

Private Sector Participation in the Provision of Water, Electricity & Garbage Collection: International Experiences

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Introduction

City services like water, electricity and garbage collection are often poorly provided for in cities of developing countries. They are characterized by huge unmet demand, high costs and low coverage. For example, in the city of Manila, prior to 1997, one-third of the residents did not have access to piped water. (ABD, 1997)

In response to these shortcomings, many cities, states and countries have embarked on reforms to change the way the services are delivered. A popular form of change has been to increase involvement of the private sector in the provision of these services. The idea is to create a more market-like environment, where competition would increase efficiency and improve delivery.

This paper studies the experiences of four cities (Johannesburg, London, Manila and Santiago) of allowing private firms to participate in the provision of city services. The services that are looked at are water, electricity and garbage collection, as they are most basic and hence the most common objects of privatisation. Attention is paid to the change in costs and coverage in order to assess the benefits of privatisation. An attempt is also made to identify the institutional factors that have facilitated or hindered the realisation of benefits of privatisation in particular cases.

The old paradigm – The rationale for government provision

For most of the 20th century, in both developing and developed countries, electricity, water and garbage collection services have been provided by the government, usually at the municipal level. According to the World Bank (2004), the following rationales have often been provided for this arrangement:

- Infrastructure services like water and electricity are of too great a strategic importance to be left to the motivations and penalties of markets. Only the government can ensure a steady supply of these services.
- The government can use its control over the distribution of these basic services to further its social equity goals.
- Water and garbage disposal have huge externalities in the form of public health outcomes. Thus, the amount of output in the market might be not the same as the socially optimal level.
- Provision of these services involves high setup costs and economies of scale. In a free market, this provides a fertile ground for natural monopoly to emerge and thrive. To many policymakers, this raises the prospect of exploitative practices by private firm(s).

Thus, in most places, electricity and water have been provided by monopoly utilities, owned and managed by the local government.

The new paradigm – The rationale for private sector participation

The performance of state owned monopolies, especially in developing countries, has been disappointing. Lacking the motivations of a competitive firm, they suffer from low labour productivity, deteriorating fixed facilities and equipment, and poor service quality. Thus, there is a need to subject them to the discipline of the markets.

Government control has resulted in political tinkering of tariffs for political gains, leading to chronic revenue service shortage and inadequate investment for expansion. As a result, large portions of the population have been left without these services. Constant losses have also been a drain on the exchequer. Thus, it has become imperative to free these services from government control.

Also, due to the constraints of its role, the government has been unable to take a hard stance against theft and non-payment of services, worsening the financial situation of these enterprises.

The price structure of state owned monopolies, based on political considerations rather than on the underlying cost structure, has been distorting the allocation of resources.

Realising this, a lot of countries have embarked on reforms to privatise government owned utilities. The following cases study the experiences of four cities – Johannesburg, London, Manila and Santiago.

Johannesburg

Quick Fact: The financial capital of South Africa 1625 sq. km	Population: 2.5 million	Area:
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Administrative Structure¹

The city of Johannesburg is headed by a mayor who appoints a professional city manager to run the day-to-day operation of the city. The manager is appointed for a limited tenure, and he brings with him an administrative team to head the city departments.

The city has been divided into 11 administrative regions, each serving about 3,00,000 people. The regions have their own ¹management structures, each headed by a regional director. The regions run certain services such as libraries, community clinics, sports facilities, housing and social services.

A key service of the regions is "People's Centres", local payment points for rates and taxes, and also places where residents can lodge complaints, report service problems, and more speedily perform council-related business like lodging or copying building plans. People's Centres will in time include "one-stop shops" for quick responses to basic queries, touch screens and information kiosks.

Reforms¹

In 1997, the city of Johannesburg had plunged into deep financial crisis. One reason was a bloated administration with too many duplicated functions and waste. Another was that the council was owed more than R2-billion in unpaid service bills - chiefly electricity bills. The city then implemented a programme called "Igoli 2002" in which the administration was radically overhauled to improve efficiency and reduce waste.

In 1999, the city appointed a city manager, who brought with him a strong team of executives to reshape the city's finances. They drew up a three-year plan that called for selling of various assets, restructuring of certain utilities, and the requirement that others become self-sufficient.

Since then, the departments that used to provide key city services like water, electricity, and refuse collection have been spun off into independent entities. They contract with the city to provide their respective services and charge user fees directly from the residents. Example of above: **Johannesburg Water** provides water to the city, **CityPower** provides electricity, **Pikitup** collects refuse.

¹ Information obtained from the City of Johannesburg's official website www.joburg.co.za Accessed 02/06/2004

The bus service, the Zoo, the Civic Theatre, the Fresh Produce Market and the city's property holdings were "corporatised", with the city as the single shareholder. Each was run as a business, with management hired on performance contracts and tasked to cut the subsidy levels over five years by R100-million.

Due to these reforms, the city went from the brink of insolvency to an operating surplus of R153-million.

Water Provision²

Johannesburg Water is the city's water and sanitation utility, an independent business operating at "arm's length" from the City Council, with its own management and staff. The city is the sole shareholder in the new utility, and acts as the "client" to Johannesburg Water, setting requirements and monitoring performance and customer care. However, it cannot raise capital from sources other than the government.

Though the utility is not privatised per se, many benefits of privatisation are being captured by involving private firms into operations through management and service contracts. Johannesburg Water has entered into a management contract with a multi-national consortium led by a French company, Suez- Lyonnaise, in order to improve operations. The consortium has been setting targets for increasing coverage and service, and if these are reached, it will be paid R25-million over five years. (World Bank, 2004)

The water tariffs increased by 55% as a result of these changes. To blunt the affect of this price increase on poor people, the national government introduced a scheme in which each household in the city gets 6000 litres of free water every month i.e. they are not charged by the company for the consumption of first 6000 litres. This scheme is so that poor people can avail water at least for their sustenance. Any consumption above this amount is charged according to an increasing block tariffs schedule.

This scheme was implemented after the outbreak of cholera in 2001. The epidemic began when a small local authority began charging for tap water that had previously been free. Local residents who could not afford the R50 per month charge for water began using local streams for both water supplies and sewage disposal. This scheme costs the city 80 million Rand every year.

Electricity Distribution³

Two retail companies provide electricity in the Greater Johannesburg area. One is the city owned CityPower, and the other is national utility Eskom. Both operate in distinct areas.

CityPower, like Johannesburg Water, is a self-contained business formed in November 2000 and operating with its own management and staff. The city is the owner of the utility, as well as its customer, setting requirements and monitoring performance and customer care. The company is free to hire and fire people. However, it is not yet clear to this author if it is free to raise capital from sources other than the government.

City Power recorded a profit of R12-million after tax in its first year of existence. Since City Power took over the reading of electricity meters, meter reading has increased to 90%. The city is also so far successful in meeting its target of 4,000 new connections per year.

² Information Obtained from the official Website of Johannesburg Water www.johannesburgwater.co.za Accessed 04/06/2004

³ Information Obtained from the Official Website of CityPower www.citypower.co.za Accessed 04/06/2004

Under a nationally mandated scheme, CityPower provides 50 Kwh of free electricity per month to all households. This intention of this scheme is to subsidise the sustenance level electricity consumption of the poor. Any consumption above this amount is charged according to an increasing block tariff schedule. The cost of this scheme is recovered by charging higher tariffs for the water that is billed.

Garbage Collection⁴

PikitUp – a city owned company is responsible for all solid waste management in Johannesburg. It was privatised in 2001 in order to make it more independent and hence more businesslike in its operations. It has also been allowed to set its user fees in order to recover all its cost. It is estimated that the utility would become financially independent by 2005.

PikitUp has modernised and improved waste collection systems by constantly upgrading its fleet, and also delivering 472000 new 240 litre wheeled bins in the phased replacement of the old refuse bag system.

London

Quick Fact: The capital and largest city of UK 1610 sq. km	Population: 7.1 million	Area:
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City Administration⁵

Londoners have traditionally been fearful of a unified London Government. So it is no surprise that its local government has a very decentralised structure. The Greater London Authority (GLA), consisting of a elected mayor and a separately elected Greater London Assembly, is a loose, overarching authority in London. The GLA provides services like Policing and Fire Services. The Mayor's powers are very weak. He mainly has a strategic, coordinating role. The London assembly mainly keeps a check on the Mayor's activities.

Most of the local government power is divested to 33 divisions, consisting of the centrally located City of London (called simply "The City") and its surrounding 32 boroughs. The boroughs are responsible for all local government services like education, social services, development control, housing, leisure services, waste management etc. They also maintain state-run schools that provide education through high school. A borough government is in the form of an elected council, which the residents elect every four years. The boroughs receive most of their income from a community charge (poll tax), rents, and grants from the national government.

While the GLA controls a total budget of some £3.7 billion, the boroughs have a combined budget of some £7 billion for local services.

Water Provision⁶

As a result of the nation-wide privatisation of government businesses pursued by the Thatcher government in the eighties, Thames Water – a city owned water utility that is the sole provider of water to the city, was privatised in 1989.

⁴ Information Obtained from the official Website of PikitUP www.pikitup.co.za Accessed 05/06/2004

⁵ Information Obtained from the official Website of Greater London Authority www.london.gov.uk Accessed 02/06/2004

⁶ Information Obtained from the official Website of Office of Water www.ofwat.gov.uk Accessed 29/06/2004

Even when the utility was under public hands, its performance was good. It had provided 100 percent coverage, and managed to meet the national water quality standards.

The motivation behind the privatisation of Thames Water was to attract huge amount of funds that were needed to upgrade London's anachronistic water infrastructure (most of its underground pipes were over 150 years old). The planners felt that the private sector would be able to do it more efficiently and less distortively than the government.

Currently the private water utilities in England and Wales spend around four billion pounds a year to upgrade the water distribution infrastructure. (Ernst and Young, 2003)

OFWAT (The Office of Water Services)- the national water utilities' regulator introduced a price cap regulation in 1990 in response to concern that the utilities would abuse their monopoly power.

Under this type of regulation, OFWAT imposed a ceiling price on all water utilities with the intention of preventing water companies from receiving monopoly rents. The rationale for choosing this particular type of regulation over others was that price caps improve efficiency as firms reduce costs to maximise profits. The price ceiling is calculated using a formula that takes into account each of the firm's individual circumstances.

Tariffs of Thames water have increased by 35% since the privatisation (BBC, 1998). However, there was considerable customer unrest as the first periodic review of the price formula approached because customers perceived the then price increases as excessive.

Consumer dissatisfaction continued after the 1995 periodic review. Customers and the (then) opposition party were dissatisfied that water companies' management were receiving large remuneration packages while water companies were earning large profits. (ABD, 2001)

One probable reason for customer dissatisfaction is that customers have not seen any tangible improvements in service since privatisation. As mentioned earlier, water services were pretty good even before privatisation. The benefits of privatisation have been in the form of capital investments in infrastructure, most of which is underground and hence not directly observable to consumers. Though the benefits of such investments are substantial, they are spread over a long time and therefore less conspicuous to people. The government did not make enough efforts to articulate these benefits to the people.

With a change in government in 1997, a special one-off tax was imposed on water companies. This tax was intended to redress the bad deal the new labour government considered its predecessor had struck on water utility privatisation. (ABD, 2001)

The British approach to privatising water supply demonstrates that privatisation can be very unpopular if the community is not consulted and not given the necessary information to understand the need for and nature of the cost of new investments that privatisation has facilitated.

Since 1 July 1999, when the Water Industry Act 1999 came into effect, water companies in England and Wales have not been allowed to disconnect domestic customers for non-payment of their bills. (OFWAT, 2004) As a result, non-payment of dues has become a serious problem.

Electricity Distribution⁷

The United Kingdom introduced reforms in the early 1990s to privatise its electricity utilities and introduce competition at the retail level.

There are 3 private electricity distribution utilities (retailers) in London – Twenty Four Seven, SEEBOARD and EDF Energy. Customers can freely choose amongst them. (Electricity Association, 2004)

The physical network infrastructure for distribution (wires, poles etc.) in London is operated and maintained by EDF energy, a multinational company, under a license given by OFGEM (Office of Gas and Electricity Markets), UK's electricity regulator. EDF is hence called the Distribution Network Operator (DNO) of London. In order to use the network infrastructure to supply electricity to the consumers, the electricity distribution utilities need to pay tariffs to EDF energy. These tariffs are regulated by OFGEM. (ENA, 2004)

Since EDF energy is both a retailer and a DNO, there is concern that it might, in its capacity as a DNO, act in a discriminatory manner towards other retailers. However, these fears are unfounded, since all DNOs are required by law to provide access to its network to anyone who requests it, and tariffs for such access are regulated by OFGEM. (ENA,2004)

For those who cannot afford to pay their electricity bills, the electricity companies are compelled by law to offer flexible payment options. Those for whom default is inevitable, there is Fuel Direct - a government subsidy programme for those unable to meet their energy costs. (Energy Watch, 2004)

Since the introduction of competition, the nationwide average annual domestic electricity bill has fallen by 11% from £268 to £238 (OFGEM, 2004). Also, 15 million people have switched their electricity suppliers, with almost a million customers now switching each month. (OFGEM, 2004)

Garbage Collection

The Environmental Protection Act 1990, as amended by the Environment Act 1995, is the main legislation on waste management in England and Wales. This sets out the duties of local authorities with respect to waste management.

In London, the boroughs are responsible for waste collection. All 32 boroughs and the corporation act as waste collection authorities. They usually contract out the actual waste collection operations to private firms.

Twelve boroughs act as unitary authorities, responsible for both waste collection and disposal. However, the remaining 21 London boroughs carry out their disposal functions through four Statutory Joint Waste Disposal Authorities created by the Waste Regulation and Disposal (Authorities) Order 1985.

Waste disposal authorities are the public bodies responsible for arranging the disposal of municipal waste collected in their area by waste collection authorities. They also provide civic amenity sites, where local residents can deposit waste, free of charge.

⁷ Information Obtained from the official Website of Office of Gas and Electricity Markets www.ofgem.gov.uk
Accessed 01/07/2004

The four statutory waste disposal authorities are East London Waste Authority, North London Waste Authority, West London Waste Authority and Western Riverside Waste Authority. Together, these are responsible for waste disposal in 21 of the boroughs.

Manila

Quick Fact: The capital and largest city of Philippines 2008 sq kms	Population: 11 million	Area:
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City Administration⁸

The actual city of Manila, with a population of 1.6 million, is a small part of the greater metropolitan area of Manila (called Metro Manila), that has a population of 11 million and consists of 16 other municipalities.

Phillipines has unique sub-local units of government called *barangays*. Each *barangay* represents a residential area of about 2,000 to 10,000 people. In the city of Manila alone, there are 897 *barangays*. Each of this *barangay* is responsible for recreational activities (arranging basketball matches being one of them) and primary health care in its area.

Water Provision

Until 1997, government-owned Metropolitan Waterworks and Sewerage System (MWSS) was responsible for all water and sanitation services in Metro Manila. During that time, only two-thirds of the household were connected to the piped water system. The poor spent up to 20% of their income on water from vendors, who sold lower-quality water at 7.4 times the basic rate charged by the MWSS. About 56% of the water distributed was lost before it reached the customers due to theft and leaking pipelines. (ABD, 2001)

In 1997, the government decided to privatise the water services. Following a competitive selection process, 25-year concession agreements were awarded in 1997 to two private companies, both of which were consortiums of Philippine and foreign firms. The Manila Water Company became responsible for the network in the eastern part of the Metro, while Maynilad Water Services took control in the western zone. The concessions were won on the basis of the largest reduction in tariffs for a set of performance targets.

Motivated by the prospect of profits and penalties, the private companies made significant progress toward their targets during the first 5-year period, and as a result, many households have improved water service. As of 2001, the two companies had installed 238,000 new connections, of which 54% were in poor urban areas. Some of the reasons for this success are discussed below.

While each concessionaire is required to meet the same standards for *outputs* such as water pressure, continuity, and customer service, technical standards for *inputs* (e.g., construction methods, pipe diameter) are not specified in the contract. The concessionaires have interpreted this as a license to innovate, developing special programmes to expand the network in poor neighbourhoods.

During the early years of the concession, both companies developed innovative strategies for addressing the problems of dealing with the urban poor. They no longer made land titles a condition for installing water connections; instead, they asked the local government

⁸ www.cityofmanila.com.ph

to approve the water service installation in a certain community. Poor households were allowed to pay for the connection fees in installments.

The concession agreement is written in a way that it permits alternative providers to play an active role in serving the poor. While the concessionaires are granted exclusive rights to serve customers in their service areas, in practice they do not prevent local firms from operating.

Numerous housing associations, community groups, and at least one local company specialising in water distribution are buying large quantities of network water and selling it to households via sub-networks. Tankers and handcarts also continue to serve off-network markets.

The attraction of this situation is that re-sellers of piped water are helping the concessionaires to achieve their coverage targets. Bulk water sales have become an important part of Manila Water's strategy for serving the poor, and do not just achieve its coverage targets. It charges the alternative providers the highest block rate in the residential tariff schedule or the commercial rate, and the company's investment in tertiary distribution in such cases is nil.

In delegating service delivery to a third party that operates outside the confines of the concession agreement, including the official tariff structure, Manila Water has found a way to profit from a segment of the market where it would otherwise operate at a loss.

Electricity Distribution

MERALCO, a privately owned utility, produces and distributes electricity in Manila. Its history goes back to 1903, making it the oldest private electric utility in South-east Asia. It is the only privately owned and operated electricity utility in Phillipines, though it was briefly nationalised in the 1950s. The government has initiated steps to privatise other electric utilities in the country. Though Meralco is privately owned, it is afflicted with problems similar to that of government owned utilities. The reasons for that include heavy handed regulation by the state, inability to check electricity theft due to poor law enforcement and costly to maintain power plants.

Garbage Collection

The Metropolitan Manila Development Authority (MMDA) and local municipalities carry out day-to-day operation of Metro Manila's solid waste management system. The Department of Environment and Natural Resources (DENR) sets policy and establishes laws and regulations at the national level.

MMDA is responsible for operation of disposal sites and transfer stations. The municipalities are responsible for the collection and transport of garbage within their regions. Most hire private collection firms to collect waste.

However, the collection services are far from ideal. They are often irregular due to traffic. In squatter area, waste is often not collected at all, leading to illegal dumping. Waste thrown into waterways contributes to frequent flooding in the Metro region. According to the service providers, they are not able to provide better services because of the low compensation offered to them by the city in their contracts. (ABD, 2004)

Santiago

Quick Fact: The largest city of Chile Population: 6 million Area: 1723 sq km

City Administration

The Municipality of Santiago is headed by an appointed Mayor, who reports to a body of councillors elected by the residents of Santiago. The city is divided into 32 communes for administrative purposes. The communes are responsible for their public health services, maintenance of parks and recreational facilities and garbage collection. The communes have no taxation power and get their revenues from the city, which collects property taxes from city residents.

Water Provision

Santiago's water system is often cited as an example of successful water utility reform. In the late 1980s, Chile planned to privatise **Santiago's sanitary works enterprise (EMOS)** but instead, due to political constraints, reformed it under public ownership. The success of its reform is not surprising considering its good initial conditions. Even before reform, EMOS provided water to 98% of Santiago residents. There were hardly any water shortages as Santiago has access to abundant fresh water from the nearby Maipo river. There was also the tradition of economic management and private sector participation, since operations such as meter distribution, reading and repair, network maintenance and transport had regularly been contracted out. (Shirley, et al)

The impetus for reform came in the form of financial difficulties. As is the case everywhere, water provision in Santiago was under priced. This made it difficult for the company to recover its costs. (Shirley, et al) The Ministry of Finance's prohibition against excessive borrowing by state-owned enterprises led EMOS to under-invest in maintenance and expansion. Some of EMOS' facilities were old and much in need of repair and replacement by 1990. For example it had collection and treatment works dating to 1917 and 20% of its network of pipes exceeded their usable life of 30 years (Raquel Alfaro 1987). This contributed to 52 pipe breaks per 100 kms in 1989, compared to a US average of 17.

The World Bank estimated in 1986 that EMOS would need to invest US\$ 118.6 million from 1987-1989 to meet projected demand and maintenance needs; but its actual investment for that period was only \$24 million (all figures in constant 1989 dollars). Although service was still reasonably good, without additional funds the company would not be able to keep water pressure up, avoid even more frequent service interruptions and expand the system to keep up with population growth.

The reforms took place in the form of a regulatory framework that mimicked the design of a concession with a private utility, setting tariffs that ensured at least a 7 percent return on assets, creating a neutral regulator independent of ministry intervention, and giving EMOS the right to appeal the regulator's tariff decisions.

The reform produced net benefits in economic welfare that largely accrued to government, although consumers benefited from almost 100 percent coverage of expanding demand, better water pressure and fewer interruptions of service. Consumers also had to pay higher prices, but the effects were ameliorated by a nationally administered direct subsidy to poor consumers. Employees gained from wages closer to market wages. (Shirley, et al)

Electricity Distribution⁹

Electricity is distributed in Santiago by *Chilectra Metropolitana*, which was privatised gradually from 1982 to 1985 as a part of the government overall drive for selling off public companies to private investors.

To win employee support for privatisation, a system for selling shares to workers in *Chilectra Metropolitana* was put into practice. The system made an advance payment of 50% of a worker's years of service compensation, subject to the obligation to use at least 80% of the advance to buy shares in the company. While the possibility of acquiring shares was attractive for workers, the chance to receive 20% of their total compensation in cash was also a special incentive. As a result, there was very little opposition against privatisation, and the workers of the company ended up owning 27% of the shares.

There are also other benefits of involving employees in the ownership of a privatised firm. For one thing, it tends to undercut the foundations of Marxist exploitation theory, and secondly it also reduces the chances of future expropriation of these firms, as it would be very difficult for a government to expropriate from its own workers.

As a result of privatisation, between 1983 and 1987, the ratio profit/ net worth has risen to settle around 10%, which is in line with profitability in the market for capital invested in low-risk businesses. Some sectors will argue that this rise in profits has been caused by price increases resulting from the privatisation of the firm. However, it should be noted that electricity rates are set by law and not determined by *Chilectra Metropolitana*. In fact, from 1983 to 1985, real prices of energy fell, yet profitability rose, indicating an increase in productivity.

Electricity is less interrupted because the private company has built a thermal power plant to supplement its hydro-electric plants, which suffer during periods of drought.

Garbage Collection¹⁰

Each of the 32 communes are responsible for garbage disposal in their area, which is done by contracting out the task to private firms. In 1986, 14 communes got together and formed EMERES (Empresa Metropolitana de Tratamiento de Residuos Solidos), a private corporation offering state-of-the-art disposal services to its 14 shareholders and 6 other communes. It charges user fees and is self financed. The rest of the communes are served by KDM (Kiasa Demarco S.A.), a subsidiary of the U.S. based company Kenbourne.

Lessons

The benefits of privatisation are enormous, but are thinly spread over many people over a long period of time, making them not very obvious. On the other hand, the costs of privatisation (in terms of job loss, loss of business) are small, but since they accrue to a small group of people, they have greater visibility and are successful in mobilising resistance to privatisation. The privatisation of utilities in London is a case in point. Even though privatisation has been successful in lowering costs for customers and increasing their options, there is widespread discontent about privatisation (ABD, 2001).

Thus, any privatisation effort should be accompanied by a massive informational and educational campaign about its potential benefits. Also those adversely affected by privatisation should be duly compensated in order to lessen their resistance.

⁹ Information contained in this sub section summarized from Beyer, 2000

¹⁰ The information contained herein is summarized from Estevez. 2003

Involving employees in the privatisation process by offering them equity at favourable terms is also a good way of winning over their support. For example, the workers of Santiago's electric utility *Chilectra Metropolitana* became the strongest proponents of the company's privatisation when they were invited to buy equity at favorable terms and their interest became aligned with that of the company.

It is commonly argued that since distribution of water entails the construction of expensive infrastructure, supplying water is an activity with natural monopoly characteristics. Thus it is best to have it under government control than private control since the latter is most likely to follow exploitative practices. But as we have seen, government ownership has its drawbacks as well.

The solution to this predicament lies in what is called the vertical unbundling of operations i.e separating the operations of producing water, transporting and distributing it. Since major infrastructure is required mainly in transporting water, all other activities can be delegated to the private sector. As an analogy to this setup is the gas supply business in United Kindom, where privatisation has successfully been introduced (see Appendix 1 for more on this).

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Appendix 1

Where does Britain's gas come from?

Offshore gas fields from the North and Irish Seas produce the majority of Britain's gas. Gas is also imported from Norway and through an interconnector pipeline between Britain and Belgium.

How is gas transported to communities?

Since market reforms in 1996, wholesale gas has been traded like any other commodity. Suppliers buy gas from shippers - companies who contract with offshore producers to bring gas onshore - in order to meet the needs of homes and businesses.

As well as taking more gas from offshore gas fields and the interconnector, shippers can draw on gas held in large gas storage facilities. For example, Rough gas storage, located under the North Sea, can meet around 10 per cent of Britain's gas needs in winter when demand for gas is greatest. To ensure they can provide suppliers with the gas they need, shippers buy capacity on the high-pressure gas pipeline system owned and run by National Grid Transco (NGT) which is also privatised. They can book this capacity through a series of auctions, which allow them to buy capacity for up to 15 years in advance. NGT is responsible for ensuring the system remains in balance and buys or sells gas to ensure supply matches demand every day.