Performance-based Contracting in Sanitation Delivery

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Introduction

Globally, 2.5 billion people do not have access to improved sanitation[1] facilities and 15% continue to defecate in the open – a practice that has serious public health and environmental implications. Although over 1.9 billion people have gained access to improved sanitation facilities since 1990, the Millennium Development Goal sanitation target to increase the proportion of people with access to improved facilities from 51% in 1990 to 75% by 2015 is projected to be missed, by at least half a billion people (UNICEF/WHO, 2012) (MDG2013, 2013). The situation stands particularly exacerbated in developing countries[2] where explosive population growth and unplanned expansion of urban areas pose significant socio-economic challenges to the delivery water and sanitation services. Low quality urban slum colonies[3] are the most affected without access to potable water and safe waste disposal, posing a serious risk of exposure to water-borne and sanitation-related diseases (WHO/UNICEF, 2006).

Continued progress in sanitation would therefore require stronger, more focused efforts that are oriented towards achieving tangible results (improved access) yielding sustainable impacts (improved quality of public health and environment). With governments and donor institutions directing substantial investments to realize better outcomes in sanitation[4], there is also an express need for clarity on how the available funds should be utilized and who would benefit most from these funds. Performance or results based approaches that link funding more closely to results offer a positive way to measure the effectiveness of funding in achieving the desired sector outcomes (Pearson, 2011). Such outcome oriented approaches to sanitation delivery are particularly necessary in today's global context where there is a growing recognition of the scale of demand for improved sanitation and its social multiplier effects on environment and human health.

Guided by principles of service orientation, operational efficiencies and financial viability (Agrawal, 2009), performance approaches seek to maximize the effectiveness of public sector interventions and investments in realizing positive sector benefits. Administered through well-structured contractual arrangements that tightly link project funding and incentives to service provider performance, these approaches offer a promising mechanism to fast track achievement of desired results and longer-term impacts in the sanitation sector.

Paper objective

This white paper is motivated with the question of what are certain preconditions for improving the effectiveness of performance-based contracting approaches in sanitation service delivery. Performance agreements in service provision assume various forms ranging from Output-based Aid to contractual agreements between different hierarchies of governments or different service delivery arms of the government or to legal agreements between public entities and private companies depending on the

[1] According to WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, an improved sanitation facility is one that hygienically separates human excreta from human contact (includes flush/pour flush (to piped sewer system, septic tank, pit latrine), ventilated improved pit latrine, pit latrine with slab, and composting toilet)

[2] Urban population lacking access to improved sanitation facilities: 19% in Eastern Asia, 36% Southern Asia and 58% in Sub-Saharan Africa

[3] An estimated 863 million urban residents live in high-density slum settlements (UNICEF/WHO, 2012)

[4] According to UN MDG Report 2013, net disbursements from developed to developing countries was $126 billion in 2012

degree of privatization of services. For purposes of this paper, the term performance agreements will denote contractual agreements that govern privately delivered public services. In other words, agreements between public agencies who are responsible for service delivery and private companies who assume responsibility for certain components of service delivery but who have to be regulated by the public agency owing to the "public good" nature of basic public services[5].

To this end, the paper will review select performance agreements executed between public entities and private companies towards service delivery in sanitation and related sectors such as water supply and solid waste management and discuss their effectiveness in achieving desired goals with respect to access, quality, reliability, equity and sustainability. With these case examples, the paper complements existing literature on the imperatives for strengthening performance-based contracts.

The sanitation status quo

In the vast majority of developing countries, the delivery of sanitation systems in urban areas falls markedly short of recommended standards (MDG2013, 2013). Lack of prioritization emerges as the key issue for this poor performance, with prevailing institutional frameworks – in the form of public policies, regulations, planning, budgeting and resource mapping – not focusing on improved sanitation provision. Roles and responsibilities of public functionaries are subsumed under the delivery of city-level mandates with respect to sectors such as health, water supply or education, where the social and economic gains or losses are readily visible. Lack of clarity on which public agency is responsible for service delivery functions (planning, execution, operations and maintenance) or service supervision functions (economic and environmental regulation, monitoring, and enforcement) leads to diffused accountability. (WHO/UNICEF, 2006)

Often times, even well-intentioned projects in the water and sanitation sector fail to achieve the desired goals and outcomes despite adequate funding because they are conceived and structured without reference to a detailed, outcome-oriented strategy or plan and are implemented in a multi-stakeholder environment where conflicting incentives influence the service delivery process. Particularly in the case of sanitation, large public and private investments made in off-site and on-site sanitation solutions are seldom backed by strong institutional and regulatory frameworks at the critical stages of operations, maintenance and monitoring, thereby allowing service deficiencies to persist.

Further, lack of long-range planning is manifest when cities direct more of their resources towards expanding networked services where cost recovery is neither understood nor achieved rather than promoting more sustainable, less expensive alternatives to wastewater management. The assumption that cities might eventually shift to networked solutions dampens focus on off-site solutions. This stifles innovation and investments into off-site solutions and encourages suboptimal markets for these solutions, keeping their costs high and competition low. At the same time, high construction costs of networked solutions and planning issues associated with densely populated urban areas disincentivize

[5] Social, environmental, consumer protection and safety objectives associated with the provision of these services

and delay their investments. (GoI, 2011) While cities deliberate over their strategies, service deficiencies in the form of demand-supply mismatches in installed capacity of transport and treatment proliferate.

This leads to the next critical issue of awareness on the linkages between poor sanitation, environment and public health and the need for treatment and safe disposal. Deficiencies across the sanitation value chain – particularly, transport, treatment and disposal – carry with them adverse environmental implications in the form of surface and ground water contamination. (GoI, 2011) On the demand side, the consequences are illnesses and deaths through diarrhea and other water-borne diseases and economic costs (productivity and income loss) associated with poor health. On the supply-side, the consequences involve increased cost of water supply owing to contamination of available natural water sources and increased public health related expenditure. (Tyagi)

While these sector issues relate to the broader environment and health, progress is still insufficient on basic MDG sanitation areas such as demand creation and safe collection. This is reflected in poor service coverage and last-mile delivery issues with respect to toilet access and high prevalence of open defecation, particularly in urban areas with unauthorized settlements. (UNICEF/WHO, 2012)

Beyond this, a range of other systemic deficiencies are evident: poor operations and maintenance, insufficient tariff and cost recovery mechanisms, absence of demand-supply incentives to adopt improved practices, absence of governance tools in the form of performance goals, standards, metrics, targets, and monitoring and enforcement procedures. Where private sector is involved, on the one hand, limitations in checks and balances (e.g. absence of monitoring protocols, penalties, capacity and guidelines to award and manage projects involving private sector) not only lead to an unfair market place for private players but also encourage underinvestment by the private sector. On the other, supply-side ambiguities such as inequitable risk-reward allocations, inflexible concession terms, etc. create barriers to entry for private sector participation and scalability in service delivery.

These operational and institutional failures not only truncate the useful life of public assets but fail to produce the desired benefits for the core stakeholders in the sanitation delivery process, namely the users. In particular, the impact weighs heavily upon the poor among the users, who are most dependent upon improved public sanitation services, but are ill-able to sidestep these failures or pay for better services.

In short, the issues and challenges afflicting the sector speak to the growing importance of improving efficiency and effectiveness in sanitation service delivery and call for adoption of delivery mechanisms such as performance agreements that incorporate performance principles to drive better sector outcomes.

What are Performance Agreements?

Performance agreements in the public sector (or performance-based contracts or service-level agreements) are a formalized contractual arrangement that articulates the terms and conditions of the particular partnership between different entities involved in public service delivery.

The broader intent of performance contracting approaches is to realize better service outcomes. To this end, performance agreements are designed to focus on goals and results that speak to improved service quality, efficiency and effectiveness and deliver outputs that contribute to the overall achievement of an outcome. (Robinson) (Mihaiu, Opreana, & Cristescu, 2010) (Burger & Hawkesworth, 2011)

Against this premise of an increased focus on results, *outputs* and *outcomes* as performance concepts[6] (Robinson) become central to the discussion and design of performance agreements. Performance literature defines inputs as the resources used, outputs as results achieved and outcomes as the benefits or impacts. Agreements use performance information in the form of output/outcome-oriented performance targets and indicators to drive efficiency[7] and effectiveness[8] in service delivery. Providers are then monitored and held accountable for outputs or where possible, outcomes (since these two elements are better representative of results and benefits) and remunerated on progress against agreed-upon targets/service results.

> "A performance-based contract is one that focuses on the outputs, quality and outcomes of service provision and may tie at least a portion of a contractor's payment as well as any contract extension or renewal to their achievement" (Martin, 2005)
>
> "Result based aid and Result based financing schemes both involve contractual arrangements between a principal and an agent and involve the transfer of funds in exchange for the delivery of specified results" (Pearson, Johnson, & Ellison, 2010)

Agreements are optimal when providers implicitly assume responsibility for efficiencies (time and cost) and are held accountable for it, while the public entity steers the focus on service effectiveness and tailor incentives that encourage providers to meet or exceed their targets. Well-structured performance agreements offer a favorable environment for the delivery of public services since they exhibit stronger service orientation, adopt market-oriented principles in the management of services, and drive accountability in service delivery. (Agrawal, 2009)

Performance Agreements vs. Traditional contracts

Traditional contracts focus their attention on inputs or activities, i.e. resources/procedures/processes for delivering a service or creating an asset. These contracts are limited by the fact that inputs or activities do not automatically guarantee desired results. To illustrate with an example in the sanitation sector, for a project involving construction and maintenance of a wastewater treatment plant or a public toilet, traditional contracts will measure performance on the basis of resources used (amount of labour and equipment used to build a wastewater treatment plant/ public toilet). Such an approach will distort the perception of project success since these measures do not speak to the quality, usage or reliability of services that are in fact the desired results in sanitation projects. That is not to say that traditional contracts do not attempt to deliver results, just that their focus on input parameters may at times dilute the effectiveness of results.

[6] Results chain literature defines outputs as the products or good or services that result from a specific sector intervention (or project) and outcomes as the intended impact or change brought about by the outputs. Inputs and activities are the resources and processes that used to generate the desired outputs and outcomes.
[7] Relationship between results achieved (outputs) and resources used (inputs)
[8] Extent to which results (outputs) deliver the desired benefits (outcomes)

Performance agreements represent a positive shift in the manner in which public investments are prioritized and managed as they tend to focus on outcomes or outputs**.** The public entity disburses resources not against individual expenditures or activities but against demonstrated and verifiable results largely within the control of the provider. Examples of appropriate output/outcome performance measures in water and sanitation projects include adequacy and quality of wastewater treated, improvements in revenue water indicating reduction in leakage losses, and quantity of wastewater that is recycled and reused, health and environmental benefits attributable to improved sanitation, etc. Construction of public/community toilets per se, though indicative of outputs that speak to improved coverage and safe collection and is likely to discourage open defecation, need not necessarily be outcome oriented. Outcomes or benefits are realized only if there are mechanisms in place to ensure sustained quality and adequate waste disposal such that the larger behavioral and environmental concerns stand addressed.

Elements, Essentials of Performance Agreements

The question of what constitutes optimal performance agreements is informed considerably by academic research and more importantly, through empirical evidence on contracts implemented across the world (Petrie, 2002). Lessons from international best practices have helped improve the robustness and flexibility of agreements and the institutional environment in which they are administered. What follows is a brief summary of key factors[9] that govern the design and effectiveness of performance-based contracts and how they can be applied in the sanitation context.

Role of regulation

Appropriate legal and policy frameworks[10] are particularly important in the sanitation sector owing to the public good nature of the service. While laws cannot be overly prescriptive, comprehensive regulations are necessary to safeguard equity, public health, technical and environmental quality and tariff rationality. Regulations are most effective when: 1) regulatory functions and enforcement mechanisms are entrusted with public agencies that are best suited to perform them, 2) adequate monitoring and enforcement mechanisms exist and are observed. In sanitation for example, public environment agencies/authorities are most suited to prescribe effluent discharge standards while operational agencies (utilities) are best suited to guide and monitor technical standards, tariff structures, cross-subsidies and pro-poor policies. Private players have limited economic incentive to ensure environmental or product safety. Hence, regulations would have to be adequately backed-up with enforcement mechanisms to safeguard environmental or product quality and to ensure that public and private resources are not subject to abuse. (Groom, Halpern, & Ehrhardt, 2006)

[9] Most of these factors find mention in performance contracting literature and case studies of contracts executed globally

[10] The legal framework for sanitation in most countries constitutes a broad set of laws, regulations, bye-laws and policies. The responsibility for sanitation provision entrusted to sub-national governments. Public health acts and bye-laws address issues relating to sanitation and hygiene, while water and environmental acts cover aspects such as rights to water and sanitation and protection of surface and groundwater resources from pollution by sewage and other effluents.

Effective environmental regulations require identifying wastewater emissions that are harmful to environment and health and developing targets and strategies to reduce the emissions to acceptable levels.

Domestic and non-domestic effluents must be distinguished and regulations must include: 1) effluents that are discharged into the network, 2) treated effluents discharged into the environment, 3) reuse of sludge and water.

Safety regulations relating to technical standards on collection, transport and treatment solutions also help safeguard the quality of physical assets. Safety regulations and norms for sanitary workers are also critical owing to the health risks associated with handling septage and sewage.

Environmental regulation must also address demand side issues, mandating homeowners to adopt suitable wastewater treatment solutions (septic tanks or decentralized systems or sewer network connection).

Stringent environmental regulations are particularly important where wastewater is largely handled through on-site systems and service challenges are predominantly in the form of how responsibly homeowners maintain their treatment systems and how effectively service providers handle the emptied waste (Groom, Halpern, & Ehrhardt, 2006). Most developing countries appear to lack a comprehensive approach to on-site waste management, with very limited demand or supply side regulations and policies. Homeowners are not mandated on the frequencies for desludging. Private providers, who typically offer desludging services, do not always require licenses or permits to operate. Safety regulations that govern manual vs. mechanized emptying or environmental regulations on disposal are either absent or disregarded. (Chowdhry & Kone, 2012)The ensuing risks to public health and environment are stark, necessitating strong regulatory and enforcement mechanisms for on-site systems.

Economic regulation for on-site systems can be limited to regulatory oversight (e.g. capping user fees) as competitive provider markets are capable of driving reasonable costs of service to customers. Economic regulation plays a greater role in centralized wastewater systems because of the monopoly nature of these services and need for cost recovery through fiscal instruments (taxes, user charges) (Groom, Halpern, & Ehrhardt, 2006).

Regulation can also create a demand for services and facilitate an ambient institutional environment for private participation. This is observed in the case of Malaysia where regulating scheduled desludging not only had environmental benefits but also guaranteed a demand for services which is essential for private participation.

As regards equity objectives of sanitation delivery, performance arrangements are capable of accomplishing sector goals on universal coverage and equity. However, any pro-poor provisions within these agreements can be effectual only if there is a contractual mandate for service provision in low income areas along with clear-cut implementation strategies. Further, regulatory barriers relating to pro-poor provision need to be removed (e.g. waiver of land title requirement for service access, pricing flexibilities on the demand-side to enhance service adoption and use, emphasis on cost recovery preferably through appropriate tariffs/user charges as opposed to subsidies). And importantly, the incentive structure must be consistent with service mandates and implementation barriers typically observed in low-income areas.

Obligatory due diligence

Due diligence[11] in the project planning and contract design stages lays an important foundation for the success of performance agreements (ADB, 2011). Rigorous baseline information on the nature of the service area[12] and extent of service deficiencies can help ensure that target-setting is realistic and achievable and the performance management process is smooth. A reliable baseline will help avoid time and cost overruns during implementation and will minimize transaction costs stemming from project renegotiations and redesign. Knowledge of prevailing service deficiencies can help factor equity considerations into the design of performance agreements.

Due diligence also involves evaluating the nature of demand and willingness to pay for services and factoring these considerations into decision-making. For instance, if a utility is looking to expand networked sanitation services into an area where residents already use non-networked options, willingness to connect to the network might be low, particularly if it involves a connection fee from the user. This places the network expansion investments at risk if the utility relies on these fees for capex recovery. Service challenges such as these are particularly likely in low income areas where demand for service improvements and the willingness to pay for them is heterogeneous.

Another critical element is the identification of risks that are most relevant to the sector and project scope and understanding which contracting party is best able to manage them (IBRD/IDA/WorldBank, 2012). Risks can then be allocated at the time of contract design using well-defined risk frameworks, with the mutual agreement of contracting parties. The intent of equitable risk allocation is to minimize internal and external project risks that are likely to arise during the development and operations stages of the project, bearing adverse consequences on project outputs and outcomes. In sanitation, environmental risks at the design, construction and operations stages must be given particular considerations as they have a bearing on service outcomes relating to public health and environmental quality. For instance, leaching systems are often bypassed at the time of septic tank construction owing to space considerations and effluents are discharged directly into open drains. This practice carries significant public health risks and contamination of surface water.

Table 1 Allocating risks in performance contracts

Type of risk	Description	Who should manage	
		Public	Private
Design and Construction	Time and cost escalations from engineering, design failure, faulty construction techniques, construction delays		✓
Financial	Cost escalations arising from poor financial structuring		✓
Environmental	Economic and social costs associated with adverse environmental impact from the project		✓
Demand/Revenue	Reduced revenues due to lower demand than planned for	✓	✓
Operations	Cost escalations at the time of project operations		✓
Performance	Time and cost overruns associated with failure to meet agreed-upon service levels		✓
Regulatory	Costs associated with regulatory/political changes	✓	

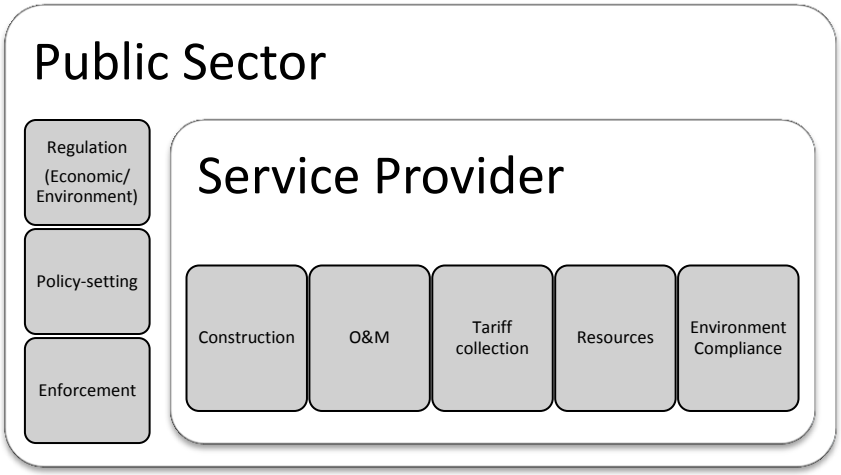
[11] Establishing the baseline demand vs. current supply, improvements needed, service area where the improvements are sought, identification of risks, technical and financial feasibility, planning for external factors

[12] In square kilometers, population, number of households, demand patterns, existing levels of service

Separating roles and responsibilities

Ambiguities in roles and responsibilities present a major obstacle to service delivery as overlapping roles dilute accountability and overlapping responsibilities drive operational inefficiencies. Role separation and clarity allows contracting parties to focus on only the functions they are responsible for and fosters an environment of better performance oversight and accountability (Agrawal, 2009). Typically, operational functions are delinked from regulatory (regulation, oversight, enforcement) functions and allocated to the provider while the public sector retains regulatory functions. Clarity in responsibilities and functions helps contracting parties to deploy their resources optimally[13], towards efforts that yield the maximum benefits in terms of desired outputs.

Figure 1 Mapping Roles and Responsibilities



Achieving role clarity also involves a reasonable level of negotiation and transparency between the contracting parties. This process of negotiation clarifies the expectations and challenges on either side, enhances consensus in goals and project scope, and contributes to the overall acceptance and effectiveness of the agreement.

Performance measurement and management

Selecting performance measures

Performance indicators are central to the discourse on performance contracting as they offer a quantifiable measure on project progress. Indicators relating to outputs or outcomes[14] (where possible) are most valuable because they directly relate to the project's objectives.

Indicators are best selected within the context of the overall project scope and service expectations. For instance, in asset creation projects (such as laying of water or sewer networks, construction of treatment

According to results framework and performance literature, performance indicators are optimal when they meet most of the following requirements (Robinson):

- *Clear, simple, easy to understand*
- *Relevant (to service goals)*
- *Representative (extent to which it can successfully measure performance)*
- *Cost-effective (benefits of the indicator must outweigh its costs of collection and audit)*
- *Comparable (to benchmark or other projects of similar nature to capture trends, variances)*
- *Minimize distortion (lack of comprehensiveness of indicator design might set off other adverse consequences of the performance measure)*

[13] Encourages resource efficiencies

[14] Performance indicators which measure project performance differ from impact indicators which measure sector outcomes. The difference lies in how closely can project performance be linked to broader outcomes and how readily can they be quantified.

plants), where high design and construction risks carry a consequence of time and cost overruns, indicators on service standards (e.g. time taken to achieve 24*7 household water connections, time taken to lay unit length of pipeline, average cost per unit length of pipeline, water pressure compliance in service area, rate of pumping failures, man-power costs per unit of network, total costs per unit of treatment, revenue improvement in service area) are best suited to measure project progress and pinpoint reasons for time and cost escalations and address if the required service levels are being met.

On the contrary, for operations and maintenance contracts, where performance risk relating to service quality is higher, output quality indicators (e.g. treated sludge quality tests that comply with requirements, response time to household complaints, quality of treated wastewater discharged into the environment, odor-free public toilets) are likely to be more relevant since they speak to user and service responsiveness. Performance indicators must be designed such that they clearly represent project-level actions and are unaffected by external factors (Robinson).

Increasingly, performance agreements are adopting customer service indicators (e.g. response time to customer complaints) as a measure of service (output) quality recognizing that customer satisfaction is integral to the service goals that the public entity is trying to achieve. A high volume of customer complaints is a good indicator of service gaps and customer deficiencies and reflects strongly on provider performance.

Table 2 Linking Indicators to Results and Benefits in Sanitation delivery

Construction and Maintenance of Sewage Network and Treatment Plants	
Outcome indicator	▪ Improved groundwater and surface water quality ▪ Equity provisions in service delivery ▪ Volume of treated effluent reused ▪ Percentage of bio-solids reused
Output quantity indicator	▪ Length of sewage network laid (not including house connection branches) ▪ Volume of sewage collected (domestic vs. industrial) ▪ Volume of wastewater treated ▪ Number of households served
Output quality indicator	▪ Frequency and duration of sewer blockages and spills ▪ Response time for network repairs/maintenance (sewer blockages/spills) ▪ Response time to customer complaints ▪ Quality compliance of discharged wastewater (meeting treatment/discharge standards)
Output efficiency indicator	▪ Unit cost of wastewater treatment (per customer, per kl. volume) ▪ Operating costs for transport & treatment (per household, per kl. Volume) ▪ Improved collection of sewage charges
Input	▪ Quantity of materials/chemicals used ▪ Reduction in primary cost drivers (savings in electricity consumption owing to energy efficiency interventions)
Construction and Maintenance of Public/Community Toilets	
Outcome indicator	▪ Reduction in open defecation in surrounding areas

	▪ Improved statistics on community health linked to sanitation related illnesses
Output quantity indicator	▪ Number of facilities for women, disabled, children ▪ Number of users served
Output quality indicator	▪ User satisfaction rate ▪ Response time for O&M issues ▪ Ease of access and use by disabled ▪ Fulfilment of considerations with respect to privacy, safety, ventilation, lighting, general maintenance
Input/activity indicator	▪ Amount of cleaning material used ▪ Number of cleaning personnel employed ▪ Number of times facility is cleaned ▪ Salaries of cleaners/caretakers ▪ Resource efficiency interventions undertaken (e.g. installation of solar panels, sharing of cleaning personnel)
Septage Management Facilities	
Outcome indicator	▪ Extent of reuse of treated sludge/bio-solids ▪ Equity considerations in service delivery
Output quantity indicator	▪ Adherence to scheduled desludging frequencies ▪ Volume of septage collected and disposed
Output quality indicator	▪ Adherence to safe, environmental standards with respect to septage dumping ▪ Adherence to prescribed technical solutions for septage treatment ▪ Customer responsiveness/satisfaction
Output efficiency indicator	▪ Number of households served per emptying truck ▪ Average unit cost of emptying (e.g. Operating cost per kl collected, operating cost per household) ▪ Use of technologies to improve fuel efficiencies of emptying trucks ▪ Average revenue per truck
Input/activity indicator	▪ Number of emptying trucks ▪ Size and capacity of trucks used ▪ Average cost of emptying truck ▪ Number of trips made per day ▪ Use of mechanical trucks for disposal

Performance targets and standards as quality and efficiency drivers

Once the requisite performance attributes of a contracted service are understood, performance targets or service standards then serve as the tool to orient service provider resources to intended project results. This leads to better management and facilitates ex post accountability. Service standards are the quality control benchmark against which actual performance can be measured. These are appropriate in instances where service improvement can be achieved immediately and not incrementally (e.g. Response time to sewer blocks can be measured against a service standard of say 4 hours). Targets are the levels of performance desired over a reliable baseline or a prescribed standard at various time periods of the project and serve as milestones for incremental service improvements. They can be set for inputs, activities, outputs and outcomes but output and outcome targets are most suited to steer a project towards desired goals.

Targets must strive to capture all dimensions of performance (customer orientation, quantity, quality and efficiency in service required from the service provider and sought by the user) such that a tight link continues to exist between project goals, deployed resources, activities and project expectations in the form of outputs/outcomes. The scope of the project, reliability of baseline and project risks must guide the design of targets. For projects involving physical outputs such as assets created, output quantity targets (e.g. Percentage increase of pipelines per unit of time by xx date, average monthly volume of wastewater treated to volume collected) must be balanced with output quality standards (e.g. Percentage of leakage loss reduction in xx duration). In projects where there exists a direct interface with the consumer, the desired levels of service can relate to service quality and customer satisfaction. Setting realistic and achievable standards and targets not only drives project effectiveness by retaining the focus on goals, but also encourages cost and service efficiencies.

Performance monitoring for greater accountability

Monitoring[15] and reporting mechanisms[16] foster transparency in operations and drive provider accountability. Performance agreements function well when there is a reasonable, reliable degree of information on which providers and public entities can base their actions (Robinson). A detailed reporting mechanism facilitates this information flow between the contracting parties and helps in decision-making. This information can serve as a management tool that helps: 1) provider to understand and improve upon operational performance, and 2) public officials to review project progress against performance targets and assess the nature of performance (project level) gaps and service (sector level) gaps that require attention. Strong reporting systems are necessary for improved accountability, as provider incentives to perform is diluted in the absence of such systems. However, the process of collecting and reporting information must be judicious and strategic in order to minimize the cost and time effort associated with this activity.

As users are the primary beneficiary of services, obtaining user feedback on services received is an important way to tighten monitoring and drive accountability. This can be achieved in the form of city-level public grievance systems or project level surveys to assess user satisfaction. Particularly in the case of projects that face a lot of initial resistance, it is necessary to promote a culture of transparency and public acceptance by disseminating information on project goals and progress. This not only encourages greater citizen oversight of provider operations but also ensures that the benefits realized from the project are understood and accepted. Public awareness and oversight must be particularly encouraged on the quality aspects of sanitation projects because of the inherent risks to the environment and public health. Reporting mechanisms are more robust when they include indicators relating to customer satisfaction (number of customer complaints received, complaints addressed in a time-bound manner, etc.). This information clarifies the service orientation of the provider and also sheds more light into the nature and severity of performance deficiencies in provider operations.

[15] Provider is usually monitored on key performance attributes/indicators and progress achieved against pre-defined targets

[16] Performance review process requires detailing out reporting formats and frequencies on project progress followed up with appropriate monitoring mechanisms

Table 3 Unbundling Performance Management

Public Sector	• Set Performance Measures (Indicators/Targets) • Set Review Process/Requirements (Reporting information/frequency/format) • Facilitate Citizen Monitoring Mechanisms • Link Payments to Performance • Ensure Monitoring and Compliance • Use Performance Information in decision-making
Service Provider	• Focus resources towards achievement of Performance Targets • Adopt strategies to optimize operational efficiencies • Gather Performance Information • Report information • Use information to improve operational performance
Performance Data	• Output/Outcome Focus • Represents various aspects of performance - Output quantity, quality, timeliness, costs, efficiency, reliability • Customer satisfaction metrics • Cost-effective • Comparable to service benchmarks

How incentives impact outcomes

Performance incentives play an important role in aligning provider actions with the desired project goals as the broader aim behind the incentive mechanism is to improve the quality, efficiency and overall value of services delivered (Petrie, 2002). Performance fees or incentives reward providers directly for their achievement of performance targets. When these targets are linked to desired service results and benefits, appropriate incentive structures motivate providers to carry out service improvements that are in line with service goals.

Pay-for-performance gained wide popularity in the health sector as a means to achieve high-quality care and better health benefits for patients. Representing a positive shift from traditional fee-based systems which rewarded providers for inputs in the form of volume and complexity of services that providers offer, pay-for-performance directed the focus towards quality by emphasizing performance categories such as patient experience and health benefits realized. While performance incentives have yielded the desired results in areas within provider control (e.g. carrying out blood tests for diabetes), evidence on the overall effectiveness of incentives on patient health outcomes appears inconclusive nor does it seem clear whether incentives are able to successfully balance considerations relating to quality, costs and efficiency. (Miller & Babiarz, 2013) (James, 2012) (Ryan & Werner, 2013) This is largely due to challenges on how to effectively structure incentive mechanisms to balance provider behavior against desired outcomes. For example, when provider performance and incentives are linked to lower patient readmission rates, this can disincentivize providers from catering to low-income patients who are likely to require readmissions (owing to factors such as low nutrition levels and poor access to medications and medical facilities) (James, 2012).

Structuring performance incentives thus requires a careful evaluation of a program's service intent and good contract design to have the maximum impact on outcomes. Incentives must also seek to balance cost and quality requirements and not exhibit "perverse effects" tendencies, where incentives that focus on costs lead to compromises in quality. If outcomes are more influenced by external factors (such as user behavior or policy barrier) than by provider performance, it becomes difficult to justify why incentives should be linked to outcomes as they fall outside the provider purview. Linking performance-based incentives to outcome targets where there only exists a loose link between the two might actually create a disincentive for private participation (Robinson). Incentives must also factor in aspects relating to heterogeneity in services required from the provider. For example, where service requirements span a heterogeneous population with varying levels of service deficiencies or willingness to pay, the burden of additional effort or cross-subsidy can serve as a disincentive for private providers and contract design needs to address this effectively.

When seeking private participation in service delivery, incentives are also market-driven. In Malaysia, when the mandatory requirement for scheduled desludging was removed and prices were capped for private service providers, user demand for desludging automatically dropped not only carrying environment impacts but also limiting the financial incentives and business viability of private providers (Chowdhry & Kone, 2012). In this case, the incentive mechanism is not only delinked from provider performance but is not even conducive to private participation. A careful evaluation of market factors is therefore needed to understand what kind of incentives (both demand and supply side) can ensure optimal private participation and performance.

It is therefore necessary to understand the project context, planned and unplanned risks prior to establishing a link between incentives and provider performance. The figure below attempts to summarize the linkages between incentive design and performance:

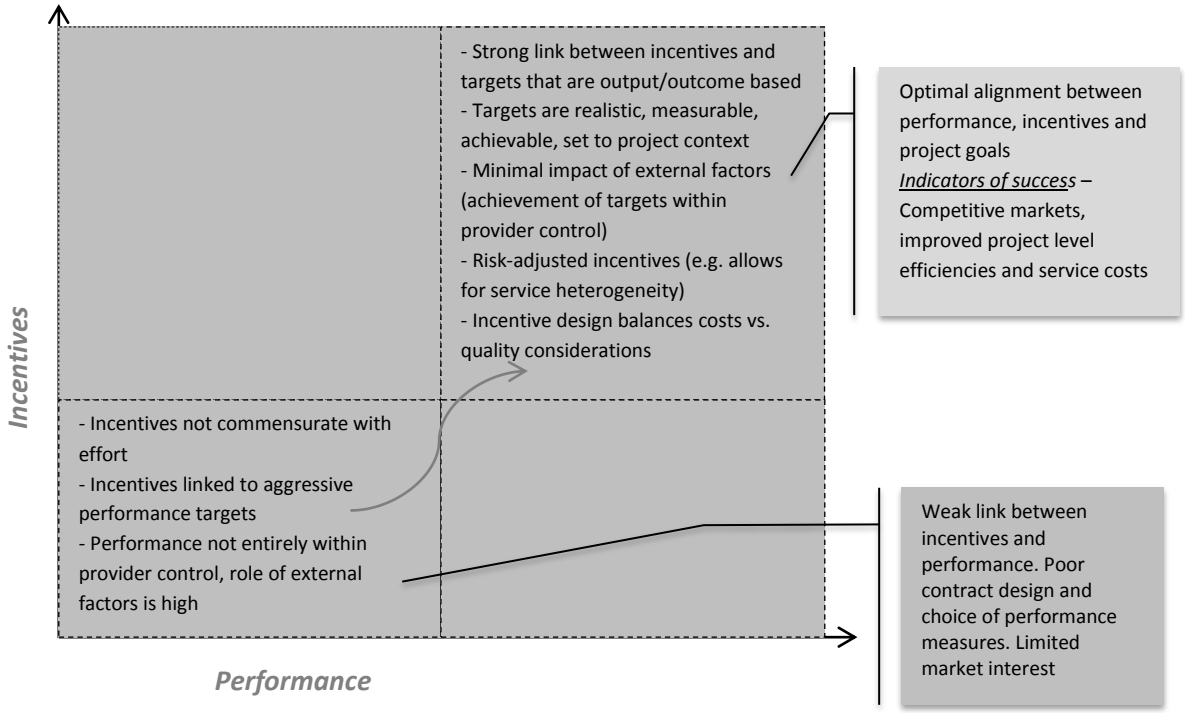


Table 4 Capabilities and Drivers for Optimal Outcomes across the Sanitation Value Chain

INSTITUTIONAL	Policy frameworks to promote access to improved sanitation Pro-poor policies to ensure equity in access Standards for Design and Construction of Toilets Guidelines to engage private sector in public/community toilet construction/maintenance (e.g. model concession agreements, performance indicators, concession periods, standard operating procedures)	Policy frameworks to promote access to improved sanitation Technical standards and guidelines for design, construction and maintenance of storage vaults/pits/septic tanks Mandatory licenses, permits for providers involved in design and construction of onsite systems Environmental regulations and enforcement mechanisms governing operations and maintenance of onsite systems Regulations mandating periodic desludging by homeowner Safety regulations governing labor safety during repairs and maintenance.	Mandatory licenses, permits for providers involved in emptying and transportation Environmental regulations governing safe emptying and transport of both septage/sewage Technical standards for sewer pipelines, suction machines for cleaning pits/tanks/sewers/manholes, vacuum trucks for septage emptying/transport Standard operating procedures for desludging and transport Economic regulation governing tariff/user fees for emptying and transport services Safety regulations governing labor safety during repairs, maintenance, desludging. Regulations governing manual vs. mechanical emptying, cleaning of manholes	Technical standards for design and construction of treatment plants (sewerage and fecal sludge treatment) Prescribe treatment technologies, suitability to context, operational requirements, limitations and risks Environmental regulations identifying wastewater emissions that are harmful to environment and governing effluents that are discharged into the network or environment Economic regulation governing tariff/user fees for sewerage/septage management	Environmental regulations and discharge standards Technical standards for reuse of treated effluent – treated wastewater and biosolids
DUE DILIGENCE	Availability of reliable baseline on household access Planning for public/community facilities based on demand-supply gap analysis Establish demand and willingness to pay for both public and community	Reliable baseline information on number of residential, commercial and institutions with onsite systems and connections to sewer networks Baseline on size, age and capacity of pits and septic tanks Baseline and historical trends on usage patterns, volume of fecal sludge generated, septage	For onsite management, service area baseline on- - Type of latrine and waste disposal option - Market size - Volume of sludge generated - Household emptying frequency - Willingness to pay for emptying and transport services - Number of pits/tanks that can be accessed by providers - Number of public and private	Establish desired effluent quality (this will drive selection of treatment technology) Establish wastewater characteristics within service area (concentration, flow rate, toxins) that Establish land availability (variable depending on treatment process)	Identify location (land, water bodies) for disposal of treated effluents Establish demand for treated wastewater, biosolids, biogas Establish potential for reuse - carry out costs vs. benefits analysis of reuse operations

	toilets Establish user needs, particularly for community/shared toilets construction to ensure sustained use Risk framework for public/community facilities: - Demand, Design, Construction, Maintenance, Performance – Private - Delays in Land and Utility connections, Regulatory – Public	characteristics, emptying frequencies Environmental and Operational risks and compliance - Homeowner Monitoring and oversight – Public sector	trucks in the city - Truck capacities - Cost of new/used trucks - Capex and Omex cost drivers for emptying and transport - Indicative investment requirements - Operational challenges such as poor truck access space, long distances to dump sites, local availability of vehicles, spare parts, service personnel - Investment requirement estimates - Technical and financial feasibility of services Offsite systems - Technical and financial feasibility of construction and maintenance of networked systems (population trends, demand) - Willingness to pay for network connections, potential for cost recovery Risks are inherent across – design, construction, O&M, Performance, and Environment. Risk management to be done within project context and service arrangement with provider	Availability of resources (power, water, land, skilled manpower) Potential for reuse of water, biogas generation Identification of potential risks within project context (e.g. land acquisition delays, design failures, construction delays, Performance failures) and allow for equitable sharing of risks	
PERFORMANCE	Performance of public/community facilities to be measured on the basis of quality of construction and maintenance Indicators to relate to output quality (e.g. availability of water, electricity, lack of odor, adequate ventilation, well-maintained infrastructure – doors, water closets, floor,	Performance relates to quality of construction and ongoing maintenance	Performance relates to output quality and efficiency and positive environmental outcomes Indicative performance measures are provided in Table 2 Performance incentives and penalties to be linked to performance measures on output quality (environmental quality, customer complaints, incidences of sewage/septage leakages/spills)	Performance relates to output quality and environmental compliance Performance levels can vary depending on whether treated effluent will be reused or discharged into water bodies Indicative performance measures are provided in Table 2 Performance incentives and	Performance relates to output quality and environmental compliance Indicative performance measures are provided in Table 2

	sink, etc.), customer satisfaction with aspects such as quality, safety, privacy and reliability of service If facility discharges into onsite systems, O&M performance must account for regular desludging Performance incentives - Guaranteed cost recovery and profit mechanisms - Penalties and contract termination for non-compliance			penalties to be linked to output quality and efficiency	
FINANCIAL	Costs to be borne by households for household level access. For public/community toilets: - Local government budgets - User charges - Advertising - Cross-subsidy mechanisms between high demand/high income public areas with high demand/low income community areas	Costs for construction and maintenance to be borne by households For low-income groups, explore alternate financing strategies such as payments by installment, part subsidies, microfinance, etc.	For offsite systems, capex is typically met through public finances (grants/loans). Limited cost recovery is achieved through connection fees and tariff collected as part of water & sewerage or property taxes Onsite systems are typically serviced by private providers. Financial viability is critical to secure provider participation and performance. - Cost recovery through user fees - Access to financing mechanisms for truck sourcing/fleet expansion - Adoption of strategies to reduce operating costs (e.g. setting up transfer stations to reduce fuel costs) - Tariff linked to consumption of water - Demand-side incentives to encourage periodic desludging	Capex typically met through public finances (grants/loans). Limited cost recovery through tariffs. Potential for cost recovery through sale of treated wastewater Payment guarantees	

ACCOUNTABILITY	Specifically in the case of public/community toilets, Public sector - Provide land, facilitate utility connections (water supply, sewerage, electricity) - Periodic monitoring of facilities and enforcement against standards during construction and maintenance stages - Encourages user monitoring through grievance systems, user feedback surveys Provider - Responsible for design, construction and maintenance - Uphold maintenance standards - Gather and report user feedback	Public sector - Regulation, oversight and enforcement responsibilities - Ensure compliance with planning/technical norms during design and construction - Monitor periodicity of desludging, O&M and necessary clearances for the same - Carry out periodic monitoring of environmental quality - Levy penalties for tank deficiencies and failure to adhere to desludging requirements Homeowner - Assume responsibility for pit/tank maintenance - Obtain necessary environmental clearances	Public sector - Regulation (economic/environmental) - Enforcement - Stipulate methods and locations of transport - Provide transfer stations, treatment plants - Facilitate citizen and third party monitoring mechanisms to ensure safe transport and disposal - Promote competition - Remove disincentives for private participation (e.g. levy of tipping fees at dumping points) - Penalties for non-compliance Provider - Responsible for service provision (emptying, transport, repairs, maintenance) - Controls resource requirements and deployment - Adhere to technical, environmental and operational standards in service provision	Public sector - Regulation (economic/environmental) - Monitor operational efficiencies, service standards and environmental quality compliance - Land acquisition - Facilitate third party monitoring Provider - Responsible for design, construction and maintenance - Controls resources, choice of technology - Adheres to technical, environmental and operational standards	Public sector - Regulation (environmental) - Enforcement - Locations for disposal Provider - Adheres to disposal requirements

Sector experiences and lessons

Performance-based management of water supply system in Mysore, Karnataka

In November 2008, Mysore City Corporation (MCC), along with Karnataka Urban Water Supply and Drainage Board (KUWS&DB), administered a performance-based management contract[17] to address the inefficiencies in the city's 100-year old water distribution infrastructure and improve water supply services to the city's residents. With grant funding from Government of India (80%) and Government of Karnataka (10%) and Mysore city finances (10%), the project sought to modernize the existing intermittent water distribution system to a continuous, pressurized and metered 24*7 distribution network and reduce revenue losses through non-revenue water and poor collection efficiencies.

Prior to defining the project scope in terms of service area and service requirements, KUWS&DB and MCC carried out a preliminary due diligence exercise, including baseline mapping of existing water supply systems and technical/financial feasibility studies for the proposed rehabilitation. Bids were then invited on the project design through a competitive tendering process. The bid from Jamshedpur Utilities and Services Company (JUSCO), one of India's leading infrastructure services companies, was selected on a lowest cost basis among the three bids that were received. Limited private interest in the project (only 3 bids) and wide disparities in the financial estimates of the three bids[18] should have raised concerns on aggressive bidding by JUSCO. More so because the perceived risks on the project were high – the contract involved substantial service improvements in an aggressive time frame.

Upon project award, a tripartite performance agreement was signed between the three stakeholders (MCC, KUWS&DB and JUSCO) to execute the project 72 months, including a 1 year Preparatory phase to understand baseline and prepare operating and investment plans, a 3 year rehabilitation phase to carry out improvement of existing facilities in the service area, and a 2 year management phase when service improvements will be completed and operations and maintenance will be carried out.

Table 5 Mysore City Profile and Water Supply Indicators (2010-11)

Population	3 million
Per capita water supply	135 liters per capita per day
Coverage	79%
Supply continuity	4.5 hours per day
Non-revenue water	22%
Quality and treatment	81%
Redressal of customer complaints	95%
Cost recovery	62%
Efficiency in collection charges	70%

Source: Census of India 2011, GoI
Service-level Benchmarking Data book, Ministry of Urban Development, GoI, 2010-11

The contract carried detailed performance indicators covering all aspects of performance: output quantity, quality and efficiency as well as customer service indicators. These indicators were linked to bi-annual targets to be achieved during the rehabilitation and management phases. Operator payments were then linked to accomplishment of

[17] Tender agreement No. 07/2008-09 between KUWS&DB,MCC,JUSCO (http://jnnurm.mysorecity.gov.in/news/01/16/2009/dpr)
[18] Jusco's financial bid was significantly lower than the other two bids and lower than even the original feasibility estimates

milestones and targets as laid out in the contract, with additional performance bonuses for project efficiencies.

To all intents and purposes, the project appears to incorporate the requisite features for a successful performance contracting approach to public service delivery, with even the revenue risk to the operator seemingly eliminated through guaranteed funding arrangements. However, the contract began to unravel at the end of the preparatory phase, when JUSCO's baseline survey revealed a much larger rehabilitation scope than was originally estimated, with a corresponding 30% increase in costs. Compounding this were other contract design issues (WorldBank, 2014) that surfaced at the implementation stage: performance targets that were aggressive and had no flexibility for adjustment even based on revised baseline findings (JUSCO consistently failed to meet these targets), high revenue risk (over 50% of provider fee was linked to performance targets and payments were lapsed if targets were not met or even delayed), and weak risk management mechanisms to address unforeseen risks such as changes in project scope. These contract design shortcomings also create an incentive-motivation mismatch: when payments are not consistent with operating costs incurred by the provider and aggressive targets add to provider's financial woes, there is limited motivation to perform.

While the project has been successful in meeting certain performance parameters, the stated purpose of the project to carry out city-wide service improvements stands seriously tested as renegotiations are still underway between JUSCO and the public agencies to address the discrepancies from poor project structuring.

This case example also raises key questions on whether agreements are structured effectively to allow for impartial and equitable delivery of services. The project seeks universal coverage and replacement of public stand-posts with household connections, with pro-poor operator obligations: "*To ensure that properties belonging to classified urban poor has a private water connection or a shared water connection among five families as the case may be".* Discouraging use of public taps and providing for in-house connections is an acceptable long-term water service solution in urban areas and is in line with India's Service Level Benchmarks for water supply (GoI-MoUD). However, the implementation challenges associated with this directive need to be given due consideration. Most of the unauthorized water connections and public taps required to be phased out as part of this project are found in slum areas inhabited by people of low income groups who either do not have access to[19] or are unable to pay for household services. With tenure status[20] being integral to access to basic services in urban slums in India, the contract fails to address how service discontinuities due to removal of public stand posts will be handled, particularly in areas where lack of tenure rights prevent household connections. Even where in-house connections are possible, the nature of demand in low income areas needs careful exploration. Demand is likely to be influenced by connection fees (if mandated) or fears that metered in-house connections could increase household expenses on water.

[19] According to a Karnataka Slum Clearance Board report, 83% of slum dwellers draw water from public stand posts, 12% from bore-wells and only 5% have household connections (http://www.jnnurmmysore.in/DPR/KSCB/BSUP%20_%20DPR_Phase-I.pdf)

[20] The percentage of Mysore's slum population is 6.5%, spread across 62 notified and 19 non-notified slums. 6 slums are located in private land, and only 57 slums have secure tenure rights (http://mhupa.gov.in/ray/csmc_ppt/4th_csmc_KSDB.pdf)

Key lessons
Robust due diligence, baseline data, pre-feasibility studies critical to reduce transaction costs, improve project viability/effectiveness
Performance targets must be realistic, achievable and flexible, particularly when baseline quality is poor
Incentives need to be appropriate, particularly when project costs cannot be reliably estimated
Effective risk management frameworks needed to address both planned and unplanned risks
Not leveraging private investment can compromise resource efficiencies

Secondly, the technical and operational complexities in service delivery generally increase provider reluctance to operate in low income areas. Particularly in fixed-fee contracts such as Mysore-JUSCO, where the service offering is homogenous but the service improvements and related costs are variable and unpredictable across the service area, there is very limited economic incentive for the provider to expand services in low income areas where the investment costs are likely to be higher.

Given the scale of implementation challenges even in core city areas and a lack of contractual clarity on 1) public/private sector obligations relating to pro-poor access, and 2) absence of enabling institutional and incentive mechanisms, it seems unclear if this contract can effectively fulfill its universal service expansion mandate. To this end, experiences from similar projects like the 1990s Manila water/wastewater concession agreement can inform potential strategies to adopt. Despite similar policy frameworks that prevented service provision in settlements where land ownership was questionable, the operator facilitated access by waiving property title requirements from applicants and allowed low income households to make connection payments through monthly installments (UNDP). The 1997 concession agreement between the Bolivian government and Aguas del Illimani for expansion of water and sewer services in La Paz-El-Alto also offers important contract design lessons for pro-poor service improvements (Komives).

Concession agreement on Municipal Solid Waste in Chennai, Tamil Nadu

The Corporation of Chennai signed a concession agreement with Ramky Enviro Engineers in November 2011 for management of Municipal Solid Waste in the city. The contract was awarded through a transparent tender process in November 2011, for a concession period of 7 years. A special purpose vehicle, Chennai Municipal Solid Waste Pvt. Ltd (CMSWPL), was launched by the company to handle operations in three zones, while waste management effort in the remaining zones is handled by the city corporation. The outsourced zones have a population of 19 lakhs and an estimated quantity of waste generation of 1510 tons per day (33% of total waste generated in the city).

The project scope primarily involves door-to-door collection of household waste, segregation of waste, transport and disposal of non-recyclable waste to the designated dumping grounds and street-sweeping. Contractor payment involved a tipping fee to per ton of waste collected and transported; 50% of the fee is paid automatically by weight while the remaining 50% is linked to contractor performance as measured by certain performance parameters captured on a daily basis. The performance parameters

are intended to capture qualitative aspects of the services delivered[21]. Minor penalties (0.25% - 2%) are levied for service deficiencies relating to public complaints frequencies, worker safety, non-compliance with certain aspects of collection and vehicle/personnel deployment.

Table 6 Chennai city profile and waste indicators

Population	4.6 million
Per capita waste generation per day	700 grams
Estimated generation of solid waste per day	4500 tonnes
Residential waste	68%
Commercial	16%
Household level coverage	95%

Source: Corporation of Chennai

Urban solid waste has significant environmental and public health implications and like sanitation, needs a scientific approach in its management. In India, the Environment Protection Act, 1986, has published the Municipal Solid Wastes (Management and Handling) Rules, 2000, (MSWMRules2000) which mandate how municipal solid waste (household waste) should be managed and disposed. Responsibility of implementing the provisions of these rules is entrusted with local governments. The mandatory aspects of these rules include: source segregation, door to door collection, abolition of open storage, daily street sweeping, waste transportation in covered vehicles, waste processing (composting or energy recovery) and disposal of inert in sanitary landfills. Guided by the underlying principle of safeguarding public health and environmental quality, the rules also elaborate on the compliance criteria for each of these mandatory parameters. However, imbibing the intent behind these rules and institutionalizing the requisite measures to realize the intent remain aspirational for most Indian cities. The challenges typically cited are lack of financial resources, weak institutional arrangements, inappropriate technologies and lack of public awareness.

Private partnership in the area of solid waste management is not new to Chennai Corporation, it has partnered with community-based organizations and other private firms in the past. The last private partner was in fact suspended by the corporation for performance related issues, after just 4 years of operations. The corporation would therefore appear to have an understanding of the challenges and constraints relating to private participation in waste management and how best to structure agreements to achieve desirable outcomes.

Unlike the Mysore-JUSCO contract, this contract has not been defined as a performance agreement with a stated objective to achieve positive service outcomes. However, it incorporates all the relevant elements of an effective performance contract, with a fairly well-defined project scope, demand estimates, performance measures that speak to output quality, incentives linked to these measures, penalties for non-compliance on certain key aspects of quality, monitoring and reporting mechanisms that are intended to drive accountability and appropriate dispute resolution mechanisms.

Nevertheless, the contract fails to satisfactorily address a range of service and performance management aspects. From a service outcome perspective, the contract is very limited in its focus on waste segregation, an activity that is critical in the waste management value chain and has downstream

[21] 25% of the performance fee is linked to visual inspection of pre-decided waste collection points and 25% is linked to deployment of vehicles for collection and transport

effects on environmental sustainability. MSW 2000 rules provide guidelines on source segregation and even the Service level benchmark on segregation prescribed by the Ministry of Urban Development, Government of India, is quite ambitious (100% segregation). However, as segregation at source is rarely practiced in most Indian cities and public awareness on the issue is very low, the burden of segregation largely falls on the service provider. But providers find segregation after source to be cumbersome and their treatment of this critical activity is very ineffectual, with little regard for sustainability or environmental impact.

Performance contracts can play an important role in pushing for positive environmental outcomes associated with proper segregation. Forward-looking contracts proactively drive segregation-related outcomes by incorporating appropriate performance measures and targets for segregation and tailoring incentives towards achievement of these measures. Since segregation results are dependent on user behavior, simultaneous demand-side incentives (encourage residents to segregate at source) promoted by the public entity will ease the burden on the service provider. Economic instruments such as Extended Producer's Responsibility laws[22] that require manufacturers to assume financial responsibility for recycling their products are other avenues that can be explored to minimize the burden on the service provider. However, the Chennai-Ramky contract only has fleeting references to segregation and speaks very little on how segregation goals and sustainable waste management can be achieved[23]. Unless the contract design includes segregation related standards and payments are made contingent upon achieving these standards, there is very limited incentive for Ramky to perform this activity effectively. When bolstered with demand-side measures, the provider is more incentivized to own this activity. However, in effectively discharging both residents and providers from ownership of segregation, the corporation appears to have missed an opportunity to drive positive environmental outcomes in management of the city's solid waste.

Understanding the quantity and quality of waste and the quantum of recyclables helps determine the type of processing technologies to be pursued for safe disposal. To this end, the contract fails to address performance aspects on recycling and waste recovery, which play an important role in sustainability in the waste management process[24]. The contract design incentivizes the provider to recycle more by allowing the provider to retain revenue streams from recyclables. However, this incentive may fail to achieve the desired goals if: 1) recyclable markets are inadequate, 2) provider costs to recycle outweigh the benefits from it. In the absence of performance measures or targets relating to recycling and reuse, the provider has limited incentives to pursue these strategies effectively and the contract's capability to promote environmentally sustainable outcomes stands diluted.

That Chennai Corporation is directly handling solid waste management in the remaining city zones helps the city to develop firsthand knowledge of: 1) its waste streams, 2) complexities in segregation and

[22] Currently applied to e-waste and plastic waste

[23] The contract includes segregation as one of the provider responsibilities but it is unclear how this is being enforced. The website maintained by CMSWPL as a customer support and public awareness mechanism identifies the project scope as "door-to-door collection of **segregated MSW** from specific municipal areas" but makes no mention of if and how the provider will ensure that the waste is segregated before it is transported and disposed

[24] The general recommendation is to strive for maximum proportion of generated waste to be recycled, reused or processed

recycling, and 3) potential ways to make the disposal process more effective and safe. These are learnings that can be effectually applied to private sector engagement.

Contractual design weaknesses are also evident in the performance measures and incentive mechanisms linked to these measures. While the design limitations were detrimental to the provider in the Mysore-JUSCO contract, they stand to benefit the provider in this case example. Performance measures primarily involve visual ratification of quality in collection and transport – one set of measures involve quality inspection of locations identified in the contract while the other set of measures involve inspecting that that targeted number of vehicles/manpower are deployed for collection. Performance-based fee is tied equally to achievement on these two measures. Even at the outset, the redundancy of some of these measures are evident - measures relating to the number of vehicles/manpower deployed are more input-oriented as they do not speak to provider performance (quality, timeliness or efficiency dimensions) on collection, transport or disposal. Monitoring inputs also goes against core performance principles of operational autonomy for providers. Further, mobilizing the necessary resources can be fairly easily achieved, unless there are challenges such as high rates of absenteeism among workers or frequent vehicle failures. In linking a considerable proportion of the performance fee to this indicator, the contract essentially rewards the provider for no stated effort to improve performance. Given the lack effectiveness of this measure, the significant data monitoring effort associated with it would also seem needless and avoidable.

Key lessons
While strong links cannot always be created between incentives and outcomes, agreements must uphold the spirit of service mandates and outcomes, particularly where it relates to public health and environmental quality
Performance measures must capture all aspects of service quality. Uni-dimensional measures may distort provider behavior and encourage sub-optimal results
Incentives need to be linked to appropriate performance measures to yield desired results
Equity considerations in contracts require stated purpose, regulatory support, and

The second indicator - quality inspection of collection points - is a direct result of resource deployment and is better-suited to capture performance. The collection points that will be monitored are listed in the contract and performance-fee is linked to meeting desired quality criteria in these locations. The potential problem with pre-identifying the locations to be assessed is that it may trigger behavioral distortion. If the location list does not exhaustively include all streets/lanes/by-lanes and any other potential locations in the service area, the provider may direct less effort to serving locations that are not included in this list. The fact that payments are linked to the quantum of waste collected can offset this distortion and encourage the provider to collect more waste. However, if the benefits from the additional effort are only marginal compared to the costs associated with it, the provider is unlikely to expend this effort. Low income areas which are not included in the list might be particularly impacted as the operational constraints associated with service provision in these areas (narrow lanes where waste vehicles cannot enter, acute lack of awareness, more prone to vandalism of bins, unorganized settlements) can drive up the service costs.

Another critical aspect is the failure to adequately recognize of the role of informal waste workers in the waste management value chain. Chennai has an active waste picker community which constitutes the informal recyclables sector in the city. Privatizing waste management jeopardizes their livelihood as they now have to compete for the same resources with the private contractor. In such instances, it becomes the obligation of governments to adopt inclusive development strategies that will protect their rights to livelihood. The city of Pune presents a workable example of how to successfully mainstream waste pickers into the city's waste management services. The Chennai Corporation-Ramky agreement presents no strategies to integrate waste pickers into the waste management chain. In merely suggesting that the provider can engage the services of waste pickers in segregation and recycling at their discretion, the corporation fails to pursue an inclusive approach to service provision.

Model Concession Agreement on Public Toilets in Hyderabad, Andhra Pradesh

The south Indian state of Andhra Pradesh has a vibrant environment for PPPs and is second only to Karnataka in the development and use of PPPs in the delivery of infrastructure services (GoI-DEA, 2011). The Andhra Pradesh Infrastructure Development Enabling Act 2001, which applies to all infrastructure projects implemented in Andhra Pradesh through the PPP mode, provides the necessary legal framework for attracting private sector participation towards infrastructure development in the state. The state has undertaken a total of 207 PPP projects till date, with a maximum number of projects in the sectors of Roads (48 projects), Tourism (49 projects) and Urban Infrastructure (45 projects) (GoAP-PPPCell, 2014).

One of the specific goals of the National Urban Sanitation Policy, Ministry of Urban Development, Government of India, is the creation of "Open defecation free cities". States are encouraged to achieve this goal by developing state-specific sanitation strategies, which include expanding household coverage of sanitation and developing public and community toilets in high-demand areas. To this end, Government of Andhra Pradesh appears keen to replicate its PPP success in other sectors such as Roads, Ports, within the sanitation sector. Private participation under a Build-Operate-Transfer mode is actively encouraged for construction and maintenance of Pay-and-Use public toilets across the state (GoAPCircular, 2012). The directive from GoAP's Urban Development is comprehensive in terms of the performance expectations from the private sector and service obligations of the public and private sectors. It also includes detailed technical guidelines to strengthen the capacities of local governments to undertake and manage public toilet PPPs. The recommendations with respect to concession periods, advertisement rights and service charges reflect an optimal assessment of the financial feasibility parameters of BOTs in public toilets.

Table 7 Hyderabad City Profile and Sanitation indicators

Population	3,943,323
# Households	881,512
# Households with sanitation facility	98.5%
# Households with piped sewer system	91.4%
# Households with septic tank	4.3%
Open Defecation	0.9%

Source: House-listing & Housing Census, Andhra Pradesh, Census of India 2011

Hyderabad is the capital city of Andhra Pradesh and is governed by the Greater Hyderabad Municipal Corporation. GHMC is responsible for providing basic urban services including sanitation within its jurisdiction. According to GoI's Census 2011, the

city boasts a high household level coverage on sanitation and minimal open defecation indicators. The demand for public toilets in the city is therefore primarily from floating population (in commercial, tourist and transit areas). According to MEPMA, a state agency that focuses on poverty reduction programs, Hyderabad has 1230 slum settlements dispersed across the city and 8784 households residing in these slums lack access to toilets (GoAP-MEPMA-USHA). According to the City Development Plan of Hyderabad, slums in the core city have only 55% of sanitation coverage and 111 community toilet seats (GHMC-CDP, 2011).These numbers establish a strong demand for improved sanitation in the form of household/shared/community toilets in these settlements.

During the last decade (2002-12), GHMC has undertaken construction of public toilet BOTs to the tune of Rs. 5.15 crores (GoAP-PPPCell, 2014). Under a scheme called Fund-Your-City, an initiative to promote private participation in urban infrastructure development in the city, GHMC invited tenders under Domestic Competitive Bidding mode for construction of 150 Pay-and-Use toilets[25] on a Design-BOT basis (Gnaneshwar) during 2008-09. The tender attracted wide interest from the private sector, 23 different agencies were selected through the tender process and issued project packages[26] for construction of toilets in varied locations across the city (GoAP-PPPCell, 2014) (Gnaneshwar).

Public toilet management exhibits similar patterns of issues and challenges across cities in India – poor quality of construction, absence of quality parameters in maintenance, poor maintenance and infrastructure, and absence of monitoring and enforcement mechanisms. Planning and management of public toilets falls very low in cities' priority list of sanitation related issues, with no visible effort taken to improve the levels of service offered to users. Historically, local governments have relied on public funds to construct public toilet complexes in places where there has been a stated need or where land was available. Maintenance was often outsourced to private contractors who operate locally. The degree of formalization and scale in operations was low and fairly localized. Contractual arrangements were simple and sought merely to transfer maintenance responsibility for an extended duration of time (~20-30 years). There was no reference or conditionality on outputs (dimensions such as quality, reliability, privacy, gender/disabled sensitivity) or outcomes (equity, public health), nor was there an understanding of the cost economics of this arrangement.

The role of private sector in financing, developing and managing public toilets emerged in the past decade, stemming from a growing dissatisfaction with the quality of facilities in urban areas and a demand for improved, user-oriented facilities (Colin & Nijssen, 2007). Public toilets constructed on a BOT basis in New Delhi in 1998 demonstrated the potential of private sector engagement in public toilet provision. Since then, the attractiveness of this engagement model has led other cities and states to undertake public toilet projects on a BOT basis, with varying degrees of success. Contract design has become more elaborate as a result of the array of technical models to choose from, technical and planning norms to follow, maintenance parameters to fulfill and incentive mechanisms to adopt.

[25] The rationale for PPPs was: growing demand for public toilets in the city and limitations in city finances to cater to this demand effectively

[26] Each project package appears to constitute 10 public toilets and 2 urinals (Gnaneshwar)

It is in this context that GHMC's model concession agreement presents a systematic example for engaging private sector on a BOT basis in the construction and maintenance of its public toilets. The agreement appears comprehensive in terms of project scope, roles, obligations, performance requirements, incentive mechanisms and penalties for non-compliance. Contracting parties' obligations appear consistent with which party is most capable of fulfilling them. The city is required to provide land for construction, facilitate water and electricity connections (connection costs to be borne by the provider), provide design and technical specifications to be adopted during construction and carry out routine monitoring and enforcement of performance clauses stipulated in the contract. The private party is obligated to execute the project scope with respect to construction and maintenance according to the performance requirements outlined in the contract.

Once demand is established, pay-per-use public toilets are a fairly simple form of PPPs to execute for varied reasons: low scale of investments (both capex and omex), minimal technical complexities in design and construction, potential for cost recovery and manageable risks. Potential risks in public toilet investments relate to demand, financing, performance and environment. The success of pay-per-use toilet models like Sulabh in India establishes user willingness to pay for public toilets, particularly in public locations (Kothandaraman & Vishwanathan, 2007). User charges are critical to cost recovery and dissuading levy of user charges creates an incentive-motivation mismatch. If there are no other guaranteed financing mechanisms, providers respond by cutting upkeep costs (compromising on quality) or avoid such projects altogether[27]. The GHMC contract design addresses demand and financing risks by guaranteeing project cash flows through both user charges and advertising revenues. The effectiveness of this financing strategy is corroborated in other examples such as BOT public toilets in New Delhi (Colin & Nijssen, 2007).

Key Lessons

Performance indicators and incentives linked to service quality are better suited to produce desired results. This is particularly important where public assets fail due to poor quality of maintenance

The cost economics of public toilets in high footfall areas allow for cross-subsidization. However, care should be taken to ensure that quality is not compromised

Inclusive service provision must speak to all dimensions of equity – poor, gender, disabled. Contract design must address these elements

Environment risk, which is of foremost consequence in sanitation delivery, is addressed by requiring sewage connections. Environmental considerations also appear to be taken into account by mandating installation of waterless urinals.

The agreement attempts to mitigate performance risk by establishing: 1) design and construction standards to be implemented, 2) required levels of service, 3) performance indicators that are intended to measure maintenance quality, and 4) penalties linked to non-compliance with performance indicators. The design and construction requirements appear to go beyond acceptable technical norms

[27] http://infochangeindia.org/urban-india/cityscapes/why-public-toilets-get-clogged.html http://timesofindia.indiatimes.com/city/chennai/No-response-from-firms-to-build-toilets/articleshow/16522863.cms?referral=PM

for public toilets in their level of detailing. Mandated technical specifications such as stainless steel panels may seem restrictive of provider flexibility on input parameters and may also require specialized provider capabilities. This can raise concerns about limiting the pool of providers to choose from and reducing the benefits of competitive bidding. However, lowered private interest doesn't seem to be the case in this specific case example, given the number of bids that were received and selected to execute the project. The required levels of service seem appropriately focused on output quality, with guidance on inputs that can help achieve the desired service levels. However, a majority of the performance indicators do not seem *representative* of performance that is typically desired in public toilets (output quality, reliability, user satisfaction). Further, the ability to verify certain indicators (phenyl or acid not used) is also questionable. Due to these shortcomings, key accountability mechanisms such as indicators and penalties, though well-intentioned, fail to contribute effectively to the desired results.

Equity in service provision is not given due consideration in most public toilet concessions as a desirable outcome. Equity in terms of gender and disabled access is mandated even in planning norms but is not adequately incorporated or enforced during project implementation. Inclusive and equitable service outcomes also involve facilitating access and quality services to low income areas. The commercial viability of public toilet PPPs has been demonstrated through examples such as the New Delhi public toilet BOT or the Sulabh model (Colin & Nijssen, 2007) (Kothandaraman & Vishwanathan, 2007) (Norman, 2011). Independent evaluation of the New Delhi model indicates that the internal rate of returns of such projects can be over 40%[28] for a 5-year concession period and will increase if the project duration is extended (Colin & Nijssen, 2007). In light of such high project returns, there is merit in evaluating if cross-subsidies can be built into project packages. Packages can be structured to include a healthy proportion of profit-making locations alongside facilities in low income areas that require maintenance. In order to prevent quality deficiencies in the cross-subsidized areas, the entire package can be subject to the same service standards. While cities do undertake targeted strategies[29] to improve access to basic services in low income areas, contractual design strategies such as the above can offer alternate solutions. Discussions with public and private stakeholders in GHMC indicate that the city is pursuing such strategies through its existing PPP contracts. An independent performance evaluation of such arrangements would be very instructive.

Concluding remarks

Performance based approaches are intended to play an important role in making public service delivery more results-oriented. While they do hold promise and merit to this end within the sanitation sector, evidence suggests the need for a measured approach in their adoption and use.

Performance approaches are likely to work better when there is: 1) clarity in service goals, 2) clear and measurable results in line with the goals, 3) role of external factors (such as user behavior) is minimal on results, and 4) incentive mechanisms are consistent with goals and desired results. However, empirical

[28] This return seems well above average risk returns ratio of around 15%-20% in other infrastructure sectors (Power, Roads, Telecom) (http://www.idfc.com/alternatives/media/idfc_in_news25.htm, http://www.ibef.org/download/funding.pdf)

[29] http://www.indianoon.com/news/city-hyderabad/question-hour-in-assembly-ghmc-prepares-action-plan-for-slum-free-city-4823.html

evidence shows that agreements are seldom that straightforward; complexities in performance management are more the norm. Developing institutional capacities to design, procure, manage and monitor performance agreements is an important way of managing complexities during implementation. This paper discusses certain key preconditions or capabilities in the institutional and project level environment that could improve the prospects of performance agreements in achieving sanitation service goals (Table 4). These capabilities, while not intended to guarantee desired outcomes, offer a cohesive set of abilities and actions that can be undertaken by contracting parties in order to accelerate results and progress in the sanitation sector.

The case discussions underscore the potential benefits and pitfalls of performance based approaches and the challenges of private sector engagement in service delivery. Key lessons from these case examples also corroborate the role of some or all of the above-mentioned capabilities in steering performance contracts towards desired sector outcomes.

The Mysore-Jusco example speaks to the importance of *good planning and preparation* and its implications on project outcomes and provider performance. All three examples underscore the importance of *appropriate performance measurement and management systems* in influencing provider incentives, and subsequent performance. In this context, Table 2 attempts to provide context to appropriate indicator selection for better results and performance in sanitation delivery.

Performance based approaches in the sanitation sector particularly need to ensure that equity, public health and environmental quality are given due attention. To this end, all three case examples underscore the importance of *governance (regulation, policy, contractual clarity) and contract design (performance indicators, incentives, targets)* in fulfilling these objectives relating to equity and environmental protection. The Chennai-Ramky example in solid waste management has several parallels to the sanitation sector in terms of safe collection, transport, treatment and disposal. This example flags the need for deliberation on what are relevant environmental goals, how best to engage private sector in achieving these goals, how to ensure compliance and what is the nature of demand side incentives that can support the role of private providers in achieving these goals.

Equity considerations have received limited attention as well in all three examples. *Contract design, policies and regulation* play a critical role in ensuring that project benefits reach the poorer sections of the population. This might involve tailoring performance measures and targets to include low income areas/communities, structuring incentive mechanisms that align with these targets and eliminating policy barriers to achieving equity goals and targets.

In conclusion, introducing a performance perspective to sanitation service delivery will undoubtedly offer good benefits in terms of improved sector results and outcomes and improved effectiveness of public investments. The contract preconditions and principles discussed in the paper offer a framework for better contract design and implementation and a higher probability of achieving sanitation related goals. Taking into consideration the characteristics of the project and the demands and challenges of the local context are critical to better application and efficacy of these features.

Annexure 1: Key Issues and Barriers across the Sanitation Value Chain

Issues and Barriers			
Public Health and Environment Focus	Equity Focus	**Capture**	Poor household coverage High prevalence of open defecation Potential public health risks associated with exposure to fresh feces Limited demand Lack of awareness
		Storage	Insufficient storage space Potential for surface and ground water contamination Absence of design and construction standards Limited awareness Low willingness to pay for improved solutions Poor choice of technical solutions, poor design/configuration/siting Poor compliance to standards during construction and maintenance phases Poor access for desludging Limited space for wastewater absorption into ground Limited performance monitoring of septic tanks
		Transport	On-site - Lack of regulation for households to undertake periodic emptying - Lack of regulation governing transport operations - Absence of regulations governing private providers (e.g. licenses, permits, etc.) - Absence of monitoring and enforcement mechanisms - Unhygienic pit emptying and transport practices - Manual emptying/desludging - Low quantity/quality of vehicles/vacuum trucks - Lack of formalization of providers owing to limited information on market size, business opportunities and viability - Long transportation distances - Absence of transfer stations Off-site - High costs of construction and maintenance - High consumption of water and energy - Weak economic regulation to ensure full cost recovery
		Treatment	Weak regulation on design, construction and maintenance (e.g. technology standards, effluent standards, etc.) Weak monitoring and enforcement mechanisms during construction and maintenance to ensure adherence to environmental standards High construction and maintenance costs Land availability Weak economic regulation to ensure full cost recovery
		Disposal/Reuse	Illegal dumping (on-site waste) Weak environmental standards for disposal of waste and treated effluents Weak monitoring and enforcement mechanisms of waste disposal process Demand creation for reuse of treated wastewater

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