WPS3727

Small-Scale Private Service Providers of Water Supply and Electricity

A Review of Incidence, Structure, Pricing and Operating Characteristics

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World Bank Policy Research Working Paper 3727, October 2005

Foreword

Small-scale providers of water supply and electricity have long been an important part of service delivery, particularly in peri-urban, rural and remote regions and in countries with failed public utilities. Of the various forms of small-scale provision, community and government-based systems have received the most attention from donors, analysts, and the public. Indeed, most government, donor and NGO programs now provide funding to community-based organizations, particularly in rural areas and remote regions.

In contrast to these small scale *community and government* service providers, small-scale *private* service providers (SPSPs) have only recently gained acceptability as a viable alternative for developing and managing small-scale water supply and electricity services. Many governments and donors considered community based arrangements a more appropriate match for the "social" objectives they aimed to achieve – particularly in those areas where monopoly utilities are responsible for service delivery[1]. As a result, SPSPs are often viewed as "temporary"— although many have been in operation for over 20 years; "rent-seekers"— that take advantage of unreliable public services so as to gouge their customers, and "poor quality"— providing a service that does not meet technical and water quality standards.

In recent years, national programs, policies and global forums have started to pay more attention to these providers. Many practitioners now acknowledge the potential role of SPSPs in developing and managing private water supply and electricity systems and in advancing local private sector development.[2] They recognize that many communities would go unserved if not for SPSPs and that working with these providers to establish measures to improve their quality, efficiency and affordability, and to leverage their capacity in order to expand service coverage will be of more benefit to consumers than continuing to ignore them.

Several leading bilateral and multilateral agencies, including the UK's Department for International Development and the Inter-American and Asian Development Banks, are currently undertaking activities to study, encourage, and support the role of SPSPs in financing, developing and delivering water supply and electricity services. Given this trend, and to build on and advance this research and advocacy work, the World Bank, the Public-Private Infrastructure Advisory Facility (PPIAF) and Bank-Netherlands Water Partnership (BNWP) launched an initiative to synthesize lessons learned over the past decade, and draw common conclusions as a foundation for strengthening support for SPSP activity at the country level.

This exercise was conducted as a preparatory first phase of what has become known as the Policy Framework and Global Mapping Initiative (PFGMI), a global initiative to

[1] Water providers were virtually all small scale until the Fabian movement led to nationalizations in the 1920's. Historic literature describes the process of small scale providers growing during the 18th century in Europe into large scale providers, and through mergers, takeovers etc. becoming very powerful so that the fear of monopolies seems to have led to nationalization -in several countries such as England.

[2] The World Bank Group's Program for Water Supply and Sanitation, 2004.

improve knowledge and understanding of SPSPs in water supply and electricity. In addition to the literature review described in this report, Phase I of the PFGMI assessed the scope and scale of SPSPs worldwide and prepared a proposal for a more detailed study of specific issues, to be carried out in a second phase.

This report is based on work by a team comprising Mukami Kariuki, Jordan Schwartz, Johannes Exel, Carlos Linares, Roohi Abdullah, Anna Rachael and Shelly Hahn. The document was peer reviewed by Tova Maria Solo, Antonio Estache and Clarissa Brocklehurst and revised and edited by Mary Morrison.

Executive Summary

This document summarizes the key findings and conclusions of a literature review of small-scale private service providers of water supply and electricity (SPSPs) conducted over a six-month period in 2003. It draws on more than 400 documents - including journals, articles, reports, case studies and project reports - which have been disaggregated and referenced in a publicly available database.[3]

It defines key terms and proposes a common typology for classifying the different kinds of SPSPs according to two key parameters: (i) relationship to source of water or electricity (whether dependent or independent), and (ii) type of technology employed. Parallel categorization systems are developed for water and electricity[4].

The information obtained through the literature review is partial as it reflects only those countries, locations or cases for which documented evidence of SPSPs has been prepared (and found, as much of the work is unpublished and therefore difficult to access). Despite the limitations in consistency and comprehensiveness of the information available, approximately 7000 electricity SPSPs (not including battery recharging businesses) were found to be operating in 32 countries and 10,000 water SPSPs were identified in 49 countries. Given the scarcity of documented information on SPSPs, this sample is likely to represent a portion of the total population of SPSPs.

SPSPs appear most prevalent in countries with low coverage levels, ineffective public utilities that provide inadequate or partial services and remote, difficult-to-access regions. SPSPs are especially prevalent in post-conflict countries, and others with weak or failed states. Of the countries for which evidence of SPSPs was available, at least half fall into this category. SPSP provision of networked services appears to be significantly higher for electricity than for water supply**.**

Most SPSPs identified through the literature are single-purpose entities established for the express purpose of delivering water supply or electricity. SPSPs take a variety of organizational forms, both for-profit and non-profit. As such, they are established for a variety of reasons including: to meet consumer demand, respond to crises or as part of larger business ventures. The technology employed may extend upstream from distribution services to the means for producing or generating water supply or electricity, so capital needs vary accordingly. The vast majority of SPSPs have fewer than 50 employees and usually fewer than 10. A lack of affordable financing is a constraint for most SPSPs, who fund investments mainly through their own earnings and savings, loans from friends and family, and money borrowed from formal and informal lenders.

[3] This database is currently under design and will be available through the World Banks Rapid Response Unit (www.rru.worldbank.org)

[4] This document addresses other key characteristics such as legality, formality and organizational form. However, from the literature review it was evident that there was a lot of overlap among these characteristics and the relevance of organizational type was often not elaborated on. The authors therefore opted to treat these aspects qualitatively.

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1. INTRODUCTION

1.1 Why Focus on Small-scale Private Service Providers?

In communities where national, regional or municipal utilities are not providing sufficient or reliable electricity or water services, households depend instead on a wide variety of local providers. These providers finance, develop and manage systems, ranging in sophistication from water tankers and diesel generator dealers to stand-alone networks and power grids. Organizationally, they encompass community groups, village administrations and private entrepreneurs. And while a portion of them receive some form of public funds from governments, donors and NGOs, many are privately financed by business people, financial intermediaries and users.

This report focuses on those small-scale *private* service providers (SPSPs) that have contributed to the extension of water supply and electricity services at their own initiative and with resources mobilized largely from private sources. SPSPs often bear regulatory and political risk, in complex and remote locations that may also present commercial risk.

SPSPs have traditionally played three basic roles: "gap filler" in countries with high coverage levels but low service quality (measured by the number of days or hours within which services are available); "pioneer"--developing and operating systems in areas where there is no public service but there is customer demand; and "sub-concessionaire"--buying water or electricity in bulk from the utility and selling it on to customers. In addition, SPSPs are increasingly assuming the function of "manager" of small public systems in need of improved efficiency.

An analysis of the scope, scale, constraints and roles of SPSPs is important because:

- ***They are significant service providers in many countries, particularly in peri-urban, rural and remote regions, and may be the only viable operators for the foreseeable future.*** SPSPs are estimated to reach as much as half the population in some countries, particularly in post-conflict situations and other cases of weak or failed states. Overall, it is estimated that up to a quarter of the urban population in Latin America and nearly half of urban dwellers in Africa rely on SPSPs for at least a portion of their water supply. In low-coverage countries, or poor regions in higher coverage countries, SPSPs can play an important role in service provision, compensating for - or supplementing - the limited financial and human resources of the public sector.

- ***The local private sector currently accounts for over 85 percent of all private sector investment in water security[5] and the potential for private financing of small-scale waster supply is significant.*** The local private sector has demonstrated its ability and interest in the development and management of water supplies even in remote or difficult locations that are unattractive to formal providers. Despite unclear legal or operational status and sub-optimal financing

[5] *Towards Water Security: A Framework for Action*, Global Water Partnership, 2000.

arrangements (primarily from the informal market) these providers have made significant investments in water supply and electricity systems. Establishing a clear policy and regulatory framework for SPSPs could free up scarce public financing for less attractive segments of the market and reduce costs, thereby improving prices for consumers.

- ***Counting and expanding existing SPSP activity may help governments reach the coverage targets set out under the Millennium Development Goals (MDGs).*** Because SPSP activity is often considered temporary or informal, it is often not counted towards coverage targets[6]. Recognizing and supporting SPSPs may be a practical way for governments to reach service coverage objectives more quickly. As decentralized options are increasingly accepted as an integral part of service delivery by governments and decision makers, particularly in remote regions that are isolated from utility networks, policies that formalize or promote SPSP activity are increasingly important for creating a favorable business environment for SPSPs; encouraging increased private sector investment; and improving the terms and conditions of service for consumers.

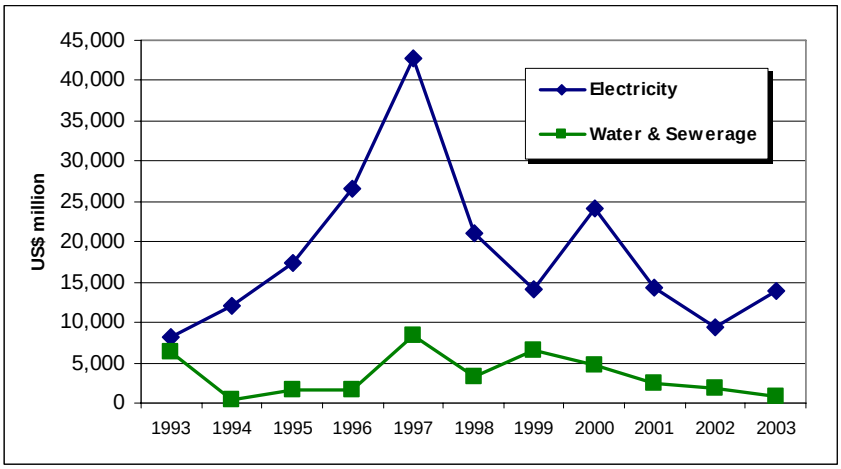
- ***Small-scale providers have the potential to become local private operators in small towns, and over time, in medium and large towns.*** With growing recognition of their role in water supply and electricity services, SPSPs in a number of countries are evolving from owner-operators of privately funded systems to developer-operators of formal systems in small towns or multi-village areas (for example in Paraguay and Uganda). While SPSPs' prior experience in the informal sector may not adequately prepare them for formal bidding processes (which are more familiar to contracting and consulting teams), recent experiences in several countries demonstrate that with the right support and consortium-building SPSPs can become an important channel for the development of local private sector capacity for water supply and electricity service.

- ***The possibilities for provision on a larger scale have diminished throughout the developing world, as both governments and the private sector have scaled back major infrastructure investments (see Chart 1).*** While small entrepreneurs are unlikely to take on the responsibility for massive rehabilitation or expansion projects in large metropolitan areas, SPSPs can help fill the growing gap in private financing of infrastructure by serving marginal urban communities, peri-urban areas, and outlying and rural communities. These are often the most costly clients to serve for large investors, the last to receive connections and the targets of controversial universal service obligations imposed upon private investors and concessionaires.

[6] Improved water source (percent of population with access). Access to an improved water source refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpipe, borehole, protected well or spring, and rainwater collection. Unimproved sources include vendors, tanker trucks, and unprotected wells and springs. Reasonable access is defined as the availability of at least 20 liters a person a day from a source within one kilometer of the dwelling

Despite these potential advantages, many governments and practitioners have paid insufficient attention to SPSPs, preventing effective planning and policy making for their engagement in longer-term water and electricity provision. This is because: i) SPSPs have been viewed as just a temporary or stopgap solution; ii) both electricity and water supply are seen by many as natural monopoly sectors - for policy makers it has simply been easier to deal with a small number of large enterprises - national providers or municipal providers – than to regulate a market of SPSPs;; (iii) water supply in particular is often considered a public good, social good or free good, and therefore not appropriate for private provision; (iv) global technical standards sometimes do not recognize SPSPs' modes of service. (For example, the Joint Monitoring Program of the World Health Organization does not consider water tankers and vendors as sources of safe water supply.)

Chart 1: Total Investment in Large Private Electricity and Water Projects, 1993-2003



Finally, while sound and consistent data are needed for informed decision-making (e.g., to justify policy decisions, enable monitoring and facilitate benchmarking), this information has often been lacking. Since the 1970s, SPSP activity has been documented, although on a limited basis (for example G. White, 1977, D. Whittington 1988). However, much of the evidence collected is anecdotal and based on scant or incomplete data (for one location or city, one type of SPSP, or with scarce data or details regarding SPSP characteristics or business). To date only a handful of projects has focused on documenting the scope and scale of SPSP activity, although the number of projects and programs with SPSP components has increased. These focus on knowledge generation—raising the profile of small scale providers; reform of regulatory and business environments—recognition of existing SPSPs; and transaction design, improved contracts, access to financing—stimulating the entry of local SPSPs in development or management of services.

1.2 Aim and Structure of this Report

This report therefore aims to clarify what is known about water and electricity SPSPs. It:

- **Describes the common features of SPSPs.** In particular, it discusses what being private and small-scale involves, and draws lessons from the more abundant literature on micro, small and medium sized enterprises sector. It looks at what is relevant across sectors in understanding the role of policy, the business environment, micro-finance and regulation.

- **Proposes a common typology for describing and classifying different types of SPSPs.** Given the spontaneous and informal manner in which most SPSP activity arises there are many definitions of SPSPs have evolved. This document attempts to classify SPSPs into broad categories that are common across countries. The typology is intended to enable a better understanding of the characteristics of different SPSPs in order to allow for the design of appropriate solutions.

- **Assesses the scale, scope and current state of knowledge of SPSPs.** Using existing data sources, it is not possible to estimate the scale of SPSP provision with a high degree of accuracy. Because the information collected to date is motivated first by the observation and study of SPSPs, and therefore limited to a specific location or type of SPSP, extrapolating across countries and regions is difficult. The incidence and importance of SPSPs beyond the scope of the current literature can only be inferred from the observations and could not be estimated with a high degree of confidence until broader analyses is conducted. This phase of the Global Mapping Initiative thus provides numbers on the scale and scope of SPSP activity as currently observed within the context of the cumulative studies identified through the literature review.

- **Compares patterns and trends in small-scale water supply and electricity services.** As there are many lessons to be learned across infrastructure sectors, and from a comparison of water supply and electricity in particular, the study reviews lessons learned in each sector as a useful basis for further analysis and sector development. Six key parameters are discussed: organization, technology, staffing, financing, sales, and customer services.

2. TOWARD A COMMON DEFINITION OF SPSPs

There are no standard definitions to describe and classify small-scale providers, largely due to their informal or improvised nature. Terms and phrases have been applied inconsistently in the literature, generating further confusion (see Box 1). For example, with respect to small-scale water providers, the term "vendor" is used in numerous, often contradictory ways. "Vendor" can describe service providers that deliver water to their customers, or more broadly describe any actor selling water, including households selling from their yard connections. The emergence of new hybrid arrangements has only complicated matters. Thus the literature review highlighted the importance of clearly defining and categorizing SPSPs, to better understand them and shape programs of support and supervision for them.

Box 1. The Definition of Terms: Understanding "Independent" Providers

A review of the literature on SPSPs reveals at least three contradictory ways of using the term "independent":

- In some literature, "independent" denotes the organizational status of the entity, suggesting simply that an "independent" provider is not institutionally tied to a larger utility.
- In other sources, "independent" refers to financial autonomy and thus refers to any private provider under the assumption that they are not receiving public financing or other major forms of subsidy.
- Because the above definitions overlap with other organizational and financial definitions, this study recommends that the term "independent" should only describe providers who are physically de-linked from larger utilities, that is, those who produce (and sell) their own sources of energy or water.

2.1 Defining the "Private" in SPSP

The following key features distinguish private SPSPs from other small-scale providers of water supply or electricity.[7] SPSPs are established:

- at the initiative of a private owner or operator, which may be either a for-profit or non-profit organization;
- with a significant share of capital financing (25 percent or more) provided or borrowed by the private entity; and
- on a commercial basis (although they may be unprofitable or have non-profit status).

2.2 Scale: SPSPs as Micro, Small and Medium Enterprises (MSMEs)

SPSPs are assumed to serve fewer than 50,000 people each or 5,000 customers in small settlements, whether urban, peri-urban or rural.

The literature on smaller private businesses in all sectors, broadly known as Micros, Small and Medium-Sized Entities (MSMEs), can provide some interesting insights for SPSPs, which are the MSMEs of the water supply and electricity sectors. SPSPs generally share the following characteristics with MSMEs operating in other market

[7] This definition deliberately excludes wholly owned public systems (whether funded by government, a donor or NGO) that do not have significant risk taken by the private entity (e.g. management contracts for existing small towns, local government systems or utility standpipes).

segments (e.g. telecommunications, textiles, food processing or transport services). The literature shows that SPSPs typically:

- use private capital to develop their business;
- conduct their business in a constrained regulatory environment
- face excessive political interference and/or corruption;
- face difficulties in obtaining financing and
- have limited access to industry, financial, technical and managerial knowledge and information.

Within the MSME category, The World Bank Group defines micro or small enterprises as those with fewer than 50 employees, total assets of up to $3 million or total sales of up to $3 million. This definition was used to guide the review of literature on SPSPs, taking into account a distinctive feature of the water supply and electricity sector: low levels of direct employment. Small-scale water and electricity companies generally have fewer staff than other businesses of equal turnover or asset value, such as manufacturing or value-added agricultural businesses. A well functioning utility may have a staff-to-connection ratio of 4:1000 or below. At this ratio, an SPSP might serve a community of 25,000 people (assuming 5,000 household connections) with only 20 staff. Productivity benefits of these providers are indirect—albeit considerable. Electricity provision allows for home-based work and evening study while household water supply provides improved health benefits and considerable time savings, particularly for women and children who are often responsible for water collection. Understanding MSME linkages is also important for policy and regulatory reforms in favor of SPSPs. For example, initiatives to establish microfinance or credit institutions, simplify business licensing procedures, provide for tax incentives or offer training and capacity building programs intended for small business in general could have residual benefits for SPSPs - provided that they are formally recognized or eligible.

2.3 Classifying SPSPs

All SPSPs found in the literature review have some common characteristics around which they can be grouped. Based on the literature review it was considered important to characterize SPSPs along two main axes: relationship to their source of energy or raw water; and type of technology employed (see Table 1).

Table 1. Overview of Source and Technology Related Parameters

		Relationship to Source	
		Independent (Develop own source)	**Dependent** (Source supplied by larger utility)
Technology Employed	**Grid or Network**	Integrated production/generation with transmission/distribution	Purchasing water or electricity and on-selling through mini-grid/network
	Point Source	Own source, fixed location vendor	Connected to utility fixed location vendor
	Mobile Distributors	Own source, mobile vendor	Purchase from utility mobile vendor

The following are fuller explanations of these two key parameters.

- ***Relationship to Source: Independent and Dependent***
  SPSPs can be divided into two broad categories: (i) those with their own, independent source of water supply or electricity—such as a well or borehole, diesel generator or small hydro plant; and (ii) those that are dependent on a formal public utility for the supply of water or electricity. The nature of policy, legislative and regulatory frameworks for SPSPs varies according to the source of water or energy involved. For the former group, key regulatory issues may include ground water abstraction, electricity generation and distribution, water quality and public health standards. For the latter, contract terms with the supplying utility, including tariff and connection charges, fee structures and licensing procedures are of more relevance.

  Technology or system: Networks/grids, Point Sources and Mobile Distributors
  Three general categories have been defined to cover the technology of the service-delivery system: (i) networks or grids, through which water supply or electricity is delivered via a fixed system by the SPSP right to a customer, such as a household or point source; (ii) point sources—kiosks, standpipes or dealerships to which customers travel to purchase water (by the container) or electricity (battery charging); and (iii) mobile distributors, such as tankers, solar panels, and diesel generator distributors who deliver to the client through non-fixed channels.

Within the framework described above, a classification system (see Tables 2 and 3) has been derived for water-supply SPSPs. In addition to the Source and Technology parameters, information from the literature is synthesized wherever possible into organizational parameters for both water and electricity providers as defined below:

- ***Organization: Profit Motive and Legal Status***
  The organizational characteristics of the entity that owns and operates the system or source of water supply are more difficult to define because of the wide variation in legal frameworks under which they are established. The salient organizational characteristics of SPSPs are the strength of profit motive and their legal status. Most SPSPs are either non-profit entities which benefit (by virtue of their status) from grant funding or they are profit-seeking businesses that rely on private sources of financing. By status, the range of SPSPs includes sole proprietorships and family businesses; user associations and voluntary membership organizations; community-based organizations; and informal sector enterprises.

The remainder of the report uses the definitions provided above as a basis for analysis.

Table 2: Categorizing Water Supply SPSPs

Features, by technology	Dependent	Independent
i) *Piped Networks*		
System	Operator buys water in bulk from utility and develops distribution sub-networks connected directly to households, institutions and public kiosks stand posts	Operator develops own water sources (wells or boreholes) and connects network to households and other users.
Organization	Private company or individual, community organization or neighborhood association	Sole proprietor, cooperative, private land and housing developer, water user association, community-based organization.
Regulatory Issues	Contract with utility, business license, customer agreements, bulk rates, customer tariffs	Groundwater abstraction permits, title deeds, resale permits/licenses, water quality testing, business licenses, rights to own infrastructure and/or to lay networks in public rights of way
ii) *Point Sources*		
System	Kiosk or stand post connected to the utility network (could be household supply); buying water in bulk - at a special tariff - or at household tariff.	Water point linked to own source (well or borehole, underground or above-ground storage tank) installed privately and operated on a for-profit basis. Water may be purchased from a tanker.
Organization	Individual, enterprise, self-help group	Neighborhood association, micro-enterprise, community based organizations
Regulatory Issues	Contract with utility, license/permit, customer tariff, bulk purchase price, performance incentives	Groundwater abstraction permit, license, tariff structure, water quality testing
iii) *Mobile Distributors*		
System	Tankers or truckers obtain water in bulk from the utility (or municipal supply) and deliver it directly to the customer, including public utility water storage tanks, communal cisterns, or individual households and institutions	Tankers, truckers or carters develop source or obtain water from a private well for distribution to households; public utility water storage tanks, communal cisterns, or institutions
Organization	Sole proprietor, tanker association, lessee, informal sector	Sole proprietor, tanker association, lessee, informal sector
Regulatory Issues	transport license, business license, tanker cleanliness, bulk rate, utility contract, customer tariff	Transport license, business license, water quality, abstraction permit,

A parallel classification system was also derived for electricity SPSPs:

Table 3: Defining Electricity SPSPs

Features, by technology	Dependent	Independent
i) *Distribution Network/Grid*		
System	Purchase electricity in bulk from main utility and sells it on kWh or fixed basis to clients connected to a distribution network installed by the SPSP. May operate in the utility service area, or extend services beyond these boundaries.	Generate own electricity and distributes to customers through own local network. Electricity is sold on a kWh or at a fixed rate.
Organization	Concessionaires, licensees, cooperatives, enterprises, corporations	Concessionaires, licensees, cooperatives, enterprises, corporations, community-based organizations
Regulatory Issues	Power purchase agreement, consumer agreements	License or permit, tariff structure, technical and service standards, hydro rights for mini hydros ?
ii) *Point Source*		
System	Purchases electricity in bulk from main utility, operates battery-charging station at which customers pay to periodically recharge batteries	Generate own electricity for charging station; sells electricity on basis of charged battery
Organization	Enterprises	Enterprises Community based organizations
Regulatory Issues	Power purchase agreement; if commercial to commercial, minimal regulatory concerns	
iii) *Mobile Distributors*		
System	Electricity supplied through a standalone system installed at the customer's home/compound – diesel generator or solar system. SPSP operates as agent for utility, leasing or renting systems on agreed terms - fee and/or commission	SPSP sells home based systems over the counter on a cash or credit basis; or leases/rents these systems to clients
Organization	Enterprises (Energy service companies)	Enterprises (Dealers, Energy service companies)
Regulatory Issues	Agents contract/agreement, customer agreements	Licence, Legal framework – sidestepping exclusivity arrangements of utility

3. ASSESSING THE SCOPE AND SCALE OF SPSP ACTIVITY

Over 400 documents were reviewed in detail, covering small-scale providers of water supply and/or electricity in 49 countries (see Table 3)[8]. Documentation on SPSPs in these countries covered at least 100 different locations. Several studies included evidence from more than one country, and some countries were the focus of several studies. But most works examined a specific location or a subset of actors within a location, such as a particular community in a city.

The literature identifies around 7,000 electricity SPSPs and 10,000 water supply SPSPs in the 49 countries considered. Given the scarcity of documented information on SPSPs, this sample is likely to represent only a fraction of the total population of SPSPs. However, because research conducted for the underlying documents was usually motivated by the observation of specific one or more type of SPSP, it is difficult to extrapolate across countries or regions from the available research. In addition, because of the broad range of SPSPs represented in the literature, it is impossible to estimate coverage levels from SPSP totals even for those countries covered by the existing research. Some SPSPs (e.g. handcart vendors) serve a small number of customers, others (e.g. grids) may serve as many as 1000 connections each. Finally, while there are strong indications from the literature that the scope and scale of SPSP activity has increased over the past decade, it is unclear how much of this apparent increase is based on better reporting or documentation of SPSP activity, rather than actual increases in activity.

Despite these shortcomings, when the existing literature is viewed in its entirety, there is a compelling story that emerges about the incidence of these providers in lower income countries and their importance to basic service provision for the poor. Table 4 provides a synopsis of the documented incidence of SPSPs by region.

The literature suggests that SPSPs are most prevalent in areas with (i) low coverage levels, (where the gap between served and under-served or un-served customers is large and stable or growing); (ii) ineffective public utilities – where customers may receive water or electricity services for only a few hours a day or week; (iii) remote regions that are difficult to access through conventional means. They are especially prevalent in low income and conflict-affected countries. Of the 49 countries for which evidence was available, about one-half fall into the category of conflict-affected. One example is Cambodia, where small-scale private electricity providers serve as much of the population as the national power utility (see Box 2)

Although small-scale private water provision can take various forms, SPSP provision of *networked* services appears to be significantly higher for electricity than for water supply. This may be due to several factors including:

[8] For several countries although no documentation of SPSPs was identified, anecdotal evidence of SPSP activity was provided.

- The lower levels of capital investment required to purchase a small generator and string up wires than to produce, treat, store, pump and pipe water.
- The competitive nature of basic water provision. As opposed to electricity, all households have some access to water—however polluted or difficult to access—since it is a basic ingredient to life. As a result, piped water providers are often competing against free surface water, community wells or aggressive mobile vendors.
- Public policy that highlights the nature of water supply as a public and social good. As a result many small systems are community-based and may not operate on a commercial basis.

Despite scale and scope economies that could be derived from bundling business activities between water and electricity supply (e.g., customer billing, meter reading, business management and electricity purchases for pumping), very few SPSPs provide both services. Still, several SPSPs engage in other business activities that relate to their sector, such as irrigation services provided by private water suppliers and agricultural equipment being sold by dealers of solar panels.

Table 4. Documented SPSP Activity by Region

East Asia and the Pacific (8)	South Asia (5)	Africa (22)	Middle East and North Africa (3)	Eastern Europe and Central Asia (3)	Latin America and The Caribbean (12)
Both Water and Energy					
Cambodia Indonesia Lao PDR Philippines	Bangladesh India, Nepal Pakistan Sri Lanka	Cote d'Ivoire, Senegal, Somalia, South Africa, Tanzania, Uganda, Ethiopia, Ghana, Kenya, Mali, Mozambique	Morocco Yemen		Argentina, Bolivia, Peru, Guatemala Honduras Nicaragua
Water Only					
Mongolia Thailand Vietnam		Angola, Benin, Burkina Faso, Democratic Republic of Congo*, Guinea, Mauritania, Niger, Nigeria, Sudan, Zambia	Jordan	Uzbekistan* Kyrgyztan* Albania*	Colombia, Ecuador, Haiti, El Salvador, Paraguay
Energy Only					
China		Zimbabwe			Dom. Rep

Note: * = based on anecdotal evidence.

Box 2. Rural Electricity Enterprises in Cambodia

The 1993 UN-supervised elections marked Cambodia's return to democracy and relative peace. Decades of conflict and neglect had shattered the country's infrastructure, but the new government lacked the resources to thoroughly rebuild. An estimated 600 to 1,000 SPSPs sprang up mostly between 1993 and 1997 to distribute electricity in the countryside. These enterprises now serve about half of all households that receive electricity. They have the following characteristics:

- Most are sole proprietorships. The typical entrepreneur has a high school education and a few (11 percent) have additional technical training. Most technical information is obtained through equipment manufacturers. The average number of full-time employees per SPSP is three, with a similar number working on a part-time basis.
- All SPSPs use diesel generator sets with an average installed capacity of about 100 kW and one to three kilometers in 100mm, three-phase distribution conductors. Most of the systems have energy losses between 20 and 30 percent.
- The estimated average cost of producing 1 kWh is around US$0.34, of which 85 percent is for fuel. The average price for one kWh is roughly US$0.51 with three quarters of SPSPs charging between US$0.40 and US$0.70. About 80 percent of them make a profit.
- The estimated average original value of assets per SPSP is about US$21,000.
- Around half of SPSPs borrow money short-term at a monthly interest rate of one to two percent. Roughly 40 percent of debt financing comes from family members.
- They have an average of 200 clients, of which households make up 94 percent.
- Electricity services are provided for about 4 hours per day on average.
- Most customers are billed from meter readings and pay monthly. Customers are responsible for purchasing electric meters.

[references 7, 118, 147, 151]

3.1 Summary of Literature Review: Water Supply SPSPs

In the water sector, literature from 44 countries with SPSPs was identified and reviewed. Half the examples cited were in cities or towns, with the remainder in rural villages or other communities. Tens of thousands of providers, mostly "point source" systems or vendors, had been documented. The nature of water SPSPs varies regionally, but corresponds closely to the level of coverage and quality of service in a given country. In Latin America and the Caribbean, where urban coverage is high, SPSPs more frequently take the form of piped water systems, mainly peri-urban, small town and rural; in South Asia, SPSPs seem to focus on gap-filling activities with many tankers operating in various cities. As would be expected, across all regions, low income countries had a larger presence of SPSPs, particularly point sources and mobile distributors (e.g. Haiti, Burkina Faso, Bangladesh).

The existing documentation, though abundant, is strongly oriented toward opinion and advice, and is frequently based on case studies rather than data collection. Much of the work that has been carried out in this regard is based on the initial work on small scale providers carried out by the Water and Sanitation Program in Africa, East Asia and Latin America. No literature on SPSPs was found for the Europe Central Asia region or large

countries such as Brazil, Mexico, China and Russia and there were only a few documents on the subject from the Middle East North Africa or South Asia. It is unclear whether the lack of literature in these regions is due to lack of importance of SPSPs or a result of low priority accorded by sector practitioners.

3.2 Summary of Literature Review: Electricity SPSPs

For electricity, literature from 32 countries with SPSPs was reviewed, with a focus on dealers of solar panels and other household electricity generating equipment as well as networked services.[9] The level of SPSP activity is high in 15 of these countries, primarily in rural areas and small settlements. Data on micro-power systems show that the total number of such systems in developing countries has more than doubled over the past decade. This gradual expansion took place over a period in which public investment in power was declining and private funding for large-scale investments was inconsistent. An estimated 10-50 million clients are served by the 7,000 SPSPs currently operating in the electricity sector[10]. About 85 percent of these are in Asia. In Africa, the Middle East and Latin America the number of SPSPs identified in each region was less than 500. In Latin America and the Caribbean, SPSP activity, particularly in large countries such as Brazil, was focused largely in remote regions of the country and provided only a small fraction of electricity service. In Africa, SPSP activity was largely limited by access to financial markets, high transaction costs, and the monopolistic rights granted to national utilities. That said, a few post-conflict countries such as Mozambique demonstrated a notable incidence of SPSPs. The maps in Annex 1 shows countries which were found to have significant levels of SPSP activity in water supply and electricity according to available literature.

[9] For the purposes of this study, literature on battery recharging businesses, categorized as "point source" systems in the typology, was not reviewed. This level of service is not considered comparable to delivered electricity or that available from diesel and photo-voltaic home-based systems.

[10] As in the water supply sector overall numbers of small-scale providers, including community and public systems would be much higher. In China alone there could be 40,000 such systems, of which SPSPs comprise an estimated 1,000.

4. KEY PATTERNS AND TRENDS AMONG SPSPs

This section describes the key patterns and trends that emerged from the literature analysis, employing the classification system developed above. Six key business elements were considered: organization, technology, staffing, financing, sales, and customer services.

4.1 Organization

Most SPSPs identified through the literature are single-purpose entities established to deliver water or supply electricity. Only a small number serve multiple functions and those that do rarely cover both water and electricity. SPSPs are established for a variety of reasons including: (i) meeting consumer demand (e.g. individuals asked to provide access to water supply or electricity for a fee by their neighbors or communities); (ii) responding to a crisis (e.g. neighborhood associations formed to develop an alternative to failing public systems); or (iii) as part of a larger business venture such as estate/housing developer, landlord or photo-voltaic dealer (see Table 5). Depending on their purpose, origin and ownership structure, SPSPs may either be informal or formal and if formal operate as a for-profit or non-profit organization.

Table 5. Typical Organizational Forms of SPSPs

Water	Electricity
• Due to their larger investment requirements, **Piped Network Operators (PNOs)** are more likely to have some form of legal status, although this varies by country. Smaller networks (5 to 50 connections) are typically owned by an individual who may have started as a private borehole owner, gradually connecting the neighbors; larger systems often are owned by user associations established expressly for the purpose of developing a network for members' use (20 to 500 connections). • **Point sources** (kiosks) may hold simple licenses or permits for abstracting ground water, or operating kiosks Dependent ones may be licensed by the utility involved - many work in areas where the utility is unable to lay water lines (e.g. illegal or unplanned settlements). Others remain informal because of legal or administrative constraints rather than by choice. • **Mobile distributors**, such as tankers, trucks transport water to their customers. They are often owned by sole proprietors who may have a small fleet of vehicles. They may have transport licenses but often do not have permits to sell water.	• **Grids or networked systems** may take a number of organizational forms. And while many such systems are owned by user associations, a growing number are managed by private individuals. **Non-profit** SPSPs are typically more formal user or community-based organizations, such as associations, cooperatives, societies, and specialized NGOs providing networked services. • The literature review did not include **point source or battery charging systems** which were even less researched than the other systems[11]. (This category will be omitted in the tables below.) • Because they require more sophisticated leasing and financing schemes, **home-based systems** are distributed by for-profit organizations such as dealers. **Profit-seeking** SPSPs are more likely to include dealers of PV and diesel generators, sole proprietorships, companies and corporations.

[11] **Point Source or battery charging systems:** The electricity sector equivalent to water kiosks may be considered the battery recharging business. These stations are generally connected to a power company and, for a fixed fee, recharge 12 volt car batteries that are used in homes to power small appliances. The literature reviewed as part of this study did not include battery recharging businesses.

The legal form these organizations take is largely driven by national policy, legislative frameworks and history. For example, SPSPs in countries with a tradition of cooperatives in other sectors, such as Kenya, Colombia and Bangladesh tend to be predominantly cooperatives. A large number of SPSPs that are registered as non-profit organizations—such as cooperatives, neighborhood associations, community groups, and societies—provide network services. Most of the SPSPs that are informal are individual entrepreneurs or family businesses. Many water SPSPs are members of SPSP associations (e.g. Kenya, Pakistan, Ghana), which serve a number of functions including sinking common or shared boreholes, purchase bulk water from utilities, and lobby for improvements in terms and conditions of service. For SPSPs operating on a formal basis, operating constraints (e.g., access to finance) are often closely linked to organizational status: for example fully private ventures rely on equity and informal borrowing while non-profit SPSPs may have access to grant funding to augment their own resources; similarly the legal form of the organization may also limit SPSP operations – a study on small scale providers in Kenya noted that the rights of small providers (e.g. to operate a bank account) varied according to the legislation (e.g. Societies Act, Cooperative Act) they operated under.

4.2 Technology

The range of technology used by SPSPs is as varied as the types of SPSPs documented above (see Table 6). Some SPSPs are only engaged in the supply of services, while others are also involved in production. The technology employed may extend upstream from delivering a service to the customer to the means for producing or generating water supply or electricity, in the case of independent SPSPs. Such providers bear additional equipment costs related to generating or producing, as well as for storage or water treatment, as appropriate, compared with dependent SPSPs. SPSPs are known, and often criticized, for applying technological standards that may not conform to national norms. A key reason cited in the literature is the rigid nature and high costs implied by existing norms and the need to match services to the affordability levels. SPSPs are also known to have introduced innovation in improving cost effectiveness of service delivery, however, to date this has not been well documented or studied.

Table 6. Technology Employed by SPSPs

Water	Electricity
• **Piped Network Operators (PNOs)**: Most piped networks have a similar set of components, but capital investment costs varied widely because of network length, number of connections and other technical inputs required. SPSPs establishing piped networks were more likely to rely on professional design and engineering inputs (e.g. to drill a borehole or lay a piped network.) • **Point sources** ranged in complexity from a simple connection to a standpost/kiosk and tap, to a borehole with tank, pipe and tap. Many were found in peri-urban or unplanned settlements with unclear tenure. Inappropriate planning and technical standards had led to haphazard layout and/or the use of sub-optimal technology. • **Mobile distributors** Across all countries studied, water tankers in use by SPSPs typically had a holding capacity of nine cubic meters. Many had been purchased second-hand and may have transported other goods in the past.	• **Grids or Networked systems:** Electricity is typically produced by second-hand, high speed diesel generators with distribution wires connecting 50-300 households. Households may or may not be metered. Service is often offered only during "peak" demand periods--sometimes as little as 3 to 5 hours per day--as a result of lack of base load, high operating costs (fuel) and low average off-peak demand. Where networks are powered by run-of-river or hydro wheels, capacity of wattage may be low (100 to 1000 kW depending upon river head) but service is constant except during seasonal river lows or flooding periods. • **Home based:** The electricity sector equivalent to mobile water vendors is the sales or leasing business servicing home and businesses which depend on self-generation units. These are often individual high speed diesel generators, or simple photovoltaic (solar panel) systems.

4.3 Staffing

Most SPSPs have flat structures with less than two layers between management and the client. Many owner/managers know their clients and are therefore considered more responsive by consumers. Most SPSPs reviwed in the literature had fewer than 50 employees— the majority of the reports for which employment patterns were detailed indicated that there were fewer than 10 employees (see Table 7). However, despite their small scale, SPSPs can play an important role in job creation. Data on water-supply vending activity in five cities (Port-au-Prince in Haiti, Dakar in Senegal, Nouakchott in Mauritania, Kayes in Mali and Bobo Diaulasso in Burkina Faso), indicates that the number of people employed in vending activities represents two to four per thousand people, or 1 to 3 percent of regular jobs in those cities [Water and Sanitation Program, 2000].

Table 7. Typical Staffing Profile of SPSPs

Water	Electricity
• The number of staff typically employed by SPSPs involved in water supply ranges from two to four employees, for **PNOs** serving fewer than 800 households. The owner is typically the manager and either relies on family members or employs a handful of additional staff on a full- or part-time basis to assist with specialized tasks. For systems with under 100 customers, staff-to-connection ratios are not a useful measure of efficiency. • **Point sources** (kiosks) were often operated by a single individual, perhaps supported by family members. • Staff reported for **mobile distributors** shows a consistent pattern of tankers staffing each truck with a driver and assistant. • For small systems,	• **Grids or networked systems:** The Cambodia Rural Energy Enterprise survey is one of the few pieces of research that has sampled staffing questions for electricity SPSPs. There, the average number of full-time employees per SPSP was found to be three, with a similar number working on a part-time basis. • Dealers of **home-based systems** typically had two or three employees, with a high school degree or less, one operations manager who is often also the owner, a technical personal and sometimes a person responsible for bill collection and relationships with the clients. An additional two to three people work on a part-time basis often to support in bill collection or helping with maintenance or the expansion of the system.

4.4 Customer Service and Marketing

As with all private sector operators, customer service and marketing play an important role in the operations of SPSPs (see Table 8). The literature often indicates a preference among consumers for SPSP services, which they perceived (at the time of study) to be more accessible and reliable (delivered water on demand) than the formal utility, even when more expensive. As their services are tailored to specific niche markets, SPSPs are therefore more responsive to customer demand. They also offer terms that are more appropriate to their customers. Many do not require proof of legal residence, such as title deeds or rental agreements, in order to provide services and some offer credit facilities and flexible payment terms for connections and monthly tariffs. As most SPSPs operate on a small scale and in peri-urban rural and remote locations where people tend to know each other, customer service and relations are a priority and many business transactions take place on a trust basis, with credit arrangements being provided to some clients.

Table 8. Customer Service and Marketing Arrangements for SPSPs

Water	Electricity
• **PNOs'** billing and collection practices are often similar to those of other utilities: monthly accounts on the basis of fixed charges or meter readings. However many small PNOs offer personalized services, tailoring payment schedules to individual requirements or extending credit facilities. These specialized arrangements also cover other costs such as connection or membership fees, which may be paid over extended periods of up to 24 months. • Most **point source** systems and **mobile distributors** charge on a volumetric basis at the point of sale— per jerrican, tanker load or storage container. The literature also revealed a wide range of payment mechanisms including weekly and monthly billing depending on customer preference.	• **Grid or Networked systems**: Some SPSPs sell electricity on a metered basis directly to customers and charge customers on a monthly or daily basis; others charge on the basis of number of light bulbs. • **Home Based Systems**: Maintaining good customer relations is particularly important where credit or leasing arrangements are offered and prompt after-sale service is essential for ensuring that monthly lease fees are paid.

4.5 Financing

Investment requirements vary widely depending on the nature and extent of the system installed, but access to affordable financing was a constraint for most SPSPs surveyed (see Table 9). The majority tap a combination of three sources: their own earnings and savings, loans from friends and family, and money borrowed from formal and informal lenders. Informal money lenders appear to be a key source of financing, even though monthly interest rates are often as high as 5 percent per month. Electricity SPSPs appear to have greater access to commercial sources such as micro-finance institutions and commercial and development banks— non-profit or community based SPSPs are often eligible for grant funding provided by NGOs and international donors.

Table 9. Typical Financing Requirements of SPSPs

Water	Electricity
• Total establishment costs for **PNOs** range from US$100 per connection to US$300 per connection, depending upon ease of access to raw water, ability to pay of customer base, degrees of competition from other network providers and other sources of water, dispersion of households being targeted, cost of capital and duration of borrowing tenors, and pumping and storage investment needs. These costs may be recovered through membership fees, upfront connection charges, connection costs spread out over an agreed payment period or may be folded into tariffs. • **Point sources** (kiosks) Investment requirements for point source networks also vary. This cost, which ranges from US$ 100 to US$ 2,000, is primarily determined by distance to the source, and for independent systems could also include the cost of developing a water source. • **Mobile distributors:** The average investment cost for a second-hand water tanker is US$10,000-15,000, while new ones cost more.	• SPSP investment requirements ranged from US$1,000 to a few million dollars. For larger investments, commercial lenders' loan terms are often difficult to meet: monthly interest rates can range from 1 percent to 3 percent, for a period of a year to two years. Non-commercial lenders may charge 5 percent per month interest rates. • Financing instruments include: co-financing grants, output-based subsidies, soft loans, guarantees for debt financing, subsidies, and equity contributions from different sources (beneficiaries, investors, etc). For user-based systems, contributions to capital investment may also be made in the form of cash, labor or local materials.

4.6 Pricing, Sales and Earnings

Data on pricing, sales and earnings was not provided consistently and information was generally limited to prices of goods (e.g. solar panels) and water and electricity services (see Table 10). More information on prices was available for water supply than for electricity (water data from 93 points of reference in 47 countries was collected and analyzed, as presented in Chart 2 below) Data on profits was scarce, and the reliability of this, particularly for informal SPSPs, was difficult to ascertain. The most accurate information on sales was available from tankers and kiosks as it was easier to track sales for these over a given period through observation.

Table 10. Pricing, Sales and Earnings of SPSPs

Water	Electricity
• Across the various types of SPSPs, average prices were fairly consistent across countries although the range of prices charged varied widely— determined by local conditions. • **PNO**'s unit prices ($0.17/$m^3$ to $0.86/$m^3$) compare favorably with utility prices ($0.02/$m^3$ to $0.79/$m^3$). The prices offered by private piped networks are on average 1.5 times those of public utilities, despite higher levels of public subsidies provided to public utilities. • **Mobile distributors**: unit prices ranged from $0.17/$m^3$ to $11.00/ m^3 for vendor-carters, within the category of mobile distributors (MDs). The findings support observations in the literature that water from a mobile distributor may cost as much as 10 times that from a piped supply[12].	• Electricity SPSPs offer several alternative products, each with a different pricing strategy. • **Grids or networked systems** Electricity from a mini-grid goes from 7cUS$/kWh, when capital costs are co-financed through grants, to cUS$92/kWh for full commercial operations. Electricity sold per appliance ranges from S$5 to US$15 per month depending on the number and kind of appliances. In some communities where the primary use is domestic, a flat rate per month is applied. • Individual **home-based systems** such as solar panels range from US$200 to US$500 for sufficient electricity for a few light points up to a mixture of a small television, radio and several lights or other appliances.

This following section analyses unit prices, price differentials and connection charges[13].

4.6.1. Unit Price Analysis

The unit price of water per cubic meter was analyzed based on data from 47 countries and 93 locations according to the typology presented earlier in this report. The analysis showed wide variation in the prices offered by the type of small scale private service provider (SPSP) at global level. Unit prices charged by PNOs ($0.17/$m^3$ to $0.86/ m^3) were notably similar to those of formal utilities ($0.02/$m^3$ to $0.79/ m^3)— for which data was presented as a benchmark. Despite the fact that many of the formal utilities in the 47 countries for which literature was reviewed, provide highly subsidized services, which may not account for full costs, prices charged by PNOs did not differ greatly[14].

[12] As concluded by a study in Manila, Philippines, the poor pay more for water and consume less, however, average prices/m3 reveals that SPSPs do not charge excessive prices. The poor depend more on intermediaries, which appears to have an upward effect on prices. [190] Sohoni, Neera Kuckreja. 2003. Draft. How effective are small-scale independent providers in serving the poor? Experience from the Philippines. Water and Sanitation Program, Department of the Interior and Local Government, and AusAID.

[13] The unit price analysis converts the rates obtained from the literature (typically per cubic meter or liter) and converts these rates to US dollars ($) for each type of SPSPs. Price Differential analysis uses the cost price and compares it to the selling price. And lastly, the Connection Charge is the cost the customers/households pay to connect to the Utility or the Private Network Operator (PNO).

[14] The unit price of public utility water may only be a fraction of the total cost to society of the provision of the service since tariffs rarely cover capital costs and often fail to cover operations and maintenance. Through budgetary operating subsidies and debt obligations, taxpayers pay the remainder. By contrast, the tariffs of private network operators generally cover all costs, including the amortized capital investments required to build the networks.

Chart 2: Price of Water by Type of Service Provider

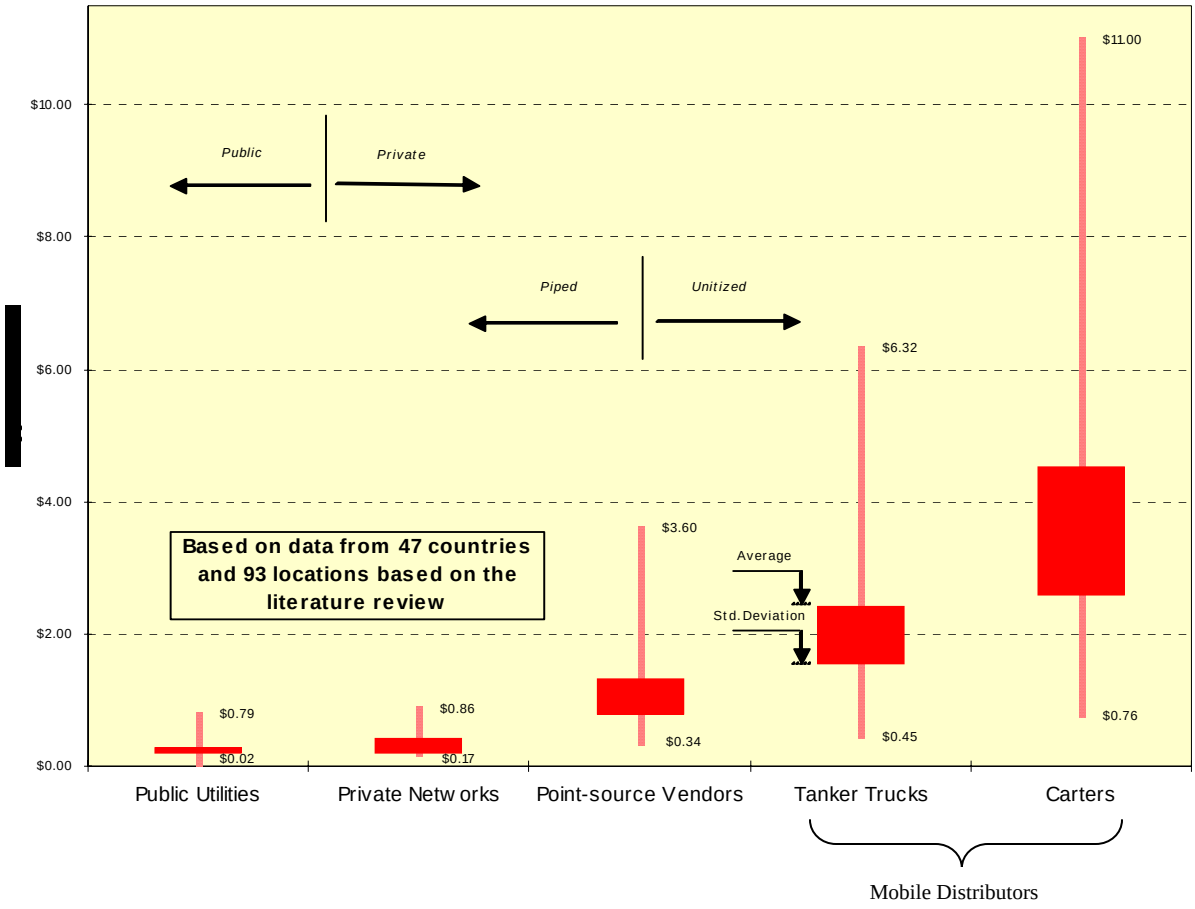


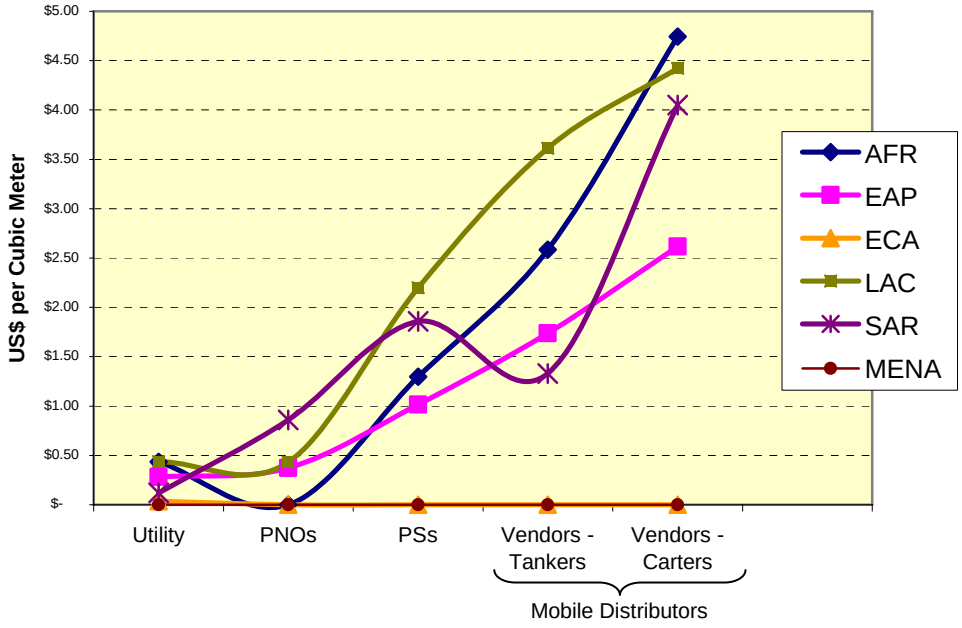
Chart 2 above indicates that price of water increases as economies of scale in production and sales decrease. Likewise, as unit size or volume of sales decrease, prices go up. Carters, which have the smallest sales volume, charge the highest unit price per m^3 of water— as much as \$11.00/ m^3 or more. Thus, the ability of the service provider to amortize capital costs as well as operating inefficiencies (such as fuel, bribes and salaries) over larger volumes is the key to improving affordability.

On average, water from piped network operators (PNO) costs 1.5 times more than that from a formal utility, whereas, water from a point source (PS) costs, on average, up to 4.5 times the utility and, finally, water from the mobile distributors (MD) can costs up to 12 times more than the utility. Taking into account the role of local conditions in establishing prices, this information provides a useful baseline. Further study of factors influencing SPSP prices by geographic location and understanding how these factors contribute towards such pricing is necessary.

The range of prices by geographic location, as seen in the Chart 3 below, also confirms that local conditions play a key role in determining prices. Factors like: distance from the source, seasonal fluctuations in water availability, economic conditions, physical terrain,

and other such extraneous factors may significantly contribute to the final price/m3 at the local level. Evidence, suggests that presence of Private Network Operators (PNOs) in Africa (AFR) and South Asia SAR) regions to be limited, as data was not available or cases were not documented. Active presence of PNOs was found in East Asia and Pacific (EAP), and Latin American and Caribbean (LAC) regions. Point Sources (PS) were less prevalent in Latin American and Caribbean (LAC) and East Asia and Pacific (EAP). Mobile Distributors (MDs) were prevalent in all regions which displayed SPSP presence.

Chart 3: Average Price of Different Service Provider Based on Regions

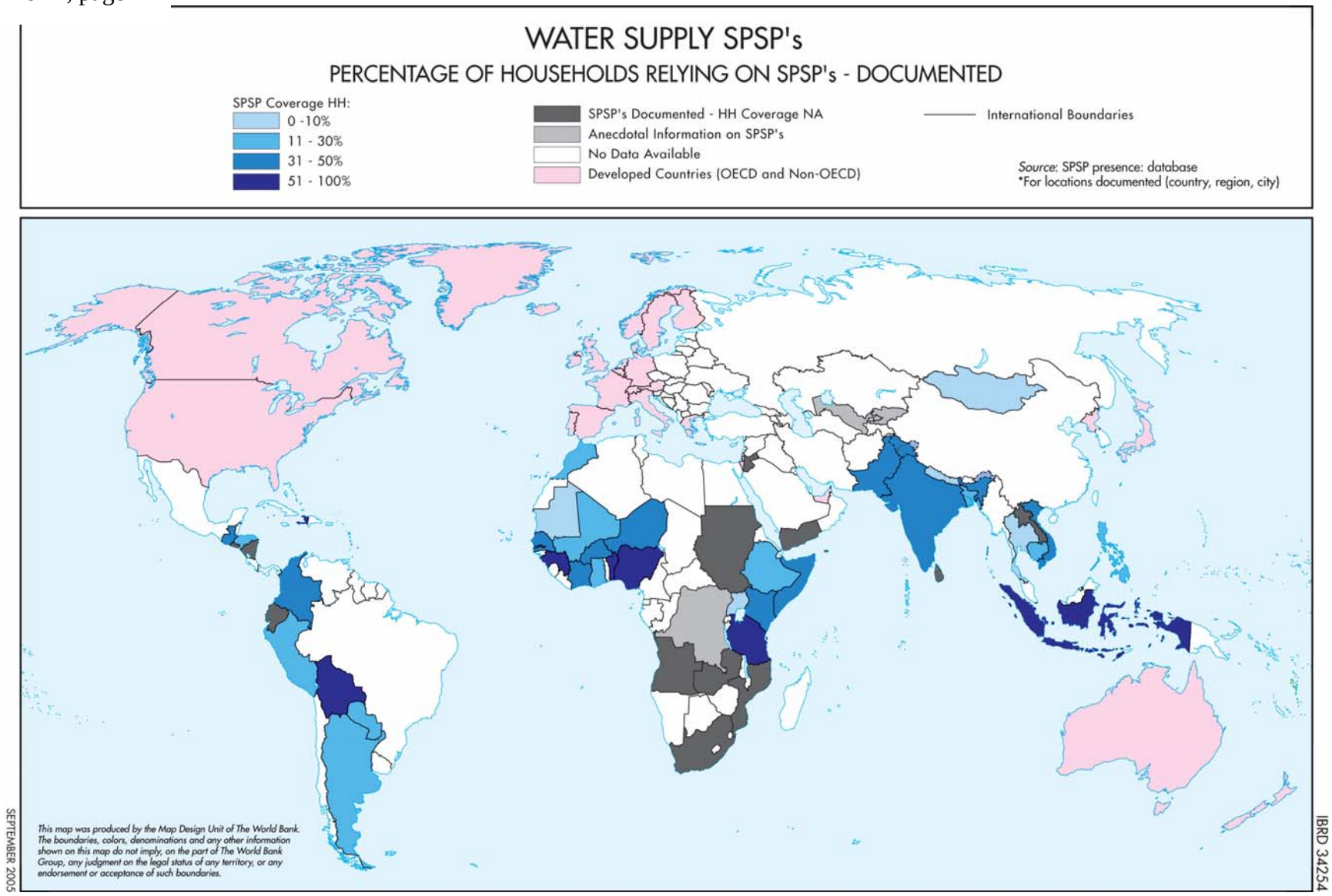


It is interesting to note, that the lowest per cubic meter prices for all categories of providers were observed in East Asia Pacific (EAP) region. PNOs were at \$ 0.37/m^3, PSs at \$ 1.02/m^3, and MDs at \$ 2.18/m^3, these values were also lower than the overall average seen in Chart 3 above. Price is determined by the market, the number of actor involved, the competition in the sector that keeps prices at the lower level and SPSPs outreach.

This analysis provides insight into the trends of price variations globally and regionally for different small-scale private service providers (SPSPs). Furthermore, it provides a benchmark to think about a particular provision based on region and its prevalence. This analysis also lends toward the need to think about the extraneous factors globally/regionally that contribute toward escalating and de-escalating the price per cubic meter.

5. CONCLUSIONS

The literature illustrates the extent and nature of small-scale private service provision of water supply and electricity services, providing rich examples that demonstrate the complexity and diversity of SPSPs, but also highlighting the limited extent of information on SPSPs – thus making it difficult to draw broad conclusions on SPSPs. Further analytical study is required to deepen current knowledge of SPSPs and to determine how best to go about the development of the water supply and electricity sectors in those countries in which SPSPs currently play an important role and are expected to continue to do so for some time to come. Where it is determined that SPSP services are essential to expanding service coverage to unserved communities, governments should strive to adapt and improve sector norms to accommodate them. However, as sector reforms take effect and the option of extending formal (public utility) services to all consumers at more affordable rates becomes possible, governments will need to work with SPSPs to develop an exit strategy that takes into consideration lost opportunity (investments and earnings) to SPSPs.


WATER SUPPLY SPSP's
PERCENTAGE OF HOUSEHOLDS RELYING ON SPSP's - DOCUMENTED
SPSP Coverage HH:
0 -10%
11 - 30%
31 - 50%
51 - 100%
SPSP's Documented - HH Coverage NA
Anecdotal Information on SPSP's
No Data Available
Developed Countries (OECD and Non-OECD)
International Boundaries
Source: SPSP presence: database
*For locations documented (country, region, city)
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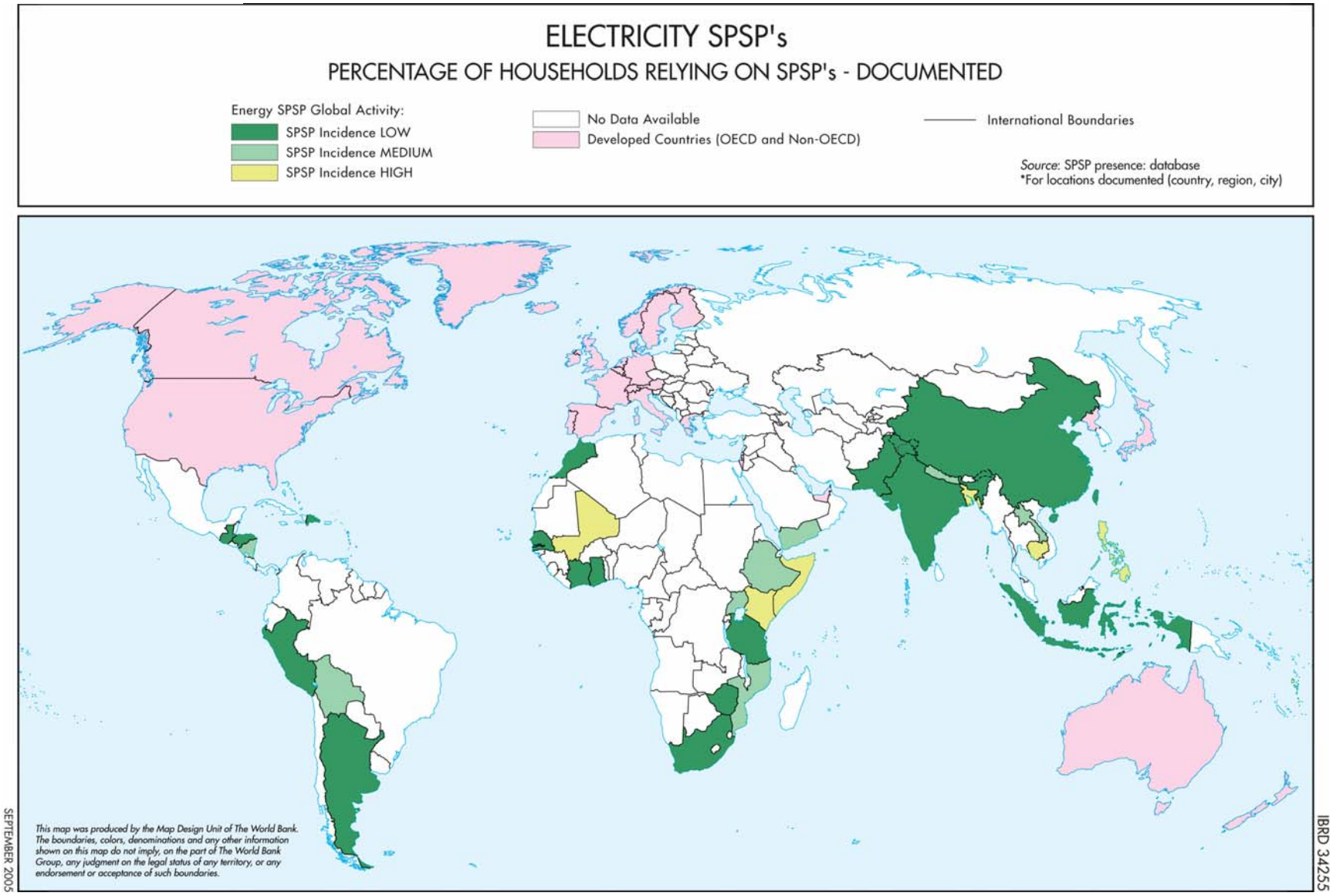
ELECTRICITY SPSP's
PERCENTAGE OF HOUSEHOLDS RELYING ON SPSP's - DOCUMENTED
Energy SPSP Global Activity:
SPSP Incidence LOW
SPSP Incidence MEDIUM
SPSP Incidence HIGH
No Data Available
Developed Countries (OECD and Non-OECD)
International Boundaries
Source: SPSP presence: database
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Annex 2. Coverage by water supply SPSPs, as reported in literature

Regions and Locations	Population / Households served (%)	Reference
Africa		
Benin, Cotonou	69	[13]
Burkina Faso, Bobo Diaulasso	33	[148]
Niangologo	68	[148]
Ouagadougou	49	[223]
Ivory Coast, Abidjan	35	[223]
Boundiali	50	[119]
Ghana, Kumasi	32	[81]
Guinea, Conakry	66	[13]
Kenya, Nairobi	60	[223]
Mandera	90	[119]
Ukunda	45	[81]
Mali, Kayes	69	[148]
Bamako	63	[21]
Mauritania, Nouakchott	51	[13]
Niger, Guidan Rouondji	40	[119]
Nigeria, Onitsha	95	[81]
Ibi	40	[119]
Dankida	15	[119]
Senegal, Dakar	21	[148]
Diourbel	90	[119]
Sudan, Khartoum	80	[81]
Somalia, Ali Matan	10	[119]
Tanzania, Dar es Salaam	56	[223]
Newala	25	[81]
Uganda, Kampala	30	[223]
Kasangati	25	[81]
Latin America & Caribbean		
Argentina, Cordoba	15 - 20	[2]
Bolivia, Santa Cruz	100	[2]
Colombia, Barranquilla	20 - 25	[2]
Guatemala, Guatemala	32	[2]
Haiti, Port-au-Prince	70	[76]
Honduras, Tegucigalpa	30	[65]
Paraguay, Asuncion	30	[2]
Peru, Lima	26 - 30	[2]
East Asia and Pacific		
Cambodia, Ky Cham	50	[119]
Indonesia, Jakarta	44	[25]
Surabaya	27	[119]
Philippines, Manila	30	[89]
Cebu	36	[25]
Ormoc	10	[119]
Thailand, Sawee	10	[119]
Vietnam, Ho Chi Minh	19	[25]
South Asia		
Mongolia, Ulaanbaatar	5	[25]
Nepal, Kathmadu	5 - 7	[25 - 346]
Pakistan, Karachi	40 - 50	[19]
India , Delhi	6 - 47	[346 - 3]
Bangladesh, Dhaka	14	[25]

Annex 3. Number Of Customers Identified in Literature as Served by Water SPSPs

As Reported in Literature Reviewed for all Regions
(By location for all types of SPSPs)

	Country	City	Number of Households	Number of Households Served by SPSPs	Reference
1	Argentina	Cordoba	220,000	38,200	[2]
2	Benin	Cotonou	130,000	60,000	[217]
3	Bolivia	Santa Cruz	188,000	100,000	[2]
4	Colombia	Urban	N/A	197,000	[2]
5	Ghana	Accra	171,800	125,000	[215]
6	Guatemala	Guatemala	200,000	78,500	[2]
7	Haiti	Port-au-Prince	198,000	60,000	[76]
8	Honduras	Tegucigalpa	107,800	16,000	[75]
9	Indonesia	Jakarta	1,660,000	1,280,000	[83]
10	Sudan	Khartoum	260,000	60,000	[187]
11	Mauritania	Nouakchott	N/A	20,000	[217]
12	Paraguay	Asuncion	109,200	50,000	[2]
13	Peru	Lima	1,120,000	360,000	[2]
14	Philippines	Manila	1,600,000	625,000	[33]
15	Tanzania	Dar es Salaam	260,000	180,000	[224]
	Total Number Reported			**3,249,700**	

City population is divided by 5 to obtain number of households

Annex 4. Number Of Customers Identified in Literature as Served by Electricity SPSPs

Worldwide estimate of SPSPs and number of clients served

Country	Number of SPSPs	Average clients per SPSP	Number of clients	Total households electrified	SPSPs as part of total electrification	Significance on electricity access in country
	[-]	[-]	million	million	%	high/medium/small
SOUTH ASIA						
Bangladesh	67	44,776	3.00	5.3	56%	high
Nepal	250	250	0.06	0.7	9%	medium
Sri Lanka	200	400	0.08	2.4	3%	medium
India	1,800	350	0.63	87.4	1%	small
Pakistan	20	300	0.01	14.6	0%	small
Sub total	*2,337*	*9,215*	*3.78*	*110.4*	*3%*	
EAST ASIA/CHINA						
Philippines	119	44,538	5.30	13.2	40%	high
Cambodia	600	200	0.12	0.4	32%	high
Laos	125	200	0.03	0.2	13%	medium
Indonesia	2,000	200	0.40	22.5	2%	small
China	1,000	300	0.30	249.0	0%	small
Sub total	*3,844*	*9,088*	*6.15*	*285.3*	*2%*	
AFRICA						
Kenya	20	5,000	0.10	0.5	21%	high
Mali	100	300	0.03	0.2	15%	high
Somalia	100	200	0.02	0.2	12%	high
Mozambique	10	1,000	0.01	0.3	4%	medium
Ethiopia	100	200	0.02	0.6	3%	medium
Uganda	5	500	0.00	0.2	1%	medium
Zimbabwe	30	300	0.01	1.0	1%	small
Cote d'Ivoire	3	10	0.00	1.6	0%	small
Ghana	3	10	0.00	1.7	0%	small
Senegal	3	10	0.00	0.6	0%	small
South Africa	10	1,000	0.01	5.7	0%	small
Tanzania	5	300	0.00	0.7	0%	small
Sub total	*389*	*736*	*0.20*	*13.2*	*2%*	
MIDDLE EAST/NORTH AFRICA						
Yemen	300	200	0.06	1.5	4%	medium
Morocco	100	200	0.02	4.1	0%	small
Sub total	*400*	*200*	*0.08*	*5.6*	*1%*	
LATIN AMERICA						
Bolivia	80	300	0.02	1.0	2%	medium
Nicaragua	10	1,000	0.01	0.5	2%	medium
Dominican Rep	15	1,000	0.02	1.1	1%	small
Honduras	10	1,000	0.01	0.7	1%	small
Peru	35	1,000	0.04	3.8	1%	small
Argentina	10	1,000	0.01	7.0	0%	small
Brazil	100	300	0.03	34.2	0%	small
Guatamala	10	500	0.01	1.5	0%	small
Sub total	*270*	*763*	*0.14*	*49.9*	*0%*	
ECA	-	-	-	-		
Total	**7,240**		**10.35**	**464.3**	**2%**	

Note: countries listed have been selected after literature review - list might change after field surveys

Annex 5. Page 1: Typology of Water Supply SPSPs

Categories and Subcategories

1. Private Piped Network Operators (PNOs)	
1.1 Independent networks	**1.2 Dependent networks**
1.1.1 Private for profit piped network operators that develop their own water sources (wells or boreholes), and serve households (and other users) by means of small networks of pipes with house connections. Includes registered / licensed operators in Guatemala City [136]; and unregistered / unlicensed operators in Asuncion, Paraguay [2]; Kampala, Uganda [217]; and Cebu City, Philippines [346].	1.2.1 Private for profit piped network operators in partnership (or under contractual arrangement) with water utilities. Includes sub-concessions bulk water purchases in Marinilla, Colombia [4] Manila, Philippines [12], and Banteay Meanchey, Cambodia [181].
1.1.2 Cooperative-built, owned and managed for profit piped networks serving households, regulated / licensed, with independent water sources, in Santa Cruz, Bolivia [135], and Santo Tomas, Philippines [12].	1.2.2 Neighborhood or community not-for-profit piped network operators in partnership (or under contractual arrangement) with water utilities. Includes concessionaires of small systems and bulk water purchases from utility in Manila, Philippines [12];
1.1.3 Private land and housing developers and homeowners associations operating their own private for profit piped networks serving households with independent sources of water in Cordoba, Argentina [133], Guatemala City [136]; and Manila, Philippines [24].	
1.1.4 Water user associations (WUAs), water committees, water boards, or community-based not-for-profit systems managing piped networks, unregulated, with independent water source. These include self-investment and shared investment in the case of donor-supported systems in rural areas of El Salvador [233], and Itagua, Paraguay [4].	
1.1.5 Small-scale community owned and operated (multisector) irrigation systems that also supply domestic water in rural areas in Guatemala [138].	

Annex 5 page 2: Typology of SPSPs
Categories and subcategories (continued)

<table>
<tr><td colspan="2">2. Private Point Sources (Kiosks)</td></tr>
<tr><td>2.1 Independent Kiosks</td><td>2.2 Dependent Kiosks</td></tr>
<tr><td rowspan="3">2.1.1 Micro-enterprise, neighborhood or cooperative associations who develop and operate their own water points for-profit, in Kampala, Uganda [217] and Gitaru, Kenya [98].

2.1.2 Private owner-operated and for-profit baths with independent source of water in Lima, Peru [65].

2.1.3 Private well or borehole owner-operators, that sell bulk water to public or private mobile vendors in Lima, Peru [134], and Karachi, Pakistan [19] (where well, pump and tank systems are called “hydrants”).</td><td>2.2.1 Private and neighborhood based associations who develop and operate a water kiosk (or tap) via network extensions, licensed or unlicensed and purchase in bulk (or with household tariff) from utility in Nairobi (Kibera), Kenya [217- 16].

2.2.2 Private or community developed and operated public baths that use utility/municipal water sources. Includes franchisers of public bathing facilities in Delhi, India [205].</td></tr>
<tr><td>2.3 Dependent Resellers.</td></tr>
<tr><td>Residential and institutional for-profit resellers (through garden hose or garden faucet). Includes individual vending of utility water from domestic faucet/tap, elevated tank or cistern in Port-au-Prince, Haiti [76], Jakarta Indonesia [83]; Abidjan, Ivory Coast [217]; and Cartagena, Colombia [107].</td></tr>
</table>

Note: Cases referenced are for illustration purposes only. They do not represent the universe of these types of providers. Utility owned and built kiosks / standpipes, such as those in Dakar, Senegal [11] and Burkina Faso [217] are not included by definition of SPSPs.

Annex 5 page 3: Typology of SPSPs
Categories and subcategories (continued)

3. Private Mobile Distributors (PMDs)	
3.1 Independent Tanker Trucks	**3.3 Dependent Tanker Trucks**
Private for-profit and independent truckers that purchase water from private wells or unimproved / untreated sources (springs, rivers, and lakes). Includes licensed/registered and non-licensed/registered tanker-trucks of up to 9m3 capacity, trucks carrying several 55 gallon barrels and other load-bearing vehicles. Tank trucks may distribute water to public utility water storage tanks, communal cisterns, individual households, or institutions in Lima, Peru [134], and Kathmandu, Nepal [183]	3.2.1 For-profit private trucks that buy water in bulk from utilities or government / municipal sources. These are for-profit, registered / licensed / regulated tank trucks that distribute water to public utility water storage tanks, communal cisterns, or individual households and institutions in Chennai, India [126], and Teshie, Ghana [118].
3.2 Independent Carters	**3.4 Dependent Carters**
3.2.1 Carters and other for-profit street vendors and water carriers who obtain water from wells and boreholes, and unimproved / untreated sources (springs, rivers, and lakes) and deliver water by the can via non-mechanized means to households in Greater Khartoum and Port Sudan, Sudan [187]; and Nairobi, Mombasa and Kakamega [154 – 182]. 3.2.2 Bottlers and vendors of purified/bottled water selling UV purified river water in Manila, Philippines [190], Shanghai, China [346], or borehole water in Dhaka, Bangladesh [16].	3.4.1 For-profit carters, street vendors and other water carriers who purchase water from tankers and/or kiosks and deliver water by the can (typically 20 liters) via non-mechanized means. These operators may or may not be the owner of the vehicle/equipment used to distribute water, many vendors rent carts on a daily basis in Dar es Salaam, Tanzania [224, 217], Port-au-Prince, Haiti [76], and Dakar, Senegal [11]. 3.4.2 Bottlers and vendors of tap water (in plastic bags or bottles) in Nairobi Kenya [16], and Kano, Nigeria.

This analysis excludes not-for profit public utility-owned trucks that provide water to neighborhoods (free of charge) drawn from utilities or government / municipal sources, and natural sources (untreated water). Tank trucks may distribute water to public utility storage tanks, communal cisterns, individual households or institutions in Delhi, India [178], and Lima Peru [134]. Anecdotal evidence suggests that these “moonlight” selling water to households without control of government authorities.

Annex 6: Defining Small-Scale Service Providers

As noted in the introductory section, the phrase Small-Scale Private Service Providers (SPSPs) is one subset of a larger category of Small-scale Service Providers (SSPs), that includes both private and public owned and/or managed small-scale systems. Given the wide range of Small-scale Service Providers operating in the water supply and electricity sectors, the focus of this SPSP study was limited to Type 1 and Type 2 (private – entrepreneurs and user associations) SSPs as described below. There is some recent evidence that SPSPs are starting to play a key role in the development and management of Type 3 (public – local government) systems (Uganda and Paraguay). And in future, they could play an important role in managing Type 4 (public - community) systems, although this may be more complex to organize until their legal status is made and their financial records are strengthened.

Private Sector SSPs (SPSPs)				**Public Sector SSPs**
KEY FEATURES	**TYPE 1: Individual/ entrepreneur** establishes a water supply or electricity service which is managed as a business/on a commercial basis (e.g. entrepreneur – aguateros)	**TYPE 2: User association or self help group**. Established on initiative of the users, but not always managed on a commercial basis. (e.g. Society/self help group)	**TYPE 3: Local Government scheme** initiated by government and funded by government and donors. Managed on a commercial basis (e.g. small town water system).*	**TYPE 4: Community based scheme** initiated by Government with donor support. 100 percent financing externally sourced. Not managed on commercial basis (e.g. community based gravity scheme.*
Water: Piped Network **Electricity:** Grid	Primary focus of SPSP initiative	Secondary focus of SPSP initiative. **		
Water : Point Source or Kiosk **Energy:** Battery Recharging	Primary focus of SPSP initiative. Documented for water supply only	Secondary focus of SPSP initiative. **		
Water: Mobile Distributor **Energy:** Home based systems	Primary focus of SPSP initiative	Secondary focus of SPSP initiative. **		

* Excluded from SPSP study because of public ownership and/or extent of grant financing. SPSPs could play a future role in developing and/or managing these systems.

** Sources of financing/financial management practices could not be accurately ascertained from the literature review.

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