



Cash On Delivery Aid for Water¹

By Robert Kaplan

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The Center for Global Development (CGD) has been working on a new foreign aid approach called Cash On Delivery Aid (COD Aid) which transfers funds in proportion to progress toward a mutually agreed outcome such as universal primary completion or reductions in illness. The COD Aid approach is described in materials on the CGD website and in Birdsall and Savedoff (2010), including a specific proposal to help countries achieve universal primary schooling. The purpose of this note is to explore whether and how COD Aid might help achieve the aims of development in the water sector. It draws from previous work on COD Aid, the author's own experience with water sector programs in developing countries, and a workshop, convened by CGD on March 3, 2010, in Washington DC (see appendix for more details).

What is Cash on Delivery Aid (COD Aid)?

COD Aid involves a contract between a funder and a government tying a specific payment to achieving a shared objective, such as completion of primary school, reduced transmission of HIV/AIDS or cleaner air. Key elements are:

- **Payment for outcomes and not inputs.** The outcomes have to be related to an objective shared by funder and recipient. Outcomes should be measurable and continuous so that incremental progress can be rewarded over time.
- **Recipients assume full responsibility.** Funders do not specify or monitor inputs, but rather verify progress and pay for outcomes according to the COD Aid contract.
- **Independent verification of progress.** Both the funder and the recipient need to have confidence in the integrity of the measurement of progress.
- **Transparency and public dissemination.** Both the contract and progress measures should be as simple as possible and publicly disseminated. This increases credibility and accountability, and encourages broader social engagement in aspects of progress that are not part of the contract.

¹ This note was prepared by Robert Kaplan, Chief Advisor to the Executive Vice President of the Inter-American Development Bank, at the request of CGD. The note reflects the personal views of the author and incorporates suggestions from the COD Aid team – Nancy Birdsall, Ayah Mahgoub and William D. Savedoff. It does not in any way reflect the views or opinions of the Inter-American Development Bank.

- **Complementarity with other aid programs.** COD Aid is intended to complement and not disrupt ongoing programs, whether funded by local or external sources. COD Aid should help the country use all available resources more effectively.

What is the objective in the water sector?

At a minimum, the objective is to ensure that every individual has access to water to satisfy daily needs for consumption and hygiene.

Beyond this basic objective, there are several considerations specific to the water sector.

Volume. Minimum needs are very low (WHO minimum standard is 20 liters per capita daily). But there are many additional uses that increase demand. Where water is freely available and inexpensive, households consume (and often waste) much higher volumes.

Quality. There are different quality standards by use. For example, drinking water must be potable, but water for hand-washing, bathing, or household cleaning tasks need not be potable. Where access is limited or expensive, households minimize use of potable water (e.g. using bottled or boiled water for drinking) and use non-potable or recycled water for other uses (e.g. bathing, washing clothes, watering vegetable gardens, etc.).

Convenience. There is an income effect for households if time previously devoted to collect water, and energy devoted to potabilize it, is freed up for other (more productive) uses. Where water supply is unreliable, intermittent or delivered with low pressure, households require back-up sources and storage capacity.

Wastewater. Water does not disappear once “used,” but takes on different quality characteristics, which may carry health or environmental implications (it may become “pollution”). To avoid potential negative consequences, wastewater needs to be treated and disposed appropriately (this could include recycling for other uses).

Sustainability. There is no end-point at which the objective is finally achieved, as access must be on-going. This has been the Achilles heel of many funders’ projects. Without sufficient resources every year to operate, maintain, and expand services as the population grows, the service standard will tend to fall over time.

How is water delivered?

Formal service. Formal service generally involves an operator who collects water at the source, and then treats and delivers it to consumers, either via household connections or at public stand-pipes. Water is normally delivered through piped networks, but may be delivered by cistern truck to areas where piped networks do not reach. Consumers may pay for delivered water by metered volume or un-metered access. Wastewater may be disposed by each household (e.g. septic tank, latrine, etc.), or it may be collected by an operator, and transported, treated and disposed collectively.

Informal service. Informal service is more typical of rural areas with low population density. It involves initial capital investment to develop a water source (e.g. groundwater tapped by well and pump, or boxed surface spring), and then it is usually maintained by the community. Water supplied in this manner may or may not be treated. Households may pay into a community fund through a variety of means to operate and maintain the service. Wastewater is normally disposed by each household separately in a variety of ways, such as a septic tank or pit.

Why do water systems fail?

While building a water delivery system can be challenging in some environments, the more common and difficult challenge is operating the system. Once up and running, it is all too common for service to deteriorate over time or even fail entirely. While there are many possible reasons for system failure, it is useful to distinguish four broad categories of risk.

Political risk. Access to clean drinking water is so essential that governments often intervene to depress tariffs in the interest of making water affordable to all. However, if tariffs are held below long run marginal cost, then the service will not be self-sustaining - it will not generate the revenue needed to maintain or expand infrastructure to serve additional customers. Unless supplemental revenue is available from government (or donor) contributions, service quality will deteriorate. COD Aid could be an effective tool to address this risk if the contract incorporates a variable that rewards sustainability because it creates an incentive for the government to address a problem of its own making. If political risk is the key obstacle, then an appropriately designed COD Aid program could be just the structure for giving the government incentives and autonomy to develop political or institutional arrangements that sustain water services.

Commercial risk. Even in the absence of political risk, water authorities face the risk that consumers cannot afford to pay – there can be a mis-match between the service quality desired and the ability of the consumers to pay the full costs. It may be possible to address this risk by designing the system to achieve an appropriately modest service level (e.g. stand-pipe instead of household connections). In cases where consumers can afford operating costs but not capital investments, output-based aid programs may effectively channel government or donor funds to subsidize the system's fixed costs. COD Aid can play a role by creating incentives for the government to experiment with public policies that mitigate or compensate for commercial risk.

Operational risk. In cases with stable and supportive public policies and limited commercial risk, water authorities may still run into trouble if they are poorly managed. It is not useful to protect a water authority from its own managerial failures, but public policies are often needed to protect consumers from such deficiencies. As with commercial risk, a COD Aid agreement could provide incentives to the government to put such policies in place. (If inefficiencies arise from constraints imposed by public policy or political intervention, then it is not operational risk but political risk and should be addressed accordingly).

Environmental risk. This refers to the risk that the water source may run dry, the subterranean water table may drop or become contaminated, or the system may be damaged by environmental phenomena. This risk is not easily addressed by COD Aid except to the degree that public planning can foresee and either invest in mitigation or develop alternatives.

Options for specifying the contract

Below are a few options for specifying the contract, with principal issues and compromises, as applicable. In each case, the contract would be with the government (Ministry of Finance), which would choose the best strategy for making progress. Such strategies could range from negotiating arrangements with political parties and civil society, establishing new regulatory schemes and subsidies, or directly contracting with sector authorities and operators to achieve the objectives. The COD Aid contract period should be at least five years, preferably with automatic extensions for another five to ten years. None of the options listed below address the wastewater problem directly.

1. **Annual payment per satisfied household served.** Households defined as those with individual connection or served by a stand-pipe meeting WHO standards (distance, flow, shared use)
 - Verification: Periodic household survey.
 - Issues: How can household satisfaction be determined? Does there need to be a water quality standard?
 - Alternative incremental formulation: Satisfied households served above current baseline.

2. **Annual payment per volume of water billed and paid.**
 - Verification: Periodic audit of operators, simple to administer for formal systems.
 - Issues: Advantage of introducing an incentive to bring unaccounted water into the system, but introduces a bias toward formality. Possible perverse incentive to use (or waste) more water
 - Alternative incremental formulation: Volume of water billed and paid above current baseline.

3. **Annual payment per satisfied household served, adjusted by percentage billed and paid of total volume of water produced.** Households defined as those with individual connection or stand-pipe meeting WHO standards.
 - Verification: Requires periodic household survey plus audit of operators.
 - Issues: Higher verification burden, though issue of determining household satisfaction could be addressed by assuming satisfaction if payments are current.
 - Alternative incremental formulation: Satisfied households above current baseline, adjusted by percentage billed and paid of total volume of water produced.

Defining the payment amount

The annual payment should be large enough to be meaningful to the Ministry of Finance. To the extent that the country is able to operate water utilities sustainably (i.e. without on-going government payments to the operators), the COD Aid payment would be a source of revenue to the government that encourages it to address the political risks and policy conditions necessary for a sustainable water sector but which would subsequently be spent on other national priorities.

One approach to determining the payment amount is to base it on the average cost of producing and delivering some minimum volume of water, such as the WHO recommended minimum standard of 20 liters per capita daily (not to imply that consumption above this level is unnecessary or undesirable). Most water systems are designed to deliver substantially more than this minimum standard, and consumers generally demand a larger volume if available. COD Aid would be one among many revenue sources for the service; others are water tariffs, the government's budget, and other local and international donors and financiers.

Average cost approach applied to Option #3 in a hypothetical country of 14 million people. If the COD Aid agreement agreed to pay \$36.50 annually for each household that has access to water and has paid its water bills, the annual COD Aid payment might range from \$46 million initially to about \$102 million a year once the system reaches 100% coverage and billing (based on the following calculations).

General parameters:

WHO minimum standard for water consumption: 20 liters per capita daily
Average cost: \$1/m³ (i.e. \$1/thousand liters) of water (World Bank estimates over a wide sample of systems)
Household minimum water consumption: 5 persons per household; 20 liters per person per day and 365 days yields = 36,500 liters/year
Payment per household: 36.5 m³ x \$1 = \$36.50/year

Characteristics of a hypothetical country for illustrating costs:

Population: 14 million (approx. 2.8 million households)
Coverage: 75% have access to safe drinking water
Billing: 60 percent of water produced is billed and collected at outset.

Estimated annual payment:

(2.8m households) x (75% coverage today) x (\$36.50 annual payment) x (60% billed water) = \$46m/yr at outset, growing to \$102m/yr once all 2.8m households served and 100% water billed.

If, instead, the payment were for incremental access:

\$0 at outset, growing to \$25.6m/yr once all 2.8m households served and 100% water billed.

Further discussion

A COD Aid proposal for water needs to clarify the objective, identify an indicator, set payment amounts, and establish a mechanism for verification. Progress on an objective that is framed as expanding access to water in a sustainable system could be proxied by a number of indicators presented above. Each one should be assessed in terms of its feasibility, precision, and verifiability, as well as whether it would introduce distortions or create unintended consequences. It is hoped that this note will contribute to the discussion for further refining a COD Aid proposal that could then be submitted for consideration by donors and recipient countries.

Sources for additional information:

http://www.cgdev.org/section/initiatives/_active/codaid.

Birdsall, N and WD Savedoff. 2010. *Cash on Delivery: A New Approach to Foreign Aid with an Application to Primary Schooling*. Washington, DC: Center for Global Development.