Private and Public Alternatives
for Providing Water Supply
and Sewerage Services

Daniel P. Coypaud

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DISCUSSION NOTE

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PRIVATE AND PUBLIC ALTERNATIVES

FOR PROVIDING WATER SUPPLY AND SEWERAGE SERVICES

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ABSTRACT

Many governments today are searching for ways to shift the delivery of municipal services from the public to the private sector, including how to use market mechanisms to increase cost effectiveness. This discussion paper outlines the different alternatives available for both public and private delivery of water and sanitation services, paying particular attention to methods that facilitate greater use of the private sector. These methods include contracting with private companies for specific operating services (contract for specific operating services); contracting with private companies for management services (management contract); contracting with private companies for management services that include profit-sharing arrangements (management contract with profit-sharing arrangements); leasing systems owned by public authorities to a private company for operation and maintenance with commercial risk (lease contract); and contracting with private companies to operate and maintain the municipal system, assume commercial risk, and finance construction or rehabilitate the system (concession contract).

The paper examines the provision of services in France, where the widest variety of contracting options has been applied, the United Kingdom, and the United States. It brings out the different approaches to privatization in the three countries and presents options available in less developed countries, where services have been provided mainly through the public sector. The paper argues that to make better use of the private sector a range of alternatives must be available and that performance efficiency should be the yardstick by which services should be measured. To achieve this efficiency, governments should (i) separate social and political objectives from commercial objectives; (ii) achieve a proper balance between government control and independence among companies providing services; (iii) monitor the performance of public and private institutions; and (iv) hold managers accountable for results.
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FOR PROVIDING WATER SUPPLY AND SEWERAGE SERVICES

1. Historical Background

2. In most countries, water and sanitation services, such as sewerage, drainage, and solid waste management, are provided by central or local governments. In countries such as France, Spain, the United States, and the United Kingdom, however, both the private and the public sectors provide these services.

3. Historically, the private sector has played a major role in developing water supply systems in Western Europe. For example, in the eighteenth century private companies supplied drinking water to London and Paris. And in the nineteenth century, Compagnie Générale des Eaux (1853) and Société Lyonnaise des Eaux (1880)—the major companies still working in France today—were founded. English companies were the first to be granted "concessions" to perform services to other nations (Berlin in 1856, Cannes in 1866); French water companies also turned an entrepreneurial eye overseas and subsequently set up municipal service operations in many parts of the world.

4. After 1900, water supply systems in Western Europe were developed through both the public and private sectors. Today many governments are searching for ways to shift the delivery of municipal services from the public to the private sector and to use market mechanisms to increase cost effectiveness.

5. Different alternatives for public or private delivery of water supply and sanitation services are presented in the following discussion to bring ways to manage the infrastructure needed to supply such services into sharper focus. The French models are used as a discussion framework, since the greatest number of alternatives have been tried in that country. A summary of these alternatives is given in the following table and is considered again in section 2. Trends in France, the United Kingdom, and the United States are examined briefly in section 3. Options available to developing countries are given in the last section.

2. Alternative Types of Institutions

6. Municipal services (water supply, sewerage, solid waste collection and disposal, etc.) can be managed by a public or a private institution, and they can be managed at the local, regional, or national level. When the system is managed at the regional level, it can be implemented either under the jurisdiction of a syndicate of municipalities or under one lead municipality that acts as a "manager" on behalf of other municipalities. Table 1 summarizes these management options.

3. Government-Owned Institutions

7. A public utility (régie) whether municipal or regional can be managed by the authority's own staff (gestion directe) under the following alternatives:
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<th>Municipal Department (Regie Directe)</th>
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<tr>
<td>Managerial Autonomy</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Legal and Financial Autonomy</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Responsibility</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
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<tr>
<td>For Setting Tariffs</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
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<tr>
<td>Financing of Fixed Assets</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
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<tr>
<td>Ownership of Fixed Assets</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
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<tr>
<td>Operation and Maintenance of System</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Private without Commercial Risk</td>
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<td>Private until Expiration of Contract</td>
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<tr>
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<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Private Company</td>
</tr>
<tr>
<td>Destination of Revenues from Tariffs</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Public Authority</td>
<td>Part to Lease Part to Concessionnaire</td>
</tr>
<tr>
<td>Compensation to Private Company</td>
<td>Similar to Contract for Consulting Services</td>
<td>Proportional to Physical Parameters (volume sold, number of connections, etc.)</td>
<td>Proportional to Physical Parameters with Productivity Bonus</td>
<td>Through Part of Tariffs Reserved</td>
<td>Through Part of Tariffs Reserved</td>
<td>Through Part of Tariffs Reserved</td>
<td>Through Part of Tariffs Reserved</td>
</tr>
<tr>
<td>Contract Validity Period</td>
<td>Less than Five Years</td>
<td>About Five Years</td>
<td>About Five Years</td>
<td>Six to Ten Years (possibility ranging contract)</td>
<td>Maximum 15 Years</td>
<td>Maximum 15 Years</td>
<td>Maximum 15 Years</td>
</tr>
</tbody>
</table>

Table 1

COMPARISON OF MANAGEMENT OPTIONS
- Municipal department (régie directe). The utility staff are not managed separately from other municipal staff. Accounts are integrated in the government’s budget.

- Utility department (régie autonome). The utility has managerial autonomy but no legal and financial autonomy. Accounts are annexed to the government’s budget.

- Public utility board (régie personnalisée). The utility has legal and financial autonomy as well as managerial autonomy. Assets and accounts are completely separated from the government’s budget.

8. In all the above alternatives, the public utility may contract out specific services to a private company.

9. In government-owned institutions, staff salaries are generally fixed according to the civil service scale, and staff employment is ruled by public law. It is difficult to attract or keep well-qualified staff because pay is not competitive with the private sector and because special procedures for recruiting are often unyielding and may even prevent the selection of the best-qualified technical personnel.

10. When accounts are kept on a cash basis, according to the government accounting system, financing for maintenance and replacement of system components (e.g., plants, pipe networks) is budgeted each year. This may be satisfactory for standard maintenance but not for unexpectedly large repairs or replacements. Moreover, rules for government accounting usually do not allow unused funds to be carried over to the following fiscal year or to be invested in financial markets to maintain their purchasing power.

11. Finally, government-owned institutions, and particularly municipal departments, are generally hampered by political factors in deciding about staff management, tariff levels, and treatment of delinquent consumers.

4. Private Institutions

12. Several types of institutional arrangements involve use of a private company (with or without supplementary government funding). They are reviewed here in order of increasing private company responsibility. It should be emphasized that in every institutional arrangement described below, the overall responsibility for developing the sector remains a public obligation and implies a monopoly by the government. In every institutional arrangement, the government is ultimately responsible for legislation and tariffs on services provided to the consumer.

4.1 Contract for Specific Operating Services

13. When a government-owned institution enters into a small management contract or "service contract" with a private company, the contracting firm is a kind of part-time employee of the public authority. It provides periodic services and acts on request in case of trouble. Such services could include loaning staff for technical assistance, metering, billing and collection, maintaining private connections and meters, maintaining distribution networks, and operating and maintaining production facilities. Compensation to the
private company is similar to that made under contracts for consulting services (time-based, lump sum, percentage, cost-plus, or fixed-fee). It is paid by the public authority and entered as an expense in the operating account section of the public authority's budget. The private company's responsibility is limited to that part of the system that is operated on behalf of the public authority.

4.2 Management Contract (Gerance)

14. Under a management contract (gerance), the public authority transfers to a private company the entire operation and maintenance function of the municipal service. Legally this type of contract is still a "service contract." The contract specifies whether the private company is responsible for large repairs and replacement of parts of the system (from plants to pipes), but in all cases the public authority controls extensions of or important modifications to the system required by such factors as increased demand and changes in water quality. The public authority usually appoints an administrative committee to oversee execution of the administrative aspects of the contract and assigns a government technical department to supervise the technical aspects of the contract. Operating accounts are carefully checked by the administrative committee.

15. Legally, customers remain clients of the public authority, and bills are collected by the private company on behalf of the public authority. Compensation to the private company is made by the public authority according to the physical characteristics of the system. Usually, payment to a private water supply company is based on:

- Direct proportion of number connections. The sum per connection depends on the size of the connection. This also includes expenses for maintenance and meter replacement.

- Indirect proportion of volume of water sold. A lump sum plus proportional payment covers fixed and proportional costs for water distribution.

- Indirect proportion of volume of water produced to cover costs due to production, treatment, and pumping. To encourage the company to reduce water loss, the volume of water calculated for compensation is usually limited to the volume sold plus a fixed percentage of unaccounted-for water based on an estimate of water provided but not sold (e.g., for washing streets, flushing the sewerage system, use by fire department, and leaks).

16. The level of tariffs fixed by the public authority will not directly affect the private company. The commercial risk of supplying the service remains mainly with the public authority. The manager remunerates himself directly from the charges collected from customers. In the income statement prepared by the private company, the difference between water revenues and compensation to the private company should always be positive and is to be turned over in full to the public authority.
4.3 Management Contract with Profit-sharing Arrangements (Régie intéressée)

17. The type of contract that the French called "régie intéressée" is similar to the management contract discussed above, except that compensation to the private company includes a productivity bonus and, contingently, a share in the profits in addition to a fee calculated as a percentage of turnover. In the income statement prepared by the private company, the difference between water revenues and compensation to the private company is to be shared between the private company and the public authority. A contract with profit-sharing arrangements is unusual. It was used, however, in the Paris suburbs, where a syndicate of about 140 municipalities served 14 million inhabitants. It was also used for the Paris subway before the creation of the "Régie Autonome des Transports Parisiens" (RATP) and for the production and the distribution of gas and electricity until their production was nationalized in 1946.

4.4 Leasing (Affermage)

18. Under the type of leasing or "farming out" arrangements called "affermage" by the French, the system owned by the public authority is leased to a private company for operation and maintenance, but unlike a management contract (either with or without profit-sharing arrangements), the financial risk for operation and maintenance is borne entirely by the leasing company. In this case, customers are clients of the private company.

19. Under the lease (or farming-out) system, the lessees (or farmers) are responsible for the following:

- All legal obligations connected with providing the service.
- The good operation of the service by the technical means of their choice. In certain cases, lessees may have easements created to give them the right to install pipes on private property (notably for water distribution and sanitation).
- Provision of a water supply that meets drinking water specifications.
- Return of the equipment in good repair at the end of the contract.

20. The lessees operate the service at their own commercial risk by bearing deficits and by benefiting from eventual profits; their remuneration comes from users fees. On the other hand, the lessee does not participate in financing the basic infrastructure and facilities, including reinforcements and extensions. Thus, in the case of sanitation, the lessee does not finance the network of pipes nor the treatment facilities, which belong to the community. The lessee receives already existing facilities and must ensure only the management of the service. It must finance only the working capital and renewal expenses for short economic life components such as electromechanical equipment, connections, and meters.

21. Part of the tariff is contractually due to the private company. This is used to compensate for full operating costs, renewal expenses for short economic life components, plus profits if any. The remaining part of the
tariff (usually called "municipal surcharge") is transferred to the public authority that has financed the fixed assets of the system. Every year, the public authority gives to the lessees the amount of the surcharge they are to collect from the customers. It may happen that the contract stipulates payment by the operator to the public authority of a refund based on charges collected. The purpose is to make the public authority participate in productivity increases incurred in the operations. The public authority generally pays debt service on loans made to finance the fixed assets of the system, including investment for renewals of long economic life components of the system (civil works and pipes) from surcharge revenues. The leasing contract fixes the part of the tariffs kept by the private company. This generally is a variable part in proportion to consumption plus a fixed part to cover permanent service charges. Here the private company bears the financial risk, especially for any deficit. The part of the tariff due to the private company results from competitive bids made by several companies or by negotiations.

22. Besides their own accounting, lessees are required to describe in a special document called "Affermage Account" that part of the receipts that correspond to the surtax or to the various repayments owed to the community, a document over which the community has a right of control. The new model of contract for farming out water distribution services in France forbids any endowment to create a construction fund because of abuses in this domain. The community, as far as it is concerned, does not have to keep separate books, especially for water distribution and public sanitation services, for the farmed-out service. All the operations that might concern the community must be described directly by the leasing company's general budget. In this framework, surtax payments made by the lessee to the community are entered as credits in the operation section. The part intended to reimburse the capital of loans is entered as debits in the operation section under the form of allocation to the amortization of assets and as credits in the investment section.

23. The leasing contract is usually valid for no more than 10 years, with the possibility of renewal by tacit agreement for up to 20 years. Private companies are now lobbying for having the upper limit of the contract period extended to 20 years. In France, contracts for leasing water supply systems to private companies usually follow a standard form of contract, which is annexed to the legislation. A standard form of contract for leasing sewerage systems also exists.

4.5 Concession

24. Under the concession type of contract, the public authority contracts with a private company for not only operation and maintenance of the municipal system, including its commercial risk (compensation of the company through a portion of the tariffs), but also for the construction or rehabilitation of the system. The company finances the investment costs of the system, including replacement costs, and the working capital required for its operation and maintenance. The validity period of the concession contract (maximum 15 years, formerly 30 years) is longer than for a leasing contract, since time must be given to the concessionary to recoup the capital costs initially invested. Customers are legally bound to the company. Tariffs set by the company are fixed in relation to recovery of operational and
maintenance costs and capital amortizations. A clause in the contract permits periodic adjustment of tariffs in relation to variations of economic environment. When the public authority contributes to financing the capital costs, whether in kind (existing facilities) or in cash (e.g., subsidy from the central government), the tariff includes a surcharge that appears on customer bills and is turned over to the public authority.

25. At the end of the contract period, all fixed assets of the system are handed over to the public authority, which is entitled to full ownership. The private company must hand over the system in adequate working order. It will be compensated for the residual value of the system components that it has financed during the last years (not exceeding 10 years) of the contract period and that are to be kept by the public authority.

26. A standard form of concession contract prepared by the French authorities also exists, but it is not part of the water supply legislation. Negotiations are underway to prepare a standard water bill that includes all information to be provided to customers.

5. Trends in France, United Kingdom, and the United States

5.1 France

27. In France, the development of private water companies greatly accelerated after 1950, as shown in the following table:

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<tbody>
<tr>
<td>Population served through private water supply companies</td>
<td>31</td>
<td>46</td>
<td>54</td>
<td>60</td>
<td>62</td>
<td>65</td>
</tr>
<tr>
<td>Municipalities served through private water supply companies</td>
<td></td>
<td></td>
<td></td>
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</tr>
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</table>


French private companies also have become increasingly active in the delivery of a wide variety of municipal services, such as sewerage, solid waste management, city heating, parking lot management, cable transmission, and funeral services. In 1986 private companies managed 40% of all sewerage services. Many municipalities prefer to delegate their water supply responsibility to private firms because (i) the responsibilities that they cannot delegate are expanding; and (ii) water supply activities are becoming more complicated due to the combined effects of pollution, scarcity of water resources, and increased demands on drinking water quality. Municipalities
realize that more complex facilities and a more difficult working environment (pollution spills, labor unrests, security problems) require quick reaction to problems, flexibility, delegation of authority, and decentralization. Generally, they believe that the private sector is better at responding to these situations because of greater management autonomy and more flexibility in remuneration and discipline of personnel. Only the largest municipal utilities can afford to hire specialists for their staffs. Smaller utilities prefer to enter into contract with a specialized firm whose local staff can call specialists from headquarters.

28. During the last 40 years, the leasing contract for water supply and sewerage has been the most prevalent contract for use with private companies. Concession contracts are generally used when a service is newly established or rehabilitated and modernized. Since 1940, this contract type has not been used in France except for contracts not yet expired or for special cases. Presently, the management alternatives for water supply services in the 29,000 urban municipalities are as follows: 60% government owned, 16% leasing contracts, 13% concession contracts, and 11% other contracts.

5.2 United Kingdom

29. In the United Kingdom, with the exception of Scotland where water is supplied through local governments, 25% of water is supplied through private companies. The government intends to privatize the other 75% by selling the assets of water boards in England and Wales. In the United Kingdom, the intention is to move toward full-scale privatization by means of the sale of existing assets. This is different from France, where privatization is now generally limited to the management of water supply or sewerage systems, and, in some cases, to financing new investments. A national rivers authority would be established to take over flood control, pollution control, and water resource planning. Although ownership would be transferred, control would still rest with the government, provided it retains a significant stake in the equity. Such control could be exercised with as little as 10% of the shares if the remaining shareholders are dispersed. Selling the water supply assets would permit the British government to raise about £5 to £8 billion. Consumers would remain protected through consultative arrangements, and an office of water supply (OFWAT) would be established to monitor and regulate the privatized companies.

5.3 United States

30. In the United States, institutional arrangements differ among subsectors. There are now 25,000 investor-owned water utility companies. They account for 56 percent of all operating systems. Private companies account for 33 percent of solid waste disposal. A total of 99 percent of municipal wastewater treatment plants are publicly owned.

31. Since the passage of the Clean Water Act of 1972, the federal government has spent between $40 to $50 billion on publicly owned treatment works. It has therefore been difficult for the private sector to compete financially with federal grants and explains the high percentage of publicly owned wastewater treatment plans. The federal grant program is, however, now winding down, and
some municipalities have privatized their wastewater treatment plants while many others are exploring the possibility of privatization.

32. Privatization occurs mainly where a need for new investments arises, and, because of the difficulty in issuing new bonds and the unavailability of grants, there is no place to turn for financing except to the private sector. Furthermore, because of investment tax credits and accelerated depreciation, the private investor may benefit from reductions in capital requirements that could be shared with the municipality. Although this does not benefit the economy as a whole, it is attractive to the municipality. However, economic benefits are often obtained in a private-sector operation through economy of scale. Usually a municipal utility has a reduced number of plants, while a private owner may operate several plants, and economies are possible in the purchase of materials and supplies and the employment of highly skilled staff.

33. An important difference between the American privately owned utility and the French-owned utility is that in the United States the financial statements of the company are reviewed every year by a public utility commission and, if necessary, the rates are adjusted so that the rate of return is kept within a range of 10 to 15% after taxes. In France, water rates are predetermined at the outset of the contract period. This results in differences in attitude and motivation. Under the French arrangements, the private company is motivated to increase productivity because it can benefit from it, at least during the contract period. At the end of the contract period, productivity gains are passed on to the consumers through the market price mechanism. The French arrangements are being introduced successfully in the United States, and the largest French company is now managing, under French-type contracts, more than 10 American sewage treatment plants.

6. Options Available to Less Developed Countries

34. In less developed countries (LDCs), although the case for privatizing water supply and sewerage services is weaker than for other state industries, more and more governments conclude that the role of the state often exceeds its ability to effectively deliver these services. In Abidjan (Côte d'Ivoire), Macao, and Conakry (Guinea) the private sector is recognized for the contribution it can make.

35. Full-scale privatization may be difficult for LDCs because of the lack of strong sources of capital. Also, there are often prohibitions or restrictions on selling to foreign investors. For example, foreign investors might be discouraged by legal restrictions on the repatriation of profits and unrealistic rates of exchange for local currencies. Privatization, however, should not be excluded as an alternative for changing the institutional arrangement of a poorly performing government-owned institution. In some cases, privatization could be implemented more easily through an intermediate phase of leasing arrangement: a private manager might be brought in to run a potentially profitable institution for a share of the profits and an option to buy.

1/ Chandler, Arizona; Auburn, Alabama; Oklahoma City; and Downingtown, Pennsylvania
36. The main lesson that can be drawn from the situation in France is that a range of institutional alternatives exists for the management of water supply and sewerage systems. The contractual arrangements between local government and the private sector have improved, and LDCs might find it helpful to adopt the standard forms of contracts that have been developed. The French example also shows that it is possible, in one country, to have private firms competing against each other at the end of a contract period and against government-managed utilities.

37. It is true that arrangements that work well for one country may not do so elsewhere. However, if the performances of its water supply and sewerage systems are poor, a government should not hesitate to consider changing its institutional arrangements. Ownership does not seem to be the key issue in performance efficiency. The following approaches are more important to efficiency:

- Separate social and political objectives from commercial objectives. It is often better for a government to let an institution operate on commercial lines and then use its profits to achieve social or political goals.

- Achieve a proper balance between control and independence. The role of the government is to provide the proper environment for good competition and to monitor and regulate the private companies. It is not to interfere in the management of water supply and sewerage systems.

- Monitor the performance of public and private institutions. Profitability is a good index of managerial performance when there are no distorted prices, subsidies, or monopoly rents. However, profitability should be looked at in parallel with other financial information to take into account activities with future benefits but current costs, such as planning, maintenance, replacement of assets, training, research, or development.

- Hold managers accountable for results. Design incentives and sanctions for improving performance. Incentives can be pecuniary or nonpecuniary (more management autonomy, recognition, greater responsibility, promotions, and national honors). A bonus system could cover all the labor force and be based on salary according to a performance ranking.

38. Pragmatism and flexibility should be exercised in choosing the proper institutional alternative, with due consideration being given to local circumstances. To paraphrase the Chinese leader Deng Xiaping, it does not matter what color a cat is, as long as it catches mice.