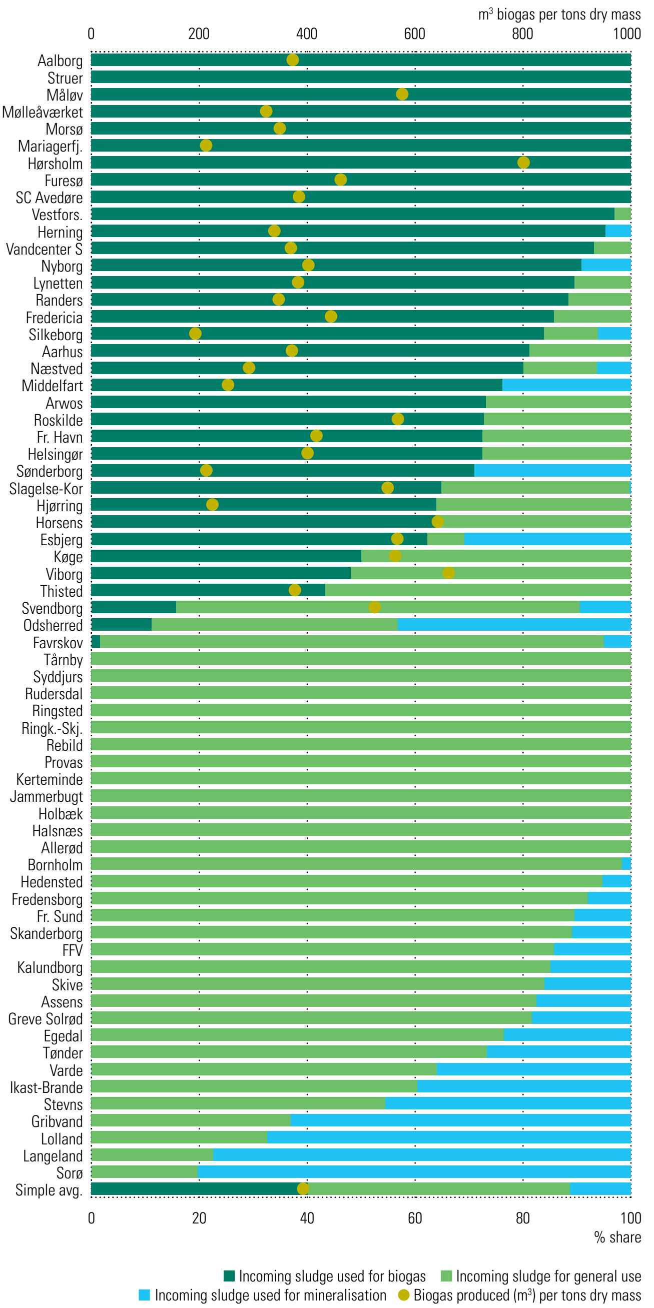
## Sludge processing by waste water companies

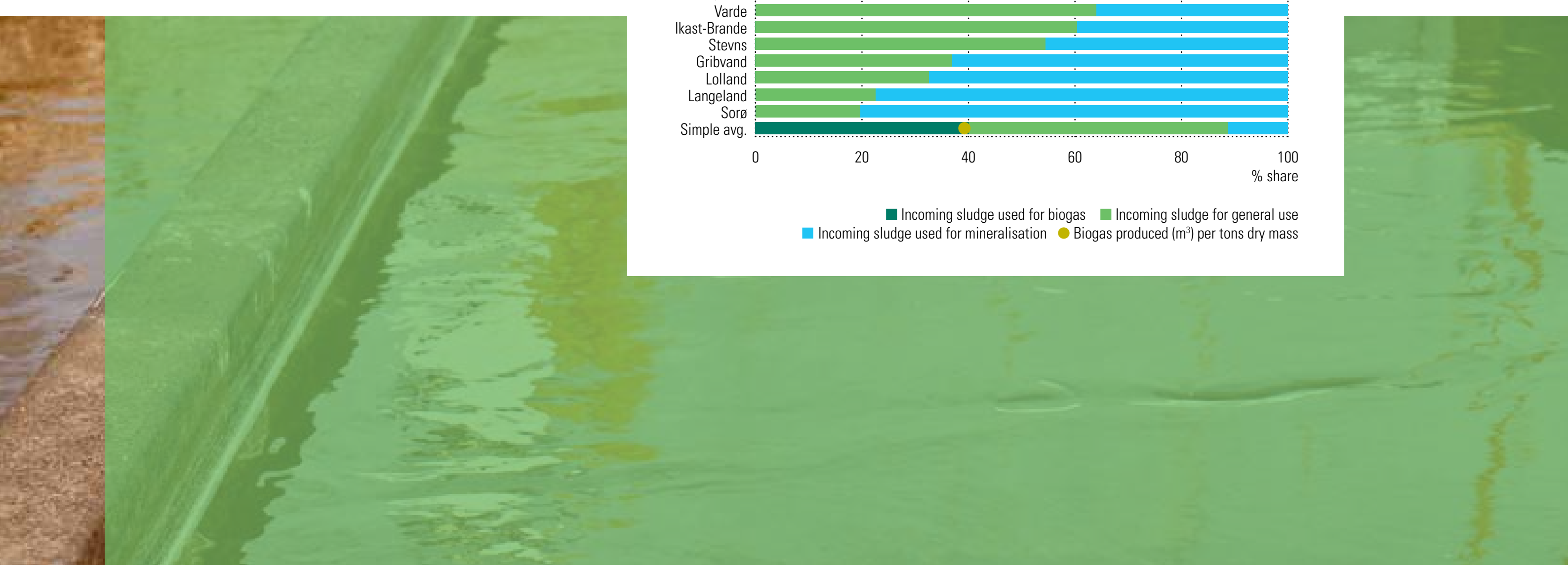
When Denmark's waste water arrives at a treatment plant, it goes through a process to cleanse it of impurities. Once this process is complete, the clean water is piped to a receiving environment, whether a river, lake or the sea. But the treatment plant now has to deal with the residual product: sludge. Before disposal, sludge may need further processing and dehydration. Final disposal may be through recycling in agricultural applications, composting, incineration or dumping.The method of final disposal depends on the sludge's content of heavy metals and/or substances that are harmful to the environment; the waste water company may also have certain principles regulating final disposal.

The figure illustrates how various companies process their excess sludge. Excess sludge is processed in one of three ways: conversion to biogas, mineralisation in plants and other processing such as dehydration (known as normal processing in connection with regulations).

The figure also shows how much biogas is produced per ton of dry excess sludge, for companies that convert part of their excess sludge to biogas. There is a relatively wide difference in the volume of biogas various companies can produce from excess sludge. This is partly dependent on the suitability of the waste water sludge to biogas production; and partly on whether other matter is added to the waste water sludge, such as agricultural waste.

## Sludge processing by waste water companies, 2014

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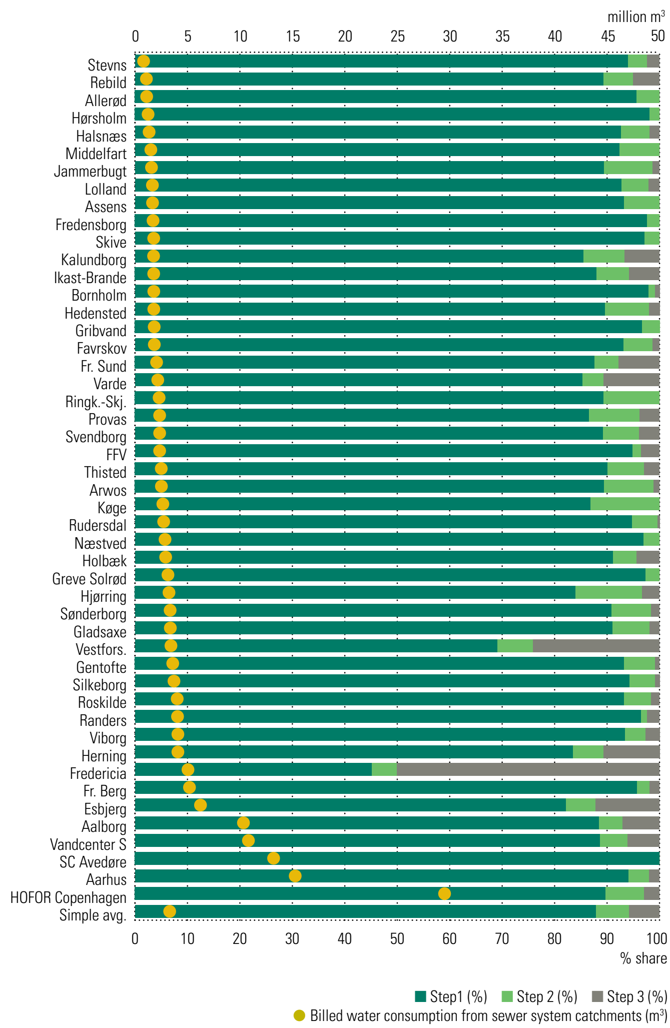
Distribution of water sold under third stage of ladder model




# A year with the ladder model

With its roots in a growth initiative, a political decision was made in 2013 to lower fees on waste water for large water consuming companies to the tune of DKK 700 million up until 2018. The first phase of this plan was financed by raising fees for households. This increase is expected to lead to efficiency enhancements so that the private consumer payments do not increase as a result of discounts granted to large companies. This is called the ladder model.

After a year with the ladder model it is beginning to be apparent that it is affecting waste water companies' pricing. Utilities that don't have customers with heavy water usage will have largely unchanged prices for its private customers. By contrast, the volume discount for large industries has a significant impact on tariffs for households belonging to companies who have industrial waste water as a large share of their overall waste water volume.

# The ladder model

## will make water more expensive for more companies in Fredericia

**Implementation of the ladder model should translate into a smaller bill for companies looking to unload their waste water. By contrast, smaller customers will have to pay more because of Fredericia Spildevand and Energi A/S having some unusually large businesses entitled to sizeable rebates.**

Both households and smaller companies in Fredericia will have to dig a little deeper into their pockets than before when the bill from Fredericia Spildevand and Energi A/S is delivered to their mailbox. Implementation of the so-called ladder model, in effect since 1. January 2014, has changed tariffs on each cubic meter of water, increasing the price for most of the company's customers.

The ladder model was a political initiative reflecting a desire to ensure a tighter relationship between price and cost of treating waste water. The idea was that a company with an annual consumption of 500m³ or more could reduce the cost of a cubic meter in the variable component of the water collection contribution. The ladder model involves a reduction in the cubic metre charge of the variable component of the water collection contribution in proportion to increased water usage. The variable water collection contribution is composed of three rates, or levels. Level 1 is for water usage of up to and including 500m$^3$ per year. Level 2 is for water usage from 500 m$^3$ a year and up to 20,000 m$^3$. Level 3 covers consumption over 20,000 m$^3$.

Of Fredericia Spildevand og Energi A/S' 70 commercial customers only those in level 3 will save money in the ladder model. This is because waste water companies have some fairly large commercial customers, where the four biggest represent half of all Fredericia's waste water.

"55 percent of all our revenue comes from the ladder model, and 49 of turnover comes from level 3, meaning around half of all income involves a sizeable rebate," explains Fredericia Spildevand og Energi A/S chief economist, Claus Christoffersen.

In order to finance this rebate waste water companies have had to raise the price for households as wells as companies on level 1 and 2 of the ladder model. The cubic meter price will increase annually until 2018, while big companies on level 3, on the other hand, will pay less waste water tariffs.

"Before the ladder model, we had a cubic meter price around DKK 19.40 (excluding VAT). In 2018 it will probably be DKK 27.40 for level 1, DKK 21.92 for level 2 and DKK 10.96 for level 3," Claus Christoffersen says.

The expected price change for a typical household with an annual consumption of 84m³ will look like this:

| 2013 | 2018 |
|---|---|
| DKK 2,225 | DKK 3,252 |

An increase of approximately DKK 1,000.

Companies in level 2 will have to pay DKK 2.52 (excluding VAT) more per cubic meter in 2018 than in 2013.

### Seeking consultation

Before the ladder model went into effect Fredericia Spildevand og Energi A/S' board of directors sent a consultation to the environment ministry explaining the specific circumstances facing Fredericia. A proposal was put forth to cut the rebates of commercial customers on level 3 from 60% to 40% in order to prevent a disproportionate price increase for other customers. The proposal was rejected.

Waste water companies do not want to decide whether or not the rebate level 3 customers enjoy is too big or too small. That's the purview of politicians, Claus Christoffersen says.

"We are just saying that it has had a serious influence on how much the prices have changed. There was also supposed to be a rebate for level 2, but because level 3 takes such a big share, tariffs have also gone up for the medium-size companies on level 2, he explains.

Before the ladder model went into effect, Fredericia Spildevand og Energi A/S lay in the top 10 cheapest waste water companies. Today they're ranked number 15 and Claus Christoffersen thinks that the company will fall about 25 spots down the list in the coming year with regard to general household rates.

"I know people can say that we as a company can streamline our way of this, and perhaps also as a country. But we're already one of the most efficient companies, so it doesn't seem likely," Claus Christoffersen laments.

| | Level 2<br>Water use: 500 $m^3$ -20.000 $m^3$<br>Cubic meter tariff is | Level 3<br>Water use: Over 20.000 $m^3$<br>Cubic meter tariff is |
|---|---|---|
| 2014 | 4 % lower than level 1 | 12 % lower than level 1 |
| 2015 | 8 % lower than level 1 | 24 % lower than level 1 |
| 2016 | 12 % lower than level 1 | 36 % lower than level 1 |
| 2017 | 16 % lower than level 1 | 48 % lower than level 1 |
| 2018 | 20 % lower than level 1 | 60 % lower than level 1 |

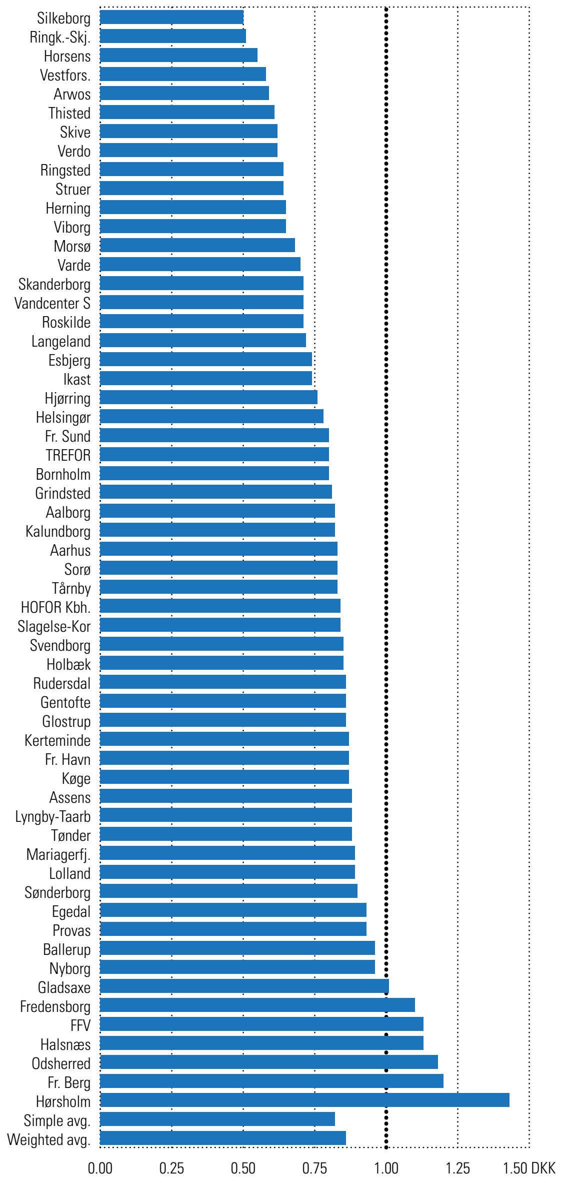
## Operating costs in relation to net volume target

All water companies over 200,000m³ must comply with the Danish Water Sector Act, which makes requirements with respect to a price ceiling and efficiency of the water companies' operating costs. These requirements are measured by the Danish Water Utility Regulatory Authority, which is part of the Danish Competition and Consumer Authority. The efficiency requirement is based on a theoretical calculated net volume target which enables comparison of a number of water companies, irrespective of size, type, framework conditions, number of customers, etc. The net volume target thus expresses how many operating costs a company can be expected to have if it is to match the average level of efficiency. In this way one might say that if a company's key figure 'Operating costs with respect to net volume measured' is above 1 (the balance point), then that company has higher operating costs than predicted by the net volume model. If however the key figure lies under the balance point, the company's operating costs are lower than predicted by the net volume model. Net volume has been adjusted for inflation.

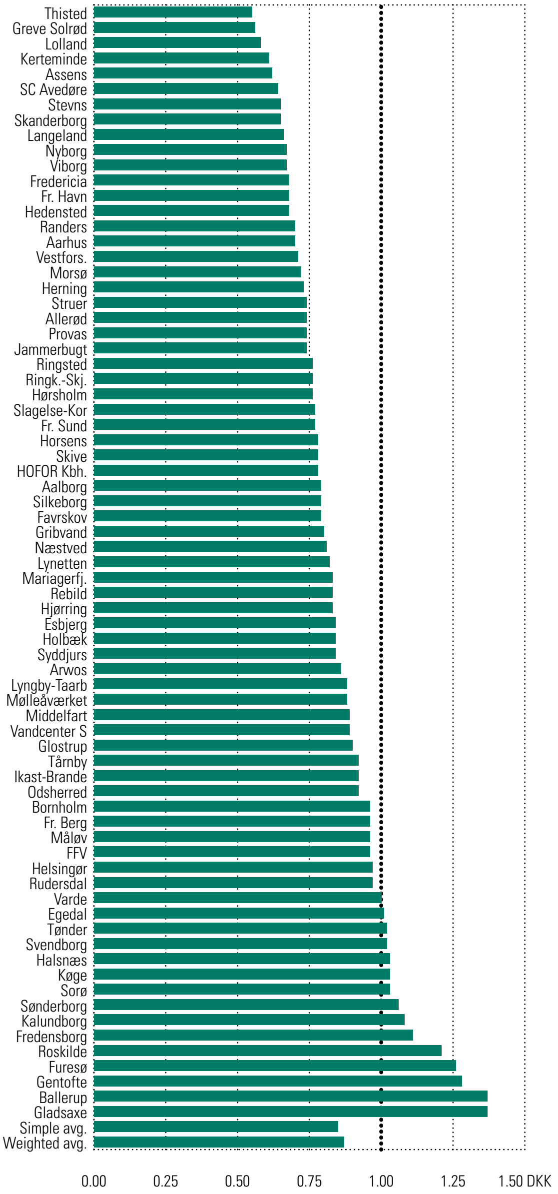
Before it is used to calculate efficiency requirements, an adjusted target is generated that takes account of the age of the distribution network and the frequency of meters per km of pipeline. Special conditions may also be taken into account. The final net volume target is used in the 2016 price ceiling.

Individual company price caps and efficiency requirements for 2016 can be found on the website of the Danish Water Utility Regulatory Authority, part of the Danish Competition and Consumer Authority. Please see: www.kfst.dk/Vandtilsyn.

Drinking water companies
Operation costs in relation to net volume target, 2014




Waste water companies
Operating costs in relation to net volume measured, 2014



| Drinking water companies included in DANVA benchmarking 2015 (Data for 2014) | MASTER DATA | | | | |
|---|---|---|---|---|---|
| | Inhabitants in the supply area | Total water volume sold | Boreholes (water abstraction) | Water works | Supply-pipelines |
| Company unit: | Persons | $m^3$/annum | Quantity | Quantity | km |
| Arwos Vand A/S | 15,046 | 1,134,268 | 14 | 3 | 259 |
| Assens Vandværk a/s | 8,360 | 649,798 | 8 | 2 | 131 |
| Bornholms Forsyning A/S | 20,000 | 1,255,580 | 28 | 5 | 686 |
| Egedal Vandforsyning A/S | 16,400 | 629,836 | 9 | 1 | 152 |
| Energi Viborg Vand A/S | 52,514 | 2,305,563 | 12 | 4 | 557 |
| Energiforsyningen (Køge Vand A/S) | 31,180 | 1,717,491 | 20 | 3 | 278 |
| Esbjerg Vand A/S | 92,000 | 6,727,000 | 49 | 6 | 995 |
| FFV Vand A/S | 9,308 | 698,249 | 7 | 2 | 239 |
| Forsyning Ballerup A/S | 54,000 | 3,118,303 | 11 | 6 | 322 |
| Forsyning Helsingør Vand A/S | 58,000 | 2,722,226 | 23 | 4 | 379 |
| Fredensborg Vand A/S | 38,400 | 1,705,492 | 13 | 2 | 271 |
| Frederiksberg Vand A/S | 103,192 | 5,291,076 | 5 | 1 | 168 |
| Frederikshavn Vand A/S | 56,000 | 4,373,374 | 105 | 6 | 1,173 |
| Frederikssund Vand A/S | 27,000 | 1,353,323 | 19 | 5 | 319 |
| Glostrup Vand A/S | 21,869 | 1,263,643 | 11 | 3 | 96 |
| Grindsted Vandværk A.m.b.a. | 12,009 | 1.069.505 | 11 | 2 | 255 |
| Halsnæs Vand A/S | 14,700 | 563,141 | 17 | 3 | 169 |
| Herning Vand A/S | 50,300 | 3,181,500 | 21 | 3 | 671 |
| Hjørring Vandselskab A/S | 34,000 | 3,262,230 | 49 | 5 | 892 |
| HOFOR Vand København A/S | 574,871 | 48,015,000 | 546 | 7 | 1,075 |
| Holbæk Vand A/S | 24,899 | 1,592,767 | 14 | 2 | 216 |
| Horsens Vand A/S | 50,000 | 3,899,023 | 20 | 4 | 616 |
| Hørsholm Vand ApS | 24,676 | 1,282,293 | | | 148 |
| Ikast Vandforsyning A.m.b.A | 16,000 | 936,466 | 11 | 2 | 207 |
| Kalundborg Vandforsyning A/S | 13,450 | 3,044,774 | 15 | 2 | 278 |
| Kerteminde Forsyning - Vand A/S | 17,000 | 898,869 | 9 | 2 | 205 |
| Langeland Vand ApS | 9,300 | 773,636 | 25 | 4 | 338 |
| Lolland Vand A/S | 42,024 | 1,637,247 | 29 | 4 | 857 |
| Lyngby-Taarbæk Vand A/S | 54,778 | 2,787,604 | 8 | 2 | 209 |
| Mariagerfjord Vand a/s | 15,000 | 1,308,492 | 14 | 7 | 297 |
| Morsø Vand A/S | 9,244 | 625,429 | 9 | 2 | 118 |

| PROCESS BENCHMARKING (TOTAL FIGURES) | | | | | COSTS 2014 | | |
|---|---|---|---|---|---|---|---|
| Operating costs for production, distribution and customer service | Operating costs for production | Operating costs for distribution | Operating costs for customer service | Investments made and renovation expenditure | Fixed annual contribution incl. VAT | Variable water contribution incl. VAT and other taxes | Expenditure for usage of (100m³/year) |
| DKK/m³ | DKK/m³ | DKK/m³ | DKK/unit | DKK/sold m³ | DKK | DKK/m³ | DKK |
| 3.90 | 0.79 | 2.71 | 49.33 | 3.25 | 563 | 15.79 | 2,142 |
| 5.13 | 2.43 | 1.74 | 130.18 | 5.30 | 595 | 16.92 | 2,287 |
| 6.44 | 2.28 | 2.85 | 108.78 | 7.64 | 1,221 | 16.12 | 2,833 |
| 7.64 | 4.29 | 1.68 | 162.27 | 3.13 | 425 | 16.73 | 2,098 |
| 5.21 | 2.19 | 2.10 | 120.69 | 4.91 | 565 | 16.41 | 2,206 |
| 5.00 | 2.32 | 2.61 | 110.52 | 7.19 | 184 | 20.04 | 2,188 |
| 3.88 | 2.20 | 0.93 | 145.72 | 4.13 | 803 | 13.58 | 2,161 |
| 7.99 | 2.49 | 3.81 | 174.75 | 4.52 | 875 | 17.67 | 2,642 |
| 5.61 | 2.58 | 2.69 | 369.53 | 2.92 | 0 | 19.43 | 1,943 |
| 6.61 | 3.24 | 1.34 | 168.04 | 10.72 | 569 | 20.78 | 2,647 |
| 4.34 | 2.99 | 2.03 | 72.82 | 7.47 | 254 | 22.12 | 2,466 |
| 5.67 | 2.34 | 3.67 | 925.94 | 3.62 | 370 | 21.20 | 2,490 |
| 5.44 | 2.79 | 1.93 | 75.43 | 19.77 | 1.313 | 15.18 | 2,831 |
| 5.71 | 2.08 | 2.97 | 69.58 | 6.41 | 825 | 17.67 | 2,592 |
| 4.33 | 1.21 | 1.84 | 538.32 | 6.86 | 283 | 20.00 | 2,283 |
| 4.25 | 1.83 | 0.95 | 306.03 | 3.42 | 693 | 10.46 | 1,739 |
| 9.97 | 4.06 | 3.82 | 121.04 | 8.71 | 838 | 22.52 | 3,090 |
| 4.24 | 1.75 | 1.98 | 72.11 | 4.09 | 630 | 13.85 | 2,015 |
| 4.68 | 2.79 | 1.40 | 62.57 | 4.50 | 1.284 | 15.04 | 2,788 |
| 3.40 | 2.22 | 1.30 | 366.19 | 2.57 | 480 | 15.75 | 2,055 |
| 5.22 | 1.95 | 2.00 | 87.55 | 6.80 | 0 | 17.16 | 1,716 |
| 3.25 | 1.67 | 1.23 | 59.31 | 8.18 | 973 | 12.00 | 2.173 |
| 4.28 | | 3.87 | 74.22 | 5.31 | 0 | 24.59 | 2,459 |
| 5.03 | 1.69 | 1.95 | 199.66 | 4.97 | 469 | 12.38 | 1,707 |
| 2.59 | 2.49 | 0.79 | 376.21 | 9.07 | 0 | 22.42 | 2,242 |
| 5.83 | 2.11 | 2.87 | 189.58 | 3.56 | 500 | 16.75 | 2,175 |
| 5.53 | 1.81 | 2.37 | 132.97 | 9.39 | 400 | 12.66 | 1,666 |
| 7.29 | 1.77 | 4.14 | 121.43 | 22.37 | 792 | 29.53 | 3,745 |
| 4.51 | 3.00 | 2.86 | 108.89 | 8.28 | 0 | 26.84 | 2,684 |
| 4.48 | 1.96 | 1.87 | 195.17 | 2.94 | 625 | 12.78 | 1,903 |
| 3.53 | 2.15 | 0.99 | 93.10 | 3.59 | 693 | 14.55 | 2,148 |

| Drinking water companies included in DANVA benchmarking 2015 (Data for 2014) | MASTER DATA | | | | |
|---|---|---|---|---|---|
| | Inhabitants in the supply area | Total water volume sold | Boreholes (water abstraction) | Water works | Supply-pipelines |
| Company unit: | Persons | $m^3$/annum | Quantity | Quantity | km |
| NFS A/S | 16,000 | 1,168,254 | 18 | 2 | 183 |
| Nordvand (Gentofte Vand A/S) | 74,607 | 3,617,520 | 23 | 1 | 303 |
| Nordvand (Gladsaxe Vand A/S) | 66,338 | 3,469,129 | 4 | 2 | 231 |
| Odsherred Vand A/S | 5,200 | 370,423 | 15 | 3 | 179 |
| Provas | 33,000 | 1,611,291 | 13 | 3 | 449 |
| Ringkøbing - Skjern Vand A/S | 43,997 | 3,310,929 | 30 | 8 | 1,176 |
| Ringsted Vand A/S | 33,573 | 1,933,454 | 12 | 4 | 371 |
| Roskilde Vand A/S | 54,557 | 3,169,561 | 20 | 3 | 375 |
| Rudersdal Forsyning | 33,000 | 1,581,334 | 13 | 3 | 204 |
| Silkeborg Vand A/S | 45,600 | 2,423,657 | 11 | 3 | 503 |
| SK Vand A/S | 69,000 | 3,341,909 | 49 | 6 | 696 |
| Skanderborg Forsyningsvirksomhed A/S | 18,500 | 1,003,381 | 19 | 5 | 204 |
| Skive Vandforsyning A/S | 33,585 | 2,366,608 | 31 | 10 | 704 |
| Sorø Vand A/S | 10,000 | 503,613 | 8 | 1 | 245 |
| Struer Forsyning Vand A/S | 16,000 | 934,960 | 9 | 2 | 266 |
| Svendborg Vand A/S | 37,500 | 1,895,421 | 27 | 6 | 450 |
| Sønderborg Vandforsyning A/S | 40,385 | 2,114,314 | 20 | 6 | 365 |
| Thisted Vand | 32,195 | 3,139,404 | 38 | 9 | 1,070 |
| TREFOR Vand A/S | 147,000 | 11,122,278 | 92 | 10 | 1,425 |
| Tønder Vand A/S | 24,370 | 1,477,701 | 12 | 5 | 552 |
| TÅRNBYFORSYNING Vand A/S | 42,573 | 2,311,257 | 10 | 1 | 191 |
| Vandcenter Syd as | 165,000 | 8,812,802 | 46 | 7 | 999 |
| Varde Vandforsyning A/S | 18,335 | 1,590,171 | 16 | 3 | 524 |
| Verdo Vand A/S | 49,194 | 2,374,326 | 20 | 4 | 339 |
| Vestforsyning Vand A/S | 42,956 | 3,618,250 | 29 | 7 | 1,090 |
| Aalborg Forsyning, Vand A/S | 115,038 | 6,634,064 | 53 | 15 | 686 |
| Aarhus Vand A/S | 274,306 | 14,351,361 | 83 | 9 | 1,462 |

| PROCESS BENCHMARKING (TOTAL FIGURES) | | | | | COSTS 2014 | | |
|---|---|---|---|---|---|---|---|
| Operating costs for production, distribution and customer service | Operating costs for production | Operating costs for distribution | Operating costs for customer service | Investments made and renovation expenditure | Fixed annual contribution incl. VAT | Variable water contribution incl. VAT and other taxes | Expenditure for usage of (100m³/annum) |
| DKK/m³ | DKK/m³ | DKK/m³ | DKK/unit | DKK/ sold m³ | DKK | DKK/m³ | DKK |
| 5.05 | 2.65 | 1.81 | 76.28 | 3.74 | 500 | 16.41 | 2,141 |
| 4.84 | 1.41 | 2.88 | 129.33 | 12.61 | 0 | 23.95 | 2,395 |
| 3.88 | 2.68 | 2.70 | 181.49 | 16.55 | 0 | 23.65 | 2,365 |
| 11.47 | 4.95 | 4.34 | 108.81 | 17.64 | 1,100 | 15.16 | 2,616 |
| 5.66 | 1.79 | 2.99 | 93.78 | 12.91 | 864 | 18.26 | 2,690 |
| 3.28 | 1.47 | 1.05 | 109.35 | 21.38 | 1,131 | 14.96 | 2,627 |
| 2.91 | 1.30 | 0.74 | 220.30 | 6.23 | 186 | 18.77 | 2,063 |
| 4.78 | 1.36 | 2.77 | 153.11 | 4.21 | 376 | 22.15 | 2,591 |
| 4.71 | 1.92 | 2.17 | 42.09 | 3.94 | 445 | 17.22 | 2,167 |
| 3.51 | 1.51 | 1.38 | 92.44 | 18.39 | 788 | 13.84 | 2,172 |
| 5.89 | 2.71 | 2.20 | 68.17 | 5.99 | 1,237 | 14.36 | 2,673 |
| 4.61 | 2.23 | 1.72 | 89.83 | 12.01 | 1,106 | 17.53 | 2,859 |
| 3.95 | 2.21 | 1.27 | 46.90 | 5.61 | 688 | 14.23 | 2,111 |
| 5.74 | 2.09 | 2.71 | 136.17 | 3.34 | 520 | 19.40 | 2,460 |
| 3.62 | 1.91 | 1.39 | 36.13 | 3.77 | 640 | 13.30 | 1,970 |
| 6.49 | 2.56 | 2.38 | 171,53 | 8.90 | 613 | 19.95 | 2,608 |
| 4.81 | 1.78 | 1.75 | 163.97 | 5.68 | 555 | 15.65 | 2,120 |
| 3.08 | 1.08 | 1.60 | 70.94 | 4.20 | 725 | 17.14 | 2,439 |
| 4.40 | 1.69 | 1.24 | 297.51 | 8.78 | 1,250 | 15.16 | 2,766 |
| 5.09 | 2.47 | 1.76 | 176.79 | 7.87 | 1,047 | 14.89 | 2,536 |
| 3.17 | 4.39 | 1.27 | 98.53 | 3.60 | 256 | 18.40 | 2,096 |
| 4.68 | 1.84 | 1.97 | 157.36 | 4.15 | 600 | 17.98 | 2,398 |
| 4.34 | 2.34 | 2.20 | 14.51 | 12.18 | 913 | 12.26 | 2,139 |
| 4.06 | 1.00 | 2.11 | 196.50 | 3.62 | 694 | 16.00 | 2,294 |
| 4.14 | 1.58 | 2.36 | 18.41 | 2.98 | 708 | 14.25 | 2,133 |
| 4.39 | 1.80 | 1.97 | 134.48 | 3.66 | 1,156 | 12.66 | 2,422 |
| 5.36 | 2.01 | 2.44 | 194.93 | 5.87 | 688 | 20.69 | 2,757 |

| Waste water companies included in DANVA benchmarking 2015 (Data for 2014) | MASTER DATA | | | | | |
|---|---|---|---|---|---|---|
| | Inhabitants in the supply area | Sewage pipelines (effluent and run-off) | Debited water volume sold | Treatment plant over 30 PE | Additional water volume to treatment plant | Total organic load |
| Company unit: | Persons | km | $m^3$/annum | Quantity | $m^3$/annum | Person equivalent (PE) |
| Afløb Ballerup A/S | 48,364 | 378 | 2,731,106 | | | |
| Allerød Spildevand A/S | 23,609 | 278 | 1,109,234 | 3 | 2,229,210 | 34,500 |
| Arwos Spildevand A/S | 50,488 | 1,132 | 2,629,759 | 8 | 8,244,706 | 68,175 |
| Assens Spildevand A/S | 36,748 | 1,034 | 1,668,357 | 8 | 5,354,993 | 70,720 |
| BIOFOS Lynettefællesskabet A/S | | | 44,018,900 | 2 | 95,420,000 | 1,285,000 |
| BIOFOS Spildevandscenter Avedøre A/S | 211,670 | 57 | 13,208,000 | 1 | 26,376,329 | 228,000 |
| Bornholms Forsyning A/S | 30,000 | 800 | 1,788,191 | 8 | 6,370,188 | 79,749 |
| Egedal Spildevand A/S | 40,653 | 594 | 1,547,447 | 4 | 2,473,166 | 32,540 |
| Energi Viborg Spildevand A/S | 94,486 | 1,641 | 4,084,734 | 22 | 11,736,725 | 110,037 |
| Energiforsyningen (Køge Afløb A/S) | 55,021 | 884 | 2,651,398 | 5 | 7,741,689 | 107,051 |
| Esbjerg Spildevand A/S | 119,000 | 1,289 | 6,240,000 | 10 | 17,970,243 | 229,009 |
| Favrskov Forsyning | 42,178 | 857 | 1,837,164 | 7 | 4,217,190 | 43,934 |
| FFV Spildevand A/S | 25,000 | 1,274 | 2,357,074 | 8 | 8,473,295 | 42,751 |
| Forsyning Helsingør Spildevand A/S | 61,000 | 590 | 2,799,750 | 3 | 6,541,124 | 67,706 |
| Fredensborg Spildevand A/S | 39,462 | 428 | 1,688,332 | 3 | 2,862,989 | 28,909 |
| Fredericia Spildevand og Energi A/S | 50,100 | 841 | 5,047,000 | 1 | 10,242,972 | 319,957 |
| Frederiksberg Kloak A/S | 103,286 | 146 | 5,099,445 | | | |
| Frederikshavn Spildevand A/S | 51,502 | 864 | 4,019,068 | 9 | 12,764,507 | 251,215 |
| Frederikssund Spildevand A/S | 39,000 | 658 | 2,054,405 | 6 | 3,868,181 | 46,863 |
| Furesø Spildevand A/S | 38,717 | 324 | 1,688,762 | 1 | 1,432,262 | 20,400 |
| Glostrup Spildevand A/S | 21,869 | 156 | 1,325,607 | | | |
| Greve Solrød Forsyning A/S | 69,153 | 846 | 3,138,254 | 2 | 8,187,602 | 92,300 |
| Gribvand Spildevand A/S | 38,500 | 770 | 1,815,425 | 9 | 5,397,796 | 44,745 |
| Halsnæs Spildevand A/S | 28,337 | 523 | 1,341,644 | 4 | 3,387,849 | 33,028 |
| Hedensted Spildevand A/S | 32,105 | 907 | 1,800,054 | 7 | 5,804,859 | 71,115 |
| Herning Vand A/S | 70,000 | 1,180 | 4,099,105 | 14 | 13,728,942 | 226,197 |
| Hjørring Vandselskab A/S | 52,000 | 1,059 | 3,238,282 | 10 | 11,102,778 | 192,277 |
| HOFOR Spildevand København A/S | 574,871 | 1,070 | 29,177,583 | | | |
| Holbæk Spildevand A/S | 53,262 | 998 | 2,920,273 | 15 | 6,483,269 | 82,668 |
| Horsens Vand A/S | 71,500 | 1,315 | 4,550,739 | 3 | 11,571,930 | 301,839 |
| Hørsholm Vand ApS | 24,511 | 196 | 1,720,940 | 1 | 3,952,870 | 54,769 |

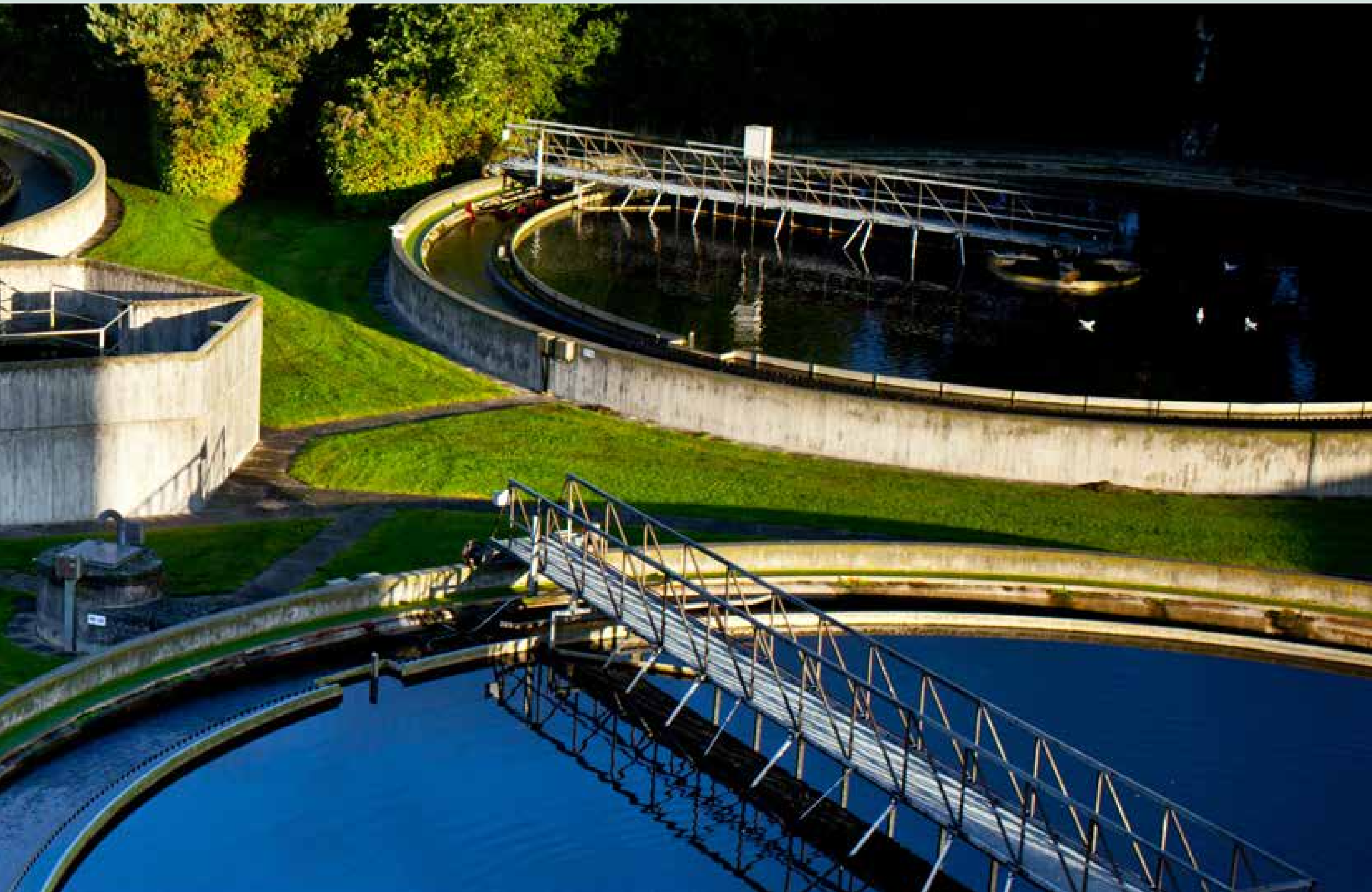
| PROCESS BENCHMARKING (TOTAL FIGURES) | | | | | COSTS 2014 | | |
|---|---|---|---|---|---|---|---|
| Operating costs for transport, treatment and customer account administration | Operating costs for transport | Operating costs for treatment | Operating costs for customer account administration | Investments made and renovation expenditure | Fixed annual contribution incl. VAT | Variable contribution including VAT and other taxes | Costs when consumption is 100 m³/annum |
| DKK/m³ | DKK/m³ | DKK/m³ | DKK/metered | DKK/sold m³ | DKK | DKK/m³ | DKK |
| 4.63 | 4.20 | | 137.85 | 9.79 | 0 | 23.17 | 2,317 |
| 11.00 | 3.82 | 6.84 | 48.31 | 32.08 | 0 | 46.65 | 4,665 |
| 12.74 | 5.69 | 6.40 | 141.97 | 21.75 | 625 | 40.31 | 4,656 |
| 15.19 | 7.65 | 6.09 | 104.40 | 30.90 | 695 | 50.65 | 5,760 |
| 2.97 | | 2.71 | 0.00 | 2.13 | | | |
| 3.56 | 0.17 | 3.39 | 0.00 | 1.02 | | | |
| 15.94 | 4.80 | 10.13 | 96.87 | 15.81 | 659 | 34.79 | 4,138 |
| 15.05 | 5.38 | 11.66 | 89.39 | 14.61 | 0 | 45.00 | 4,500 |
| 10.60 | 3.74 | 6.10 | 94.83 | 27.29 | 0 | 40.40 | 4,040 |
| 13.51 | 4.87 | 7.59 | 76.76 | 67.77 | 0 | 42.28 | 4,228 |
| 9.30 | 2.78 | 5.95 | 89.52 | 14.57 | 730 | 27.81 | 3,511 |
| 12.76 | 4.53 | 8.12 | 71.70 | 28.28 | 633 | 43.05 | 4,938 |
| 17.83 | 9.12 | 7.51 | 141.57 | 10.54 | 720 | 37.08 | 4,428 |
| 14.77 | 19.74 | 6.80 | 189.98 | 20.98 | 656 | 39.00 | 4,556 |
| 11.50 | 5.06 | 6.01 | 69.81 | 21.07 | 0 | 42.59 | 4,259 |
| 7.78 | 2.18 | 5.30 | 89.21 | 12.51 | 375 | 25.75 | 2,950 |
| 3.50 | 3.01 | | 447.33 | 3.14 | 0 | 12.80 | 1,280 |
| 12.25 | 3.23 | 6.41 | 44.72 | 15.79 | 834 | 38.21 | 4,655 |
| 14.57 | 2.88 | 10.97 | 98.77 | 29.78 | 718 | 42.50 | 4,968 |
| 11.80 | 4.32 | 15.00 | 115.21 | 13.64 | 0 | 45.00 | 4,500 |
| 3.71 | 2.94 | | 263.69 | 5.06 | 0 | 30.00 | 3,000 |
| 8.16 | 1.99 | 5.65 | 79.25 | 23.53 | 0 | 35.00 | 3,500 |
| 17.71 | 6.23 | 9.98 | 102.33 | 90.92 | 689 | 52.01 | 5,890 |
| 20.35 | 7.62 | 11.43 | 259.58 | 33.74 | 625 | 51.00 | 5,725 |
| 15.83 | 5.80 | 9.21 | 93.18 | 19.57 | 720 | 37.50 | 4,470 |
| 10.51 | 4.99 | 4.86 | 83.29 | 20.06 | 0 | 26.88 | 2,688 |
| 14.16 | 5.44 | 7.94 | 75.60 | 9.14 | 719 | 44.11 | 5,130 |
| 2.75 | 2.31 | | 344.64 | 4.06 | 0 | 20.93 | 2,093 |
| 11.91 | 5.07 | 6.14 | 95.14 | 23.10 | 0 | 34.67 | 3,467 |
| 11.73 | 2.57 | 8.68 | 64.60 | 50.20 | 720 | 28.76 | 3,596 |
| 7.01 | 2.83 | 4.79 | 42.85 | 10.85 | 0 | 30.54 | 3,054 |

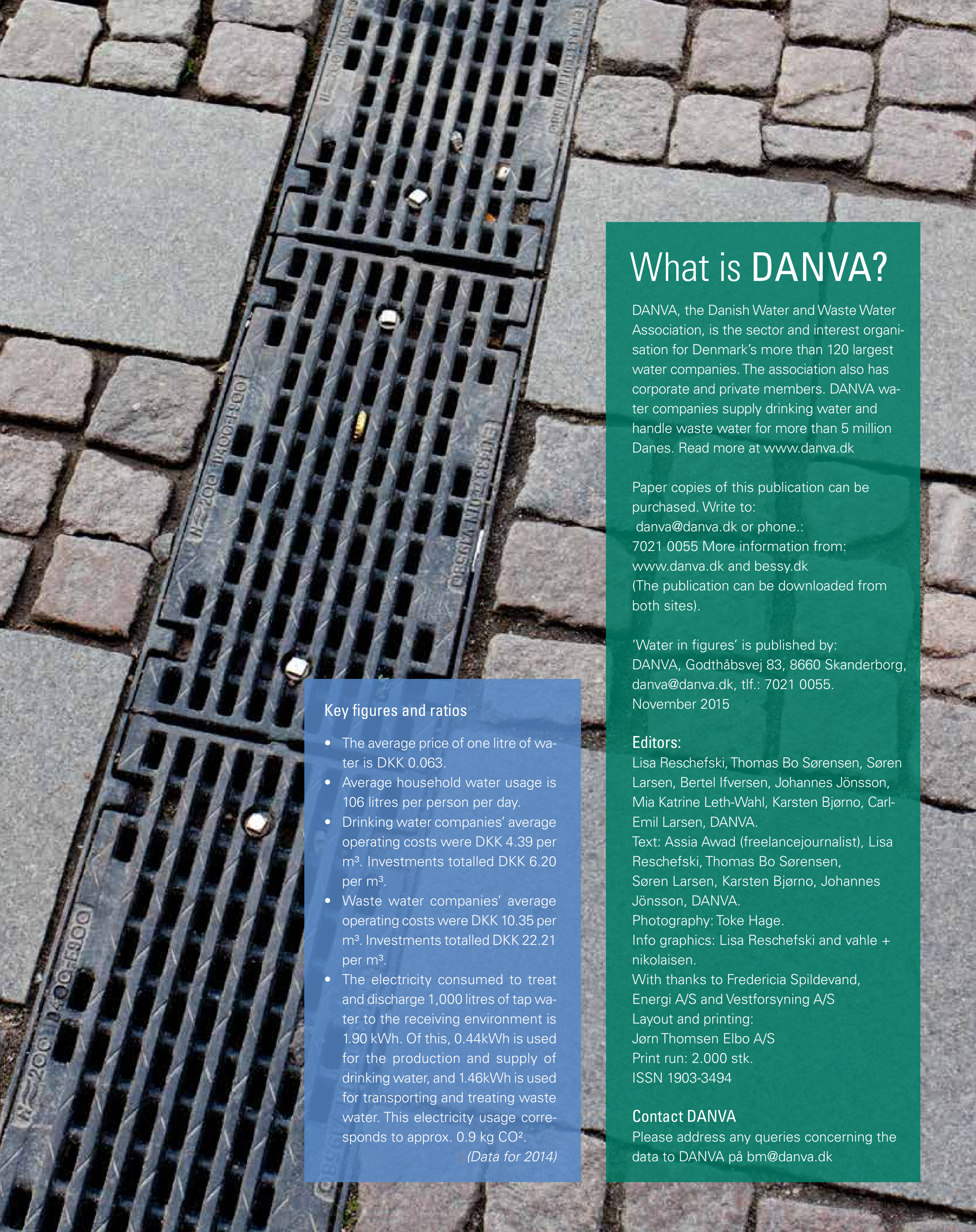
| Waste water companies included in DANVA benchmarking 2015 (Data for 2014) | MASTERDATA | | | | | |
|---|---|---|---|---|---|---|
| | Inhabitants in the supply area | Sewage pipelines (effluent and run-off) | Debited water volume sold | Treatment plant over 30 PE | Additional water volume to treatment plant | Total organic load |
| Company unit: | Persons | km | $m^3$/annum | Quantity | $m^3$/annum | Person equivalent (PE) |
| Ikast-Brande Spildevand A/S | 35,600 | 638 | 1,778,888 | 3 | 5,984,376 | 41,674 |
| Jammerbugt Forsyning A/S | 45,600 | 809 | 1,568,129 | 5 | 5,576,388 | 40,835 |
| Kalundborg Spildevandsanlæg A/S | 38,400 | 803 | 7,141,661 | 11 | 8,376,761 | 83,553 |
| Kerteminde Forsyning - Spildevand A/S | 20,804 | 455 | 1,054,230 | 4 | 2,089,207 | 13,315 |
| Langeland Spildevand ApS | 9,010 | 449 | 594,920 | 7 | 2,414,992 | 12,472 |
| Lolland Spildevand A/S | 23,435 | 912 | 1,707,748 | 56 | 6,222,907 | 54,306 |
| Lyngby-Taarbæk Spildevand A/S | 54,788 | 341 | 2,776,445 | | 0 | 0 |
| Mariagerfjord Spildevand A/S | 30,000 | 852 | 1,943,737 | 3 | 4,768,589 | 66,493 |
| Middelfart Spildevand A/S | 37,857 | 672 | 1,506,156 | 6 | 6,135,787 | 49,782 |
| Morsø Spildevand A/S | 14,767 | 494 | 864,262 | 4 | 3,539,244 | 27,62 |
| Mølleåværket Renseanlæg Lundtofte | 0 | 0 | 4,996,949 | 1 | 10,617,143 | 88,277 |
| Måløv Rens A/S | | | 2,072,742 | 1 | 4,493,550 | 66,649 |
| NFS A/S | 35,532 | 680 | 1,557,918 | 5 | 5,031,831 | 61,634 |
| NK-Forsyning A/S | 71,390 | 1,007 | 2,859,108 | 10 | 10,761,251 | 54,637 |
| Nordvand (Gentofte Spildevand A/S) | 74,607 | 380 | 3,594,135 | | | |
| Nordvand (Gladsaxe Spildevand A/S) | 66,338 | 275 | 3,365,244 | | | |
| Odsherred Spildevand A/S | 25,600 | 628 | 1,199,409 | 11 | 2,831,224 | 34,268 |
| Provas | 49,237 | 966 | 2,345,425 | 13 | 9,726,660 | 83,151 |
| Randers Spildevand A/S | 91,762 | 1,496 | 4,049,517 | 8 | 9,943,161 | 86,877 |
| Rebild Vand & Spildevand A/S | 21,500 | 577 | 1,084,302 | 12 | 753,089 | 11,025 |
| Ringkøbing - Skjern Spildevand A/S | 22,030 | 999 | 2,395,123 | | 8,976,287 | 79,160 |
| Ringsted Spildevand A/S | 27,691 | 599 | 2,041,500 | 3 | 3,913,834 | 83,936 |
| Roskilde Spildevand A/S | 67,700 | 881 | 4,020,974 | 5 | 9,194,432 | 106,329 |
| Rudersdal Forsyning | 55,013 | 460 | 2,727,820 | 4 | 4,126,640 | 20,823 |
| Silkeborg Spildevand A/S | 80,100 | 1,399 | 3,711,331 | 15 | 7,183,123 | 98,634 |
| SK Spildevand A/S | 57,100 | 1,274 | 3,243,254 | 18 | 8,375,044 | 119,490 |
| Skanderborg Forsyningsvirksomhed A/S | 58,867 | 828 | 2,380,324 | 7 | 5,618,489 | 61,169 |
| Skive Spildevand A/S | 15,343 | 1,043 | 1,849,759 | 5 | 7,191,517 | 30,751 |
| Sorø Spildevand A/S | 21,000 | 394 | 1,005,569 | 13 | 3,079,323 | 25,096 |
| Stevns Spildevand A/S | 18,269 | 447 | 815,101 | 6 | 2,700,488 | 15,977 |
| Struer Forsyning Spildevand A/S | 18,229 | 387 | 942,596 | 3 | 2,225,329 | 31,664 |

| PROCESS BENCHMARKING (TOTAL FIGURES) | | | | | COSTS 2014 | | |
|---|---|---|---|---|---|---|---|
| Operating costs for transport, treatment and customer account administration | Operating costs for transport | Operating costs for treatment | Operating costs for customer account administration | Investments made and renovation expenditure | Fixed annual contribution incl. VAT | Variable contribution including VAT and other taxes | Costs when consumption is 100 $m^3$/annum |
| DKK/$m^3$ | DKK/$m^3$ | DKK/$m^3$ | DKK/metered | DKK/sold $m^3$ | DKK | DKK/$m^3$ | DKK |
| 11.92 | 5.18 | 6.10 | 75.65 | 28.11 | 625 | 34.38 | 4,063 |
| 13.42 | 4.61 | 8.18 | 39.22 | 24.57 | 717 | 23.55 | 3,072 |
| 5.50 | 7.75 | 3.24 | 147.52 | 13.79 | 0 | 50.20 | 5,020 |
| 7.68 | 2.24 | 2.89 | 182.47 | 17.72 | 500 | 28.75 | 3,375 |
| 18.72 | 9.53 | 7.47 | 113.40 | 26.94 | 688 | 32.50 | 3,938 |
| 14.46 | 5.69 | 7.91 | 114.56 | 123.02 | 720 | 56.80 | 6,400 |
| 3.87 | 3.71 | | 39.63 | 7.24 | 0 | 26.63 | 2,663 |
| 14.75 | 5.29 | 8.68 | 111.53 | 126.59 | 650 | 32.75 | 3,925 |
| 16.65 | 5.76 | 10.23 | 59.21 | 13.37 | 0 | 51.53 | 5,153 |
| 20.30 | 6.12 | 13.20 | 107.42 | 61.09 | 619 | 42.38 | 4,857 |
| 4.29 | | 4.01 | | 2.38 | 0 | 11.44 | 1,144 |
| 4.58 | | 5.49 | 0.00 | 4.31 | | | |
| 14.28 | 4.39 | 8.43 | 87.59 | 16.03 | 500 | 40.00 | 4,500 |
| 13.36 | 5.72 | 6.52 | 125.73 | 27.22 | 720 | 46.53 | 5,373 |
| 4.95 | 4.49 | | 106.03 | 28.25 | 0 | 26.65 | 2,665 |
| 5.13 | 4.54 | | 169.03 | 9.65 | 0 | 24.50 | 2,450 |
| 16.87 | 5.10 | 10.64 | 107.08 | 22.13 | 710 | 45.00 | 5,210 |
| 12.51 | 4.70 | 6.89 | 115.50 | 26.84 | 719 | 45.76 | 5,295 |
| 10.26 | 3.13 | 5.83 | 87.83 | 23.54 | 750 | 34.73 | 4,223 |
| 10.54 | 4.40 | 17.82 | 122.23 | 47.02 | 650 | 35.00 | 4,150 |
| 13.99 | 4.78 | 8.69 | 189.20 | 12.78 | 720 | 37.96 | 4,516 |
| 10.94 | 5.75 | 5.37 | 391.13 | 25.48 | 0 | 43.85 | 4,385 |
| 13.88 | 6.30 | 7.13 | 79.76 | 11.74 | 0 | 36.65 | 3,665 |
| 6.81 | 2.78 | 6.50 | 57.49 | 24.20 | 0 | 30.30 | 3,030 |
| 10.52 | 4.36 | 5.43 | 96.18 | 21.81 | 656 | 30.00 | 3,656 |
| 13.57 | 5.78 | 6.92 | 108.22 | 62.36 | 720 | 53.13 | 6,033 |
| 10.68 | 2.85 | 6.90 | 128.89 | 23.50 | 408 | 32.50 | 3,658 |
| 12.88 | 6.78 | 6.28 | 48.89 | 33.29 | 656 | 31.88 | 3,844 |
| 17.16 | 5.76 | 9.66 | 182.99 | 29.27 | 563 | 51.55 | 5,718 |
| 15.10 | 5.50 | 8.24 | 129.96 | 62.14 | 740 | 60.00 | 6,740 |
| 12.09 | 3.91 | 7.94 | 26.68 | 14.94 | 0 | 23.75 | 2,375 |

| Waste water companies included in DANVA benchmarking 2015 (Data for 2014) | MASTER DATA | | | | | |
|---|---|---|---|---|---|---|
| | Inhabitants in the supply area | Sewage pipelines (effluent and run-off) | Debited water volume sold | Treatment plant over 30 PE | Additional water volume to treatment plant | Total organic load |
| Company unit: | Persons | km | $m^3$/annum | Quantity | $m^3$/annum | Person equivalent (PE) |
| Svendborg Spildevand A/S | 20,639 | 833 | 2,346,120 | 7 | 8,143,861 | 60,280 |
| Syddjurs Spildevand A/S | 35,800 | 764 | 1,619,450 | 12 | 3,299,387 | 37,553 |
| Sønderborg Spildevandsforsyning A/S | 32,800 | 1,470 | 3,272,092 | 5 | 9,566,715 | 77,580 |
| Thisted Vand | 40,175 | 816 | 2,499,391 | 5 | 8,289,383 | 173,312 |
| Tønder Spildevand A/S | 29,321 | 559 | 1,996,876 | 17 | 6,757,198 | 45,638 |
| TÅRNBYFORSYNING Spildevand A/S | 42,573 | 186 | 2,315,420 | 1 | 5,413,420 | 61,454 |
| Vandcenter Syd as | 215,000 | 2,201 | 10,809,150 | 14 | 29,714,338 | 296,732 |
| Varde Kloak & Spildevand A/S | 33,750 | 823 | 2,166,090 | 9 | 7,166,005 | 65,448 |
| Vestforsyning Spildevand A/S | 51,200 | 971 | 3,423,559 | 6 | 8,177,140 | 140,847 |
| Aalborg Forsyning, Kloak A/S | 199,831 | 1,988 | 10,333,499 | 2 | 27,812,428 | 403,219 |
| Aarhus Vand A/S | 320,473 | 2,643 | 15,269,083 | 9 | 33.285.800 | 364,391 |

| PROCESS BENCHMARKING (TOTAL FIGURES) | | | | | COSTS 2014 | | |
|---|---|---|---|---|---|---|---|
| Operating costs for transport, treatment and customer account administration | Operating costs for transport | Operating costs for treatment | Operating costs for customer account administration | Investments made and renovation expenditure | Fixed annual contribution incl. VAT | Variable contribution including VAT and other taxes | Costs when consumption is 100 m³/annum |
| DKK/m³ | DKK/m³ | DKK/m³ | DKK/metered | DKK/sold m³ | DKK | DKK/m³ | DKK |
| 15.79 | 5.10 | 9.53 | 130.99 | 26.10 | 204 | 36.50 | 3,854 |
| 15.86 | 6.06 | 8.46 | 139.89 | 19.43 | 795 | 48.99 | 5,694 |
| 13.79 | 5.03 | 6.70 | 184.56 | 38.37 | 0 | 44.88 | 4,488 |
| 12.14 | 4.60 | 6.97 | 89.75 | 19.26 | 720 | 36.05 | 4,325 |
| 17.02 | 8.34 | 7.57 | 106.34 | 18.74 | 594 | 37.00 | 4,294 |
| 9.82 | 3.20 | 6.11 | 123.94 | 9.66 | 0 | 28.09 | 2,809 |
| 11.06 | 3.96 | 6.28 | 117.01 | 29.66 | 656 | 34.88 | 4,144 |
| 14.07 | 5.10 | 8.58 | 11.70 | 24.44 | 549 | 29.26 | 3,475 |
| 12.64 | 4.35 | 7.78 | 91.36 | 28.61 | 711 | 26.00 | 3,311 |
| 7.84 | 3.62 | 3.25 | 158.12 | 16.99 | 719 | 28.81 | 3,600 |
| 7.27 | 2.42 | 4.31 | 105.54 | 18.22 | 0 | 30.40 | 3,040 |





# What is **DANVA?**

DANVA, the Danish Water and Waste Water Association, is the sector and interest organisation for Denmark's more than 120 largest water companies. The association also has corporate and private members. DANVA water companies supply drinking water and handle waste water for more than 5 million Danes. Read more at www.danva.dk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### Contact DANVA

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### Key figures and ratios

- The average price of one litre of water is DKK 0.063.
- Average household water usage is 106 litres per person per day.
- Drinking water companies' average operating costs were DKK 4.39 per $m^3$. Investments totalled DKK 6.20 per $m^3$.
- Waste water companies' average operating costs were DKK 10.35 per $m^3$. Investments totalled DKK 22.21 per $m^3$.
- The electricity consumed to treat and discharge 1,000 litres of tap water to the receiving environment is 1.90 kWh. Of this, 0.44kWh is used for the production and supply of drinking water, and 1.46kWh is used for transporting and treating waste water. This electricity usage corresponds to approx. 0.9 kg $CO^2$.

*(Data for 2014)*