

## Output-based aid in Colombia Connecting poor households to natural gas service

Cledan Mandri-Perrott & Dominic Patella

**N**atural gas connections could bring substantial benefits to poor households in Colombia. Compared with other fuels typically used for cooking, natural gas is safer, less expensive, and less environmentally damaging. But even though gas is more affordable, connection fees can put the cost of switching to this fuel out of reach for poor families. To help low-income families realize the benefits of natural gas, GPOBA is collaborating with Fundación Promigas, a charitable foundation established by the Colombian gas transmission and distribution company, Promigas. Together, they aim to bring 35,000 new natural gas connections to poor households in Colombia's Caribbean coastal and south west regions. Through one-time connection subsidies, the project is providing long-term economic and welfare benefits to poor families.

Throughout the 1980s and into the 1990s armed conflict between guerrilla factions, government forces, and private landowners hampered development in Colombia. Encouragingly, reforms enabled 1.4 million people to move out of poverty between 2000 and 2004. But while this progress is heartening, much work remains to be done—more than half of Colombia's population still lives below the poverty line. Particularly troubling are the high levels of poverty and unsatisfied needs in the Caribbean coastal area. Households in this region, typically consisting of five to seven family members, have an average annual monthly income of less than US\$168.

One persistent lack among poor households is safe, efficient sources of energy for daily life. Yet there is plentiful natural gas in Colombia. Recent estimates suggest that its major gas fields hold 4.2 trillion cubic feet of reserves. During the early 1990s the government developed an initiative aimed at increasing the number of households with gas service connections. This initiative, which has reached more than 17 million people (about 40 percent of the population), provides for a system of cross subsidy whereby poor residential customers receive a 40%–50% discounted tariff for the first 20m<sup>3</sup> consumed. Gas distribution companies allocate

these consumption subsidies, collected from a surtax charged to high income strata and industrial users, through monthly consumer bills.

Despite these efforts, many low-income families still rely on dangerous and less efficient energy sources. The reason is the high cost of switching to gas— a connection cost of more than US\$370 per household. This problem is particularly acute in Colombia's Caribbean coastal area, where one-time connection fees often amount to more than 220 percent of an average poor family's monthly income. In contrast, monthly natural gas service bills are relatively affordable—especially when the savings from not purchasing other fuels (such as wood, kerosene, and liquefied petroleum gas) are taken into account.

The government of Colombia has previously committed to subsidizing natural gas tariff levels in order to ensure that poor households are able to pay their monthly bills. However, poor families can only realize the value of this consumption subsidy once connected to the distribution network. By providing the means for new connections, GPOBA is working to ensure that a greater number of poor households can benefit from the governments assistance efforts.

### Bringing gas to Colombia's poor

The situation in Colombia, with families unable to afford connection fees but able to pay monthly gas service bills, is well suited to the one-time use of output-

---

**Cledan Mandri-Perrott** is a senior infrastructure specialist with the World Bank's Finance, Economics, and Urban Department. **Dominic Patella** was a summer intern with the Global Partnership on Output-Based Aid.

Special thanks to **Juan Payeras** IFC Principal Investment Officer for Promigas.



Colombian woman using new natural gas connection with stove provided by GPOBA co-financing.

based subsidies. This concept was tested in Colombia's Caribbean coastal area by an earlier, small-scale program with funding from the Dutch government. The results showed that subsidized connections are effective in bringing gas service to poor households.

Building on this earlier success, a GPOBA grant is applying new connection subsidies on a much larger scale. The aim is to connect an estimated 35,000 families in the Caribbean coastal and south west areas to the nation's natural gas distribution network. Working with Promigas, Colombia's largest gas transmission and distribution company, the project is installing a gas connection and a gas stove in each participating household.

### Structuring the project

Fundación Promigas, a charitable foundation, established by Promigas, is helping to implement the project along with Promigas' regional distribution companies. These regional companies provide the resources, household financing, and technical know-how needed to make the new connections. Fundación Promigas oversees the work and make certain that new connections have been properly made. GPOBA provides the subsidy financing and project oversight to ensure that Colombia's poor receive the maximum benefit from each dollar spent.

Because GPOBA grants apply output-based criteria to the disbursement of funds, grant recipients—in this case Promigas' regional gas distribution companies—do not receive payment until they achieve

measurable outputs. Making disbursement contingent on delivery of outputs provides incentives for eliminating waste, working efficiently, and upholding quality standards. An output-based methodology is particularly effective when supporting the delivery of basic infrastructure services, where high connection fees often make access to new services unaffordable without financial assistance.

### Getting the subsidy right

To be eligible for a GPOBA subsidy, families must belong to one of Colombia's two poorest socio-economic strata, as classified by the Estratificación Socio-Económica (ESE) system. This system, based on Colombia's Public Utilities Services Law, which provides ranking criteria for classifying households into one of six strata, has helped target social programs to the country's neediest areas since the mid-1960s. This precise targeting means that GPOBA funds will directly benefit poor households that truly need assistance to obtain service. In addition, the subsidy will be paid only if the new connections result in ongoing service.

GPOBA's grant of US\$141 for each eligible household covers about 38 percent of the US\$370 cost of a new connection. As many households do not have sufficient funds immediately available to cover the remaining US\$229 cost per connection, regional distribution companies provide financing over a six year period. GPOBA examined the cost to poor families of switching to natural gas by comparing the household connection and monthly cost of natural gas, to the cost of competing fuels such as electricity, LPG and wood. The subsidy amount was set such that the customer's contribution to the new connection (amortized monthly over a six year period) plus the monthly cost of natural gas was roughly equivalent to the monthly cost of competing fuels. The GPOBA subsidy is designed to make each connection economically feasible while still requiring beneficiary families to make a substantial financial contribution. Getting the subsidy level right is critical to ensuring that GPOBA funds reach more families, and encourages a sense of ownership among beneficiaries.

### Providing service—four steps

The project follows four steps to bring service to new households (figure 1):

- ◆ Local municipalities identify the recipient household as belonging to strata 1 or 2, the poorest, ac-

According to the rules of the Public Utilities Services Law, thereafter Fundación Promigas directs regional distribution companies to make new natural gas connections at each qualifying household.

- ◆ After making the specified connections and commencing new gas service, regional distribution companies document that new connections meet quality standards and that households have successfully paid three months of billing.
- ◆ Fundación Promigas (through an independent agent) reviews each connection and performs random technical audits to ensure that project criteria are met.
- ◆ GPOBA reviews the verifications of outputs by Fundación Promigas and disburses funds into a designated account from which the regional distribution companies are compensated for each new service connection.

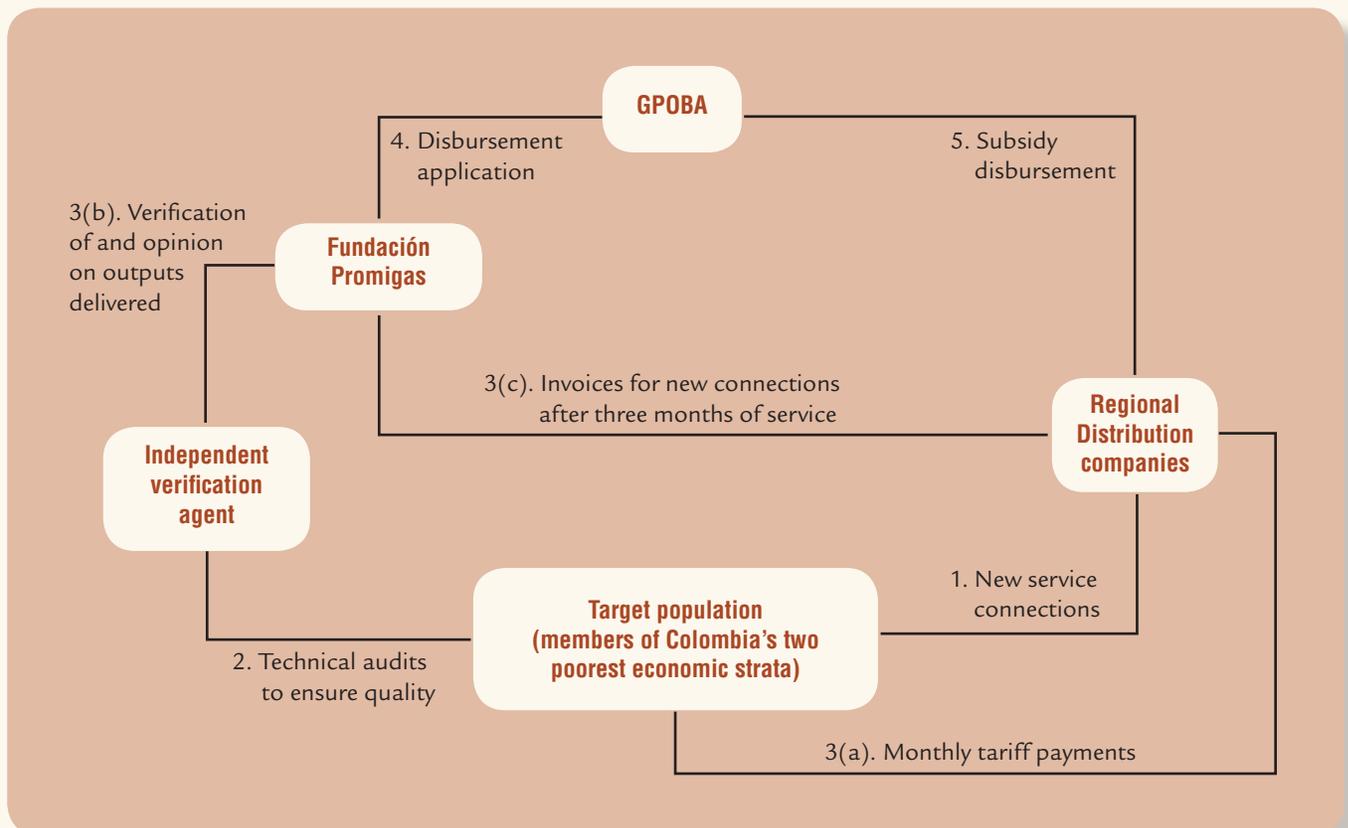
### Making sure good work is done well

To ensure that money spent delivers tangible benefits to those in need, GPOBA has made funding contingent on three primary criteria:

- ◆ Proof that each newly connected household belongs to one of Colombia's two poorest socioeconomic strata.
- ◆ Certification and inspection of new connections, which must be able to support a natural gas stove (to be provided to each eligible family at no additional cost).
- ◆ Proof that newly connected households have obtained (and paid for) service for at least three months.

Fundación Promigas will evaluate the impact of the project annually, monitoring average house-

Figure 1 Flow of funds and accountability in the project



hold consumption of natural gas, savings resulting from the new in-home connection, and satisfaction with the service. In addition, Fundación Promigas will engage an Independent Verification Agent (IVA) comprised of technical consultants to audit project expenditures and randomly inspect the quality of new connections.

## Assessing results

By June 2007, 16,632 new natural gas connections had been constructed, verified, and successfully billed for three months—representing more than US\$2 million in GPOBA subsidies that are benefiting poor families in Colombia's Caribbean coastal and south west regions. GPOBA expects the remaining 18,368 connections to be completed before the end of 2008, to reach the project's goal of 35,000 new connections. Upon the completion of this project, GPOBA will have contributed US\$4.9 million in one-off subsidies.

Because the project clearly targets poor households and delays payment until measurable outputs are realized, each GPOBA-sponsored connection represents an efficient and effective use of funds. Moreover, because families make significant contributions to the new service, ownership of the project's achievements remain at the local level.

Some benefits are even more tangible. The switch to natural gas for cooking purposes will enable participating families to save about half a month's income

each year. And it will enable them to avoid the dangers associated with using other fuels in the home.

## Conclusion

The project serves as a pilot program, demonstrating a model that regional gas distribution companies can replicate throughout Colombia to speed access to piped natural gas for poor households. By transferring performance risks to privately held regional distribution companies, GPOBA's output-based subsidy approach provides incentives for quality work and timely project completion. GPOBA's effort in Colombia is an example of how output-based aid can increase accountability and leverage the strengths of private firms to produce tangible results.

## References

- World Bank. 2004. "Colombia: Recent Economic Developments in Infrastructure (REDI)—Balancing Social and Productive Needs for Infrastructure." Vol. 2, "Main Report." World Bank, Latin America and the Caribbean Region, Finance, Private Sector, and Infrastructure Unit, Washington, DC.
- Yepes, Luis Augusto. 2004. "Colombia: Recent Economic Developments in Infrastructure—Sectoral Report on Gas" (in Spanish). World Bank, Latin America and the Caribbean Region, Finance, Private Sector, and Infrastructure Unit, Washington, DC.

## About OBAapproaches

OBAapproaches is a forum for discussing and disseminating recent experiences and innovations for supporting the delivery of basic services to the poor. The series will focus on the provision of water, energy, telecommunications, transport, health and education in developing countries, in particular through output, or performance,-based approaches.

The case studies have been chosen and presented by the authors in agreement with the GPOBA management team, and are not to be attributed to GPOBA's donors, the World Bank or any other affiliated organizations. Nor do any of the conclusions represent official policy of the GPOBA, World Bank, or the countries they represent.

To find out more, visit  
[www.gpoba.org](http://www.gpoba.org)

**GPOBA**  
The Global Partnership on Output-Based Aid