

Hans Christian Andersen and the Blue Light

Bent Ole Gram Mortensen¹

Abstract

This article examines the development of energy law illustrated through the authorship of Hans Christian Andersen (1802-1875). The focus is on the implementing of city gas, which happened in the lifetime of H.C. Andersen. Based on the literary observations of H.C. Andersen the changes in the legal framework in energy law and other regulatory areas are analysed.

H.C. Andersen's references to gas lighting provides an emotional experience to change and an approach towards the empathetic understanding to make changing life recognizably human. With this reference I have availed of the opportunity to briefly describe the historical development of energy and laws which were introduced and developed into the modern legislation we now have. – Through his literary greatness H.C Andersen not only generates an attitude of respect toward energy but also widens horizons for lawyers when we look at the energy challenges on the global level.

Introduction

Hans Christian Andersen was born in the era of gas lightning – the 19th century, a time of great technological achievements, a time of transformation, socially, economically and politically. Furthermore it was culturally a golden age. Most notably it was a period in Denmark for the introduction of democracy (a constitutional monarchy) and transformation from a feudal to a 'modern' industrialised economy, where sources of energy were becoming cheaper and more readily accessible.

This article gives an idea about the interrelationship between the change of social and economic conditions of increasing importance and the optimism about development of technology, which was common among artists in the late 19th and the early 20th century.

1 Bent Ole Gram Mortensen holds a chair in environmental and energy law, at the University of Southern Denmark. For the past 20 years, Professor Mortensen has been engaged in the legal aspects of the energy industry and has contributed to a large number of articles and books in English, Danish and German.

City Gas Supply² was the first energy supply to be transmitted by pipes to individual households. Later, conduction pipes and lines were used for electricity, natural gas and district heating and cooling. The introduction of city gas can be seen as the first step into a modern energy supply. The developed world we are living in today is a result of the 19th century development of an industrialised economy. Part of that development was dependent on an increased access to energy, one being that gas light made night shift work possible in many industries.

The municipalities were the main customer of city gas from the start. Before gas lights mainly oil lamps were used to light the streets in order to reduce crime and to make the streets safe for the citizens. Public street lighting quickly became a significant user of gas; and there was need for better street lighting. Lighting from oil lamps was of limited strength, and this was not always sufficient for streets with rough paving stones and open drains.

Gas lights soon found their way into the households of the middle class replacing candles and oil lamps. Later gas cookers and stoves were introduced. An efficient domestic energy supply had great importance for the increase in welfare for the population and for social behaviour. Better lightning increased the length of the day in winter times. Reading and social intercourse were facilitated. City gas was, however, just one of the many technological revolutions that happened in Andersen's century. The 19th century was also the century for machine power, transport and, with that, energy. Ever since then, the demand for energy has only increased.

Usually when new technology emerges the legal regulations are seldom in place. The 19th century legal regime governing such business then was very different from what we know now. This paper takes it basis in such a case, at the same time describing an interesting history of technology. And in the 19th century we had H.C. Andersen as an observer. H.C. Andersen's stories are a source of background knowledge for laws concerning energy. He describes changes in society and the human response to these changes i.e. his stories provide emotional experience to change. For empathetic understanding and to make changing life recognizably human he looks at life from the perspective of inanimate objects for example street lamps.

2 City gas is also referred to as town gas. In urban areas it is supplied to the user via a piped distribution system.

We can see how the Literature of H.C. Andersen provides an interesting historical and human aspect of this development. This paper puts forward foresight of a brilliant author – his stories that created fantasies are the realities of today. H.C. Andersen provided an attitude of respect toward energy - It's a beautiful reminder for children and even grown ups who take energy (for example electricity) for granted. Literature can expand emotional horizons of legislatures.

In the first part of this article, H.C. Andersen and his literary observations of city gas is described. In the second part these observations and their legal implications are dealt with. The term blue light as used in the title is among the names that Andersen himself used about city gas.

H.C. Andersen – a man of progress

The fairy tales of H.C. Andersen are more than just fables and moral stories. He lived in a period of social transformation, and his stories express the optimism of his time regarding the development in technology. Andersen developed the genre of fairy tales when he at last found his own style. He was humane, romantic and welcomed development. It is beyond any doubt that Andersen had an eye for the changing times and for the change between technologies and their consequences. He welcomed development and allowed himself to be inspired by the arrival of new technology such as city gas.

Among the storytellers of the Danish introduction of city gas was another Hans Christian, H.C. Oersted – a Danish physicist,³ who was very important for Andersen. Oersted attributed to himself the honour of being the first to see the genius in Andersen's fairy tales and thought that Andersen's stories would make him famous and his fairy tales would immortalise him. Oersted may have already developed a knowledge of gas as a light source prior to Andersen's birth. Oersted happened to pass through Paris in 1802. Here, he may have heard about the demonstrations led by Philippe Lebon the year before, in 1801, in relation to the use of gas as a light source.⁴ The following year, it was discussed in the journal *Nyt Bibliothek for Physik*, 3rd binder, 1802 in pages 205-218. In 1819, the same year as Andersen moved to Copenhagen, Oersted participated in Steen A. Billes project in relation to the establishment of a gasworks to light the walking street, Strøget, in Copenhagen. Like other projects of the time, however, the gas project amounted to

3 In Danish: Ørsted.

4 Philippe Lebon held public presentations in 1801 at the hotel Seignelay to demonstrate the use of the thermo-lamp.

nothing. In 1848, Oersted became a member of a committee that was to put together a combined plan for Copenhagen's water, gas and sewerage systems. However, on account of his age, Oersted was forced to withdraw from his position before the first meeting. Oersted did not manage to experience public gasworks in Denmark (Hyltdoft 1994:7, 9 and 70ff.).

Oersted's work, "The spirit in nature", seems to have been an important source of inspiration for Andersen. In his story "Two brothers" from 1868, Andersen places H.C. Oersted on the shelves together with his brother, the important Danish lawyer and politician, Anders Sandøe Oersted. H.C. Oersted is also honoured in other places, such as in "Great-grandfather" from 1872, where twenty pounds are given to his monument and in "In a Thousand Years" from 1853, which talks about the country of Oersted, among other places.

City gas was, however, just one of the many technological revolutions that happened in Andersen's century. The 19th century was also the century for machine power and, with that, energy. In the fairy tale about "The Muse of the New Century" from 1861, Andersen places the muse's birth

"in the midst of our busy time, noisy with machinery" ... "We did not hear the sound of the cradle for the clattering of machines, the whistling of railway engines, the blasting of real rocks and of the old fetters of the mind. She has been born in the great factory of the present age, where steam exerts its power, where 'Master Bloodless' and his workmen toil by day and night."

This is how industrial work is described. Moreover, Andersen saw beyond just his own century. In the story "In a Thousand Years" from 1853 an invasion of American tourists was predicted: "Yes, in a thousand years people will fly on the wings of steam through the air, over the ocean!" Here, Andersen talks about "the ship of the air", "the air steamboat", "electro-magnetic wire under the ocean", yes, and even about a "tunnel under the English Channel, to France". It was the century of projects and visionaries. Through his literary works, Andersen seems to be among those who foresaw the later consequences of the technological achievements.

Gas was not the only energy form present in his work. Coal was described as well. Denmark was at the start of the 19th century very dependent on coal importation – English coal from Newcastle, direct from the “coal-island” as H.C. Andersen describes in “The Muse of the New Century” from 1861:

“One beautiful morning in spring she will come rushing on her dragon, the locomotive, through tunnels and over viaducts, or over the soft strong sea on the snorting dolphin, or through the air on the great bird Roc, and will descend in the land from which her divine voice will first hail the human race. Where? Is it from the land of Columbus, the land of freedom, where the natives became hunted game and the Africans beasts of burden, the land from which we heard the song of Hiawatha? Is it from the Antipodes, the gold nugget in the South Seas the land of contraries, where our night is day, and black swans sing in the mimosa forests? Or from the land where Memnon’s pillar rang and still rings, though we understood not the song of the sphinx in the desert? Is it from the coal-island, where Shakespeare is the ruler from the times of Elizabeth?”

H.C. Andersen and the blue light

When H.C. Andersen moved to Copenhagen in 1819, oil lamps still ruled the streets. He was witness to the beginning of gas lighting. Public gas supply had already begun in England, but on the Continent public gas supply did not arrive before 1820, when Paris opened the first gasworks (Thomsen 2003:87f).

At the time of Andersen’s birth, oil (such as whale oil) was the streetlamp’s normal energy source, though kerosene (also referred to as lamp oil paraffin) was used in some places (Lang 1922:346). In H.C. Andersen’s birthplace in Odense, oil lamps had been used as street lighting since 1762 (Thestrup et al 1986:68). In smaller towns, street lighting began later (Thomsen 2008:12). The oil came from whale and seal catches in the North Atlantic (Thomsen 2008:12). From Denmark’s perspective, the Greenlandic whale catch was especially interesting – an interest that, among other things, contributed to the establishment of the Royal Greenlandic Trade (den Kongelige Grønlandske Handel (KGH)) in the 1770s. We can only guess about the fate of the large whale species, had city gas not appeared.

H.C. Andersen described city gas in his fairy tales as well as in his diaries. In H.C. Andersen's diaries from his many travels, there are many references to the use of city gas,⁵ both as street lighting and as lighting in buildings. Street lighting is frequently described in slightly poetic terms. In relation to a visit to London, it was noted in his diaries that he "...looked upon the lit-up shops; there were many gas flames burning..." and, "...on one street, one could see all of the winding flame contours of the gas streetlamps." In addition, it is mentioned in his diaries that "in one of the cities, a blue light was burning."⁶ He had just passed through Manheim. Similarly, gas lighting in peoples' homes was described as "a beautiful winter garden in the house; lit up by gas and good paintings".⁷ At other times, it was established, in less solemn terms simply that gas was used for lighting.

In his fairy tales city gas and streets lights are mentioned a few places. "The Dryad" from 1868, about the world exhibition in Paris in 1867, is almost bursting with references to gas rays, blue lights, gas lighting, gas stoves, gas flames, and gas pipes:

"She reached the Boulevards; a sea of light streamed from the gas in the lamps, shops, and cafes. Young and slender trees stood here in rows; each one hid its Dryad from the beams of the artificial sunlight. The whole of the long, never-ending pavement was like one great assembly room; tables stood spread with refreshments of all kinds, from champagne and chartreuse down to coffee and beer. There was a display of flowers, of pictures, statues, books, and many coloured fabrics. From the throng under the tall houses she looked out over the alarming stream under the rows of trees: there rushed a tide of rolling carriages, cabriolets, coaches, omnibuses, and cabs, gentlemen on horseback, and marching regiments, it was risking life and limb to cross over to the opposite side. Now shone a blue light, then the gas-lights were supreme, and suddenly a rocket shot up; whence and whither? Certainly, it was the highway of the great city of the world."

5 These references may be found in Andersen's dairies (in Danish), which are located in electronic form on the website of the Royal Library (*Det Kongelige Bibliotek*). Please see http://base.kb.dk/hca_pub/cv/main/Oversigt.xsql?nnoc=hca_pub

6 H.C. Andersen diaries at the website of the Royal Library (http://base.kb.dk/hca_pub/cv/main/Oversigt.xsql?nnoc=hca_pub) *Dagbøger III 1845-1850*, p. 216 and 239.

7 H.C. Andersen diaries at the website of the Royal Library (http://base.kb.dk/hca_pub/cv/main/Oversigt.xsql?nnoc=hca_pub) *Dagbøger IV 1851-1860*, p. 439.

Late in his career H.C. Andersen gives the experience of gas streetlamps special attention. In the contemporary story “Godfather’s picture book” from 1868, Andersen starts out with “the memorable year when Copenhagen got gas in place of the old oil-lamps.”⁸ He did not provide any further detail, but gas lamps were lit in Copenhagen on the 4th of December 1857 (Hydtoft 1994:9), where 1600 oil lamps were replaced by 1800 new gas lamps.

“The people walked up and down to look at the old and the new lighting. There were many people, and twice as many legs as heads. The watchmen stood about gloomily; they did not know when they might be dismissed, like the lamps; these themselves thought so far back they dared not think forward. They remembered so much from the quiet evenings and the dark nights. I leaned up against a lamp-post”.

In the second last section of the story Godfather’s Picture Book from 1868, H.C. Andersen lets Godfather say:

“You are quite welcome to show your picture-book to one or another; you may also say that I have made, pasted, and drawn the whole work. But it is a matter of life or death that they know at once from where I have got the idea of it. You know it, so tell it them! The idea is due to the old oil-lamps, who just, on the last evening they burned, showed for the town’s gas-lights like a Fata Morgana, all that had been seen from the time the first lamp was lighted at the harbour, till this evening when Copenhagen was lighted both with oil and gas.”

Most of the old oil lamps were probably melted down by the iron-moulder. However, one was not. In “The old streetlamp” Andersen allowed a streetlamp to enjoy retirement together with its watchman. This fairy tale is from 1847, before city gas supply were established in Denmark, and Andersen describes as well the streetlamps, their connection to the municipality and the watchman corps. Further, this story provides emotional experience to change. He looks at life from the perspective of an inanimate object i.e. a street lamp:

8 Most translations of the manuscripts of H.C. Andersen are based on the excellent webpage of Lars Bjørnsten (www.hcandersen-homepage.dk/). See especially the manuscripts at www.hcandersen-homepage.dk/?page_id=1162

“Did you ever hear the story of the old street lamp? It is not remarkably interesting, but for once in a way you may as well listen to it. It was a most respectable old lamp, which had seen many, many years of service, and now was to retire with a pension. It was this evening at its post for the last time, giving light to the street. His feelings were something like those of an old dancer at the theatre, who is dancing for the last time, and knows that on the morrow she will be in her garret, alone and forgotten. The lamp had very great anxiety about the next day, for he knew that he had to appear for the first time at the town hall, to be inspected by the mayor and the council, who were to decide if he were fit for further service or not; - whether the lamp was good enough to be used to light the inhabitants of one of the suburbs, or in the country, at some factory; and if not, it would be sent at once to an iron foundry, to be melted down. In this latter case it might be turned into anything, and he wondered very much whether he would then be able to remember that he had once been a street lamp, and it troubled him exceedingly. Whatever might happen, one thing seemed certain, that he would be separated from the watchman and his wife, whose family he looked upon as his own. The lamp had first been hung up on that very evening that the watchman, then a robust young man, had entered upon the duties of his office. Ah, well, it was a very long time since one became a lamp and the other a watchman. His wife had a little pride in those days; she seldom condescended to glance at the lamp, excepting when she passed by in the evening, never in the daytime. But in later years, when all these, - the watchman, the wife, and the lamp - had grown old, she had attended to it, cleaned it, and supplied it with oil. The old people were thoroughly honest; they had never cheated the lamp of a single drop of the oil provided for it.”

Reorganising the Police in Copenhagen

In Copenhagen, oil streetlamps were introduced in 1681. No less than 500 were erected. Primarily, the aim was to try and limit the extent of robbery and assault on the streets at night (Redlich 1982:I:51). These oil lamps had to be both lit up and put out. Therefore, pursuant to a regulation of 26th July 1683 about Street Lamps and Night-watches in Copenhagen (*Gade-Løgterne og Nat-Vægterne i Kjøbenhavn*) a watchman corps was established with the primary objective being to operate the oil lamps. However, the watchmen were also given the police task of maintaining peace and order at night. For this reason, they had the power to withhold suspected offenders, possibly with the help of

the military watch, while the actual investigation was handed over to the police (Nielsen 1889). With the disappearance of oil streetlamps, a large part of the 162 Copenhagen night watchmen's work also disappeared. The watchmen belonged to a profession that by this time really belonged in the past and not the future. Back then as now, new technology demanded adjustments and, for those who could not cope with this, also victims.

With the passing of a law on 11th February 1863, regarding Copenhagen's Police Reorganisation (*Københavns Polities Omordning*), which came into force on 1st July in the same year, the watchmen were dismissed and the function was discontinued. H.C. Andersen's indication of the possible dismissal of the watchmen in the fairy tale *The Godfather's Picture Book* proved to be realistic. However, Andersen's presentation of dismissal was not a predictive figuration but a literary documentation. *The Godfather's Picture Book* was first published on 19th January 1868, nearly 5 years after the law about the reorganisation of the police. The adoption of gas lighting did lead to the reorganisation of the role of the police in Denmark.

With the dismissal of the watchman corps the law enforcement was concentrated at the police. During Andersen's lifetime uniformed police were municipal. Only in 1938, uniformed police became a state police, a system that still exists in Denmark. The police are now regulated by the Police Act, but the basic tasks are still the same. The police must work for the safety, security, peace and order in society, cf. section 1 of the Police Act.

Energy supply

Security of supply is a classic part of energy policy. The Danish energy supply situation at the beginning of the 19th century could have been better. At that time, English coal was rather popular. However, in Denmark, at the time of H.C. Andersen's birth, this was far from acceptable due to strife with England in connection with the Napoleonic Wars. The fear of a lack of energy security set in (Nielsen 1944:406 and Olufsen 1811: 147ff.).

In Andersen's time, the obvious Danish alternative to coal as the primary energy source was wood and peat; an inland energy sources that gave better energy security. Wood was an old and, at that time, still significant energy source for cooking and heating buildings, among other things. In the meantime, tree felling had violently degraded the extent of Danish forest (Bergsøe 1847:204, cited in Nielsen 1944:406). Firewood was not to be seen as securing the future's energy supply. An energy and resource revolution in the previous few centuries had replaced wood with coal as the main energy resource.

(Kjærgaard 1991:86ff.). Coal had to be imported, but peat⁹ was also a domestic resource. Coal imports from England rose soon after the end of the war, and when the first gasworks with a view to public supply were opened in Denmark in 1853, they were mainly based on gasification of coal (coal-gas).

The pipeline network of city gas turned out to be a competitive way of distributing energy for many purposes. However other energy forms could be distributed by a physical network. The competition between the technology of the oil lamp, kerosene and city gas as witnessed by H.C. Andersen were not to become the last.

In the late part of the 19th century electricity became competitive also in Denmark. Since 1891, a watchmaker in Køge had owned a small generating station that could supply electricity to a limited circle of households by running cables over rooftops and through back gardens. If it was possible to avoid public roads, there was no need for public permission. And in 1907 the city of Køge entered into Denmark's first municipal electricity concession agreement.

When the electricity supply service came to Denmark, H.C. Andersen was dead. Thus, he never experienced the new struggle between the gas 'candelabra' and the new electric street lights. While it seems as though oil lamps had quickly lost the fight to gas lamps, the competition between electricity and gas for street lighting, as with many other usages, seems to have taken much longer. Furthermore, the use of city gas to fulfil many purposes other than lighting gave gasworks many good years. In Kolding, the last gas street lamps were extinguished in 1958, but gas sales first peaked in 1962 (Thomsen 2008:14 and 80). In fact, city gas is still used to a certain extent in relation to cooking (now in competition with electricity and natural gas), and even gas street lights still exist (Thomsen 2004:69), though more as a curiosity than as a practical measure.

Nowadays, the remaining city gas supplies are made use of in Aalborg and Copenhagen – natural gas thinned with air. Coal gas is no longer in use. Energy utilities are at present subject to extensive regulation,¹⁰ which is due to the networks character of natural monopolies. The majority of regulation in the electricity and natural gas supply areas

9 Peat is a plant deposit that exists in moors, and is the first link in the chain to the formation of lignite and hard coal. From the late Iron Age until the middle of the 20th century, was not an insignificant energy source in Denmark. In particular, during the two world wars, Danish peat production rose as a result of the problem with importing other energy sources. Peat is still used to a larger extent, mainly in developing countries.

10 The Electricity Supply Act, the Natural Gas Supply Act, the Heat Supply Act and the Renewable Energy Act.

stemming from EU regulation. The security of supply aspect is thus included in the objects clause in the current four central Danish energy laws.

Private or public works – role of Municipalities

The establishment of the first gasworks were carried out by private interests. It was the general practice across Europe. From the start, Municipalities were large consumer of city gas for the purpose of street lighting. The significance of street lighting as a contributing factor, which made possible such a capital-intensive project as the establishment of gasworks with associated distributions networks, cannot be underestimated.

The establishment of the energy services, however, happened on the basis of municipal concessions. There were no actual laws in existence about the establishment and operation of city gas supply plants. If the piping network had to be installed across a third person's property, this required the owner's consent. This applied in the case of both private and public property and included the traversing of roads and railways. If the piping network had to run along or across public roads in towns, the municipality's permission had to be obtained.

These permits were granted in the form of concession agreements (*koncessionsaftaler*). In these agreements the municipality often gave exclusive rights to supply the relevant town or city over a stated period of time. In the absence of a risk of competition from other gas supply companies, the private investor could better secure the rate of return on his or her investment. The legality and, therefore, validity of these exclusive rights was extremely doubtful, and with the adoption of the Freedom of Occupation Act on 29th December 1857, came the question about whether the opportunity to claim this type of exclusive right had in reality disappeared. Ministerial approval from this period dealt to a greater extent with the municipality's relationship to the gasworks. It immediately came within the Ministry of the Interior's competence to consider, for example, the municipality's contractual obligations in relation to the purchase of gas for street lighting. In 1859, the Municipality of Frederiksberg tried to give the Danish Gas Company a 30-year exclusive right to supply the Frederiksberg township. The Ministry put the brakes on the agreement and would only accept an agreement in relation to the purchased of gas for the Municipality's own use (Hyldtoft 1994:85). However, where the distribution network had already been constructed, such an agreement, with the character of a natural

monopoly,¹¹ would quickly give the gasworks' owner an actual monopoly, regardless of whether or not assigned exclusivity was lawful (Hansen 1994:79ff.).

From 1856 onwards, many Danish works were established as municipal owned works. Today the Heat Supply Act regulates the involvement of the municipality as an owner of, among other utilities, city gas supply. Of more importance is the right for municipalities to own district heating, electricity and natural gas facilities. Energy supply has become a task of municipalities.

Concession fee

Concession agreements could also contain provisions requiring the gasworks owner to provide a concession fee to the municipality, or that the municipality could ensure 'remuneration' in the form of a special favourable price on its own gas consumption. The municipality's right to stipulate such fees was built upon the understanding that the municipality could exercise various ownership powers over public roads and also let out the right to deconstruct the associated pipes. To a certain extent, this was inspired by the so called municipal socialism that, following Prussian inspiration, allowed the municipality to earn a profit on public utilities including distribution of water, gas and later electricity, whereupon the funds could be channelled to other municipal functions (Spoerer 2010: 111). The opportunity to charge concession fees became accepted by the legislature with the borough tax reform that was put into action by the legislative act of 11th February 1863 about Municipal Tax in Boroughs outside Copenhagen and, in the case of the regional municipalities, with the Act about Regional Municipalities' Administration, known as the Regional Municipalities Act of 6th July 1867, as referred to below.

Today, municipalities cannot lawfully charge concession fees. The principle of cost zero regarding the municipality utilities now hinders Danish municipalities from supplementing tax income with revenue from supply activities (and supporting supply activities with tax-financed funding). The principle, therefore, involves a prohibition on cross-subsidisation of the tax-financed and the fee-financed parts of the municipal economy (Olsen 1999). In addition, it now follows from the road regulation's 'guest principle', that the municipality cannot charge payments for the presence of piping networks under the road space.

11 A natural monopoly means that the costs of the necessary infrastructure for the distribution of, for example, energy services are of such a size that, on account of economies of scale, it is only cost effective to have one set of installations through which supply can be performed.

From free pricing to regulated prices

In opposition to the present regulation, city gas supply started as a nonregulated industry with competitive pricing.

The city gas pipeline system was a natural and legal monopoly. Only one gas supplier existed in each area. However, city gas was not without competitors in the 1800s. Kerosene, a fractional distillation of petroleum, dropped in price dramatically during the 1860s, concurrently with increasing petroleum production in the USA, and became a hard competitor for city gas.

Gasworks were able to meet the competition from kerosene by increasing income from the sale of coke, tar and ammonia (Hyldtoft 1994:103f.; Thomsen 2008:33f.). Over time, the value of gas as a source of light increased, with the introduction of new technology such as the gas incandescent lamp, which gave off a strong light through a net soaked in salt – 10 times stronger than other well-known fuels of the day (Thomsen 2008:47). The usefulness of gas expanded to industry, for use in motors, and to the kitchen, to replace old wood stoves.

Today, city gas typically consists of a blend of natural gas and air. This mixture is considered to be covered by the phrase “combustible gasses other than natural gas” and, is therefore, regulated by the Heating Supply Act.

Past, present and the future – the global challenges

The introduction of city gas is a lesson in the different interests that may be involved in energy supply. Although today's energy supply in many countries is much more developed, there are still major challenges. The issue of security of supply is still very much relevant. The role of Denmark as a net exporter of energy is coming to an end with the mature oil and gas fields in the North Sea, and large parts of Europe has made itself dependent on import of natural gas from Russia.

The municipalities established their role in energy supply during the introduction of city gas, as described above. This role they have preserved. The cost-zero-principle has stopped the municipalities to gain a profit from operating energy utilities or to demand a concession fee. However, many municipalities are in these years involved in strategic energy planning in order to reduce their CO₂ footprints. Their utility sector may be very relevant in that aspect.

City gas was introduced a natural monopoly as a distributor of energy. This had led to today's price regulation. The lack of legislation as described on the time of Andersen is today not possible.

New challenges had been added to energy supply. A significant part of energy policy relates in many countries today to the risks of future climate change. Internationally, climate policy has been only a limited success. A way to reduce these risks is to limit the use of fossil fuels. The promotion of renewable energy has been a common answer to that challenge. And renewable energy represents a win-win situation. Being a domestic resource renewable energy both works in favour of climate policy as well as security of supply. Another big challenge is an expected increase in demand from a growing world population and an increased demand for welfare. Even in a country like the United Kingdom we find significant problems with energy poverty and worldwide more than 1 billion people today lack access to electricity in their homes.

Had Hans Christian Andersen lived today, his optimism might have embraced the new era of energy advances. The many wind turbines which as tall white towers within only a few decades have come to dominate the Danish landscape would have suited his technique of making inanimate objects come to life. They are a result of modern energy legislation. He would probably also have spotted the solar panels on many Danish roofs and the district heating and natural gas systems that heats the majority of Danish homes. And would his humanism not have gotten him to describe the energy poverty which is reality for so many people in our contemporary society? We can only miss his pen.

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