

# Appendix 01.

## Global Case Studies

### A1.1 Dealer and Sub Dealer Networks, Reducing Local Supply Overheads in Turkey

Aygaz is a leading private Turkish company providing LP Gas sourcing, storage, filling, distribution and after-sales service to residential, commercial and industrial markets. Complementary to its main business operations, Aygaz also produces LP Gas cylinders, storage tanks, valves, regulators and appliances. In 2004, the company had a market share of 35% with annual LP Gas sales of over 630,000 tones in cylinders alone.

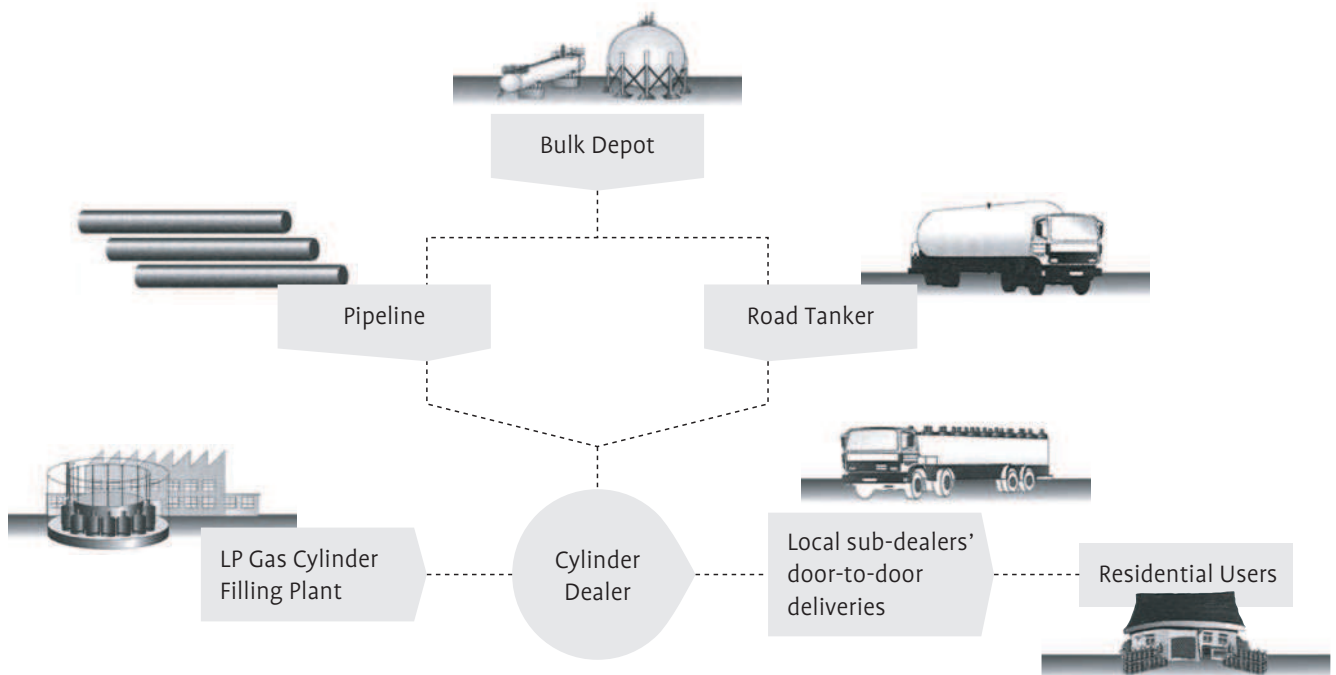
Turkey has an area of 769,604 sq km and 81 provinces in seven geographical regions. The population is over 70 million with 16 million households and 35% of the population still live in rural areas in small towns and villages. The rural population live in more than 37,000 villages. Aygaz supplies nearly 6 million households and 2 million are rural. The company also supplies LP Gas to government institutions in rural areas such as schools, hospitals, army and administrative buildings. Aygaz have over 1300 dealers operating all over Turkey with 600 in cities and 700 dealers in towns. All Aygaz LP Gas sales are via the dealer network. In Turkey, LP Gas dealers have to make door-to-door delivery of all types of cylinders except the 2 kg camping cylinders. Rural householders can buy and return cylinders in front of their doors and do not have to carry them to retail outlets.

In January 2005, the Turkish Government announced LP Gas price deregulation. The rural household LP Gas market in Turkey is highly competitive. There is no special taxation incentive for LP Gas distribution to rural households but there is a transportation cost in price index which is determined according to the distance between distribution point and the filling station. There is severe competition from natural gas in the cities and coal and firewood in rural areas. When we compare the price of natural gas against cylinder LP Gas on a calorific basis, natural gas is four times cheaper than cylinder LP Gas and electricity is 15% less. In addition, the recent changes in the tax system have seen LP Gas become liable for a 43% tax whereas natural gas is only 25%. Correspondingly the growth in natural gas consumption has averaged above 19% over the past five years.

The primary use of LP Gas in the rural household sector is for cooking. In the mountain pastures in the summer, camping cylinders are used extensively since they are portable for cooking in mountain pastures. Rural women also use the 2 kg cylinders extensively for cooking breads, jams and traditional food. In rural areas most people heat their homes with wood and coal supplemented by LP Gas space heaters particularly infrared heaters. Today, electricity is distributed to each rural household.

To meet Aygaz company commercial objectives of expanding rural household usage of LP Gas, measures are being implemented to increase the reach of their local dealer network while reducing operating overheads. After completion of cylinder filling operations in strategically located refilling plants, cylinders are transferred to local cylinder dealers by truck. In rural distribution operations, an additional step has been introduced. Aygaz uses a sub-dealer strategy in order to reach small villages. Sub-dealers are usually small scale highly locally-orientated retailers such as general stores and grocery outlets. In this model, dealers share the profit margin with sub-dealers. All cylinders are branded by the company and to manage them, Aygaz operates a deposit system.

Figure A.1 Aygaz Rural Distribution Schematic



As well as substantially increasing the accessibility by local householders to LP Gas dealers, this strategy has a number of other important benefits. The sub-dealer strategy ensures that cylinders are always available since speed and reliability of availability are key competitive factors, especially in the winter months, with snow across rural areas. It has also enabled Aygaz to embrace highly influential local traders who otherwise may have been resistant to Aygaz LP Gas and appliances. Local culture, traditions and religion are important factors in ensuring local legitimacy. Sub-dealers also manage credit with rural users and provide sales and service support.

### A1.3 Community Kitchens: Selling Cooking to Poor Families in India

The Hindustan Petroleum Corporation (HPCL) is a public sector undertaking of the government, which hold 51% of the equity. It is the second largest company in India and operates refineries and the whole liquid fuel supply chain involving petroleum products, lubricants and LP Gas. The supply and distribution infrastructure of the company consists of over 6000 retail outlets, 1647 lubricants dealerships and 2200 LP Gas dealerships spread across the country, being monitored by 185 regional offices and a total workforce of 11,132 employees. HPCL operate 40 strategically located LP Gas bottling plants. The LP Gas Business Unit is the second largest LPH marketing company in the country with sales of over 2.5 million tonnes a year and a market share of over 25%.

In 1998 the LP Gas market in India was opened to competition, although in practice this is now mainly in the industrial and commercial sectors. LP Gas supplied for domestic use in both urban and rural areas is subsidised. In 2002, HPCL started a more focused and structured approach towards rural marketing to households. Out of the total 2.5 million tons supplied annually, almost 0.5 million tonnes is being marketed in the rural areas translating to approximately 20%. The rural population constitutes 70% of the total population of India, which translates to around 700 million population and 138 million households. Currently LP Gas penetration in rural areas is estimated at 15% compared with 75% in urban areas. Most of the urban areas have been nearly saturated and due to relatively high inertia to brand switching, sustainable growth in future in the domestic segment is expected to come largely from rural markets where penetration levels are low. Rural households are therefore a key focus area for HPCL. Despite the challenges of rural LP Gas distribution, HPCL are confident that given the vast potential, once critical mass is achieved, adequate returns will come.



Figure A.4 Communal Kitchen in India

In rural households, LP Gas is mainly used for cooking, although in a few cases, it is also used for lighting. The average family LP Gas usage is 7.8 kg per month and 1.3 kg per capita per month. More than 90% of rural villages are electrified although only 44% of rural homes have a connection. Supply is normally from the electricity grid, although supplies are limited due to electricity shortages.

Despite a range of new and highly innovative supply measures for rural households, HPCL found that they were still unable to penetrate a large cross section of rural households that could not afford their own cylinders, appliances and regular LP Gas refills. They therefore pioneered an innovative scheme called the 'HPGAS Rasoi Ghar', or community kitchens. This provides a common cooking platform for one village where users have to only pay for the time they use in cooking food. It is usually based on a standard hourly charge. This eliminates both the barriers of one time high deposit and appliance costs as well as the recurring cost of refills. HPCL now operates over 1400 community kitchens across India benefiting more than 18,000 families.

Community kitchens are geared toward serving the below-the-poverty-line (BPL) families with ready-to-use cooking facilities in a common place. The space for the kitchen is provided free of charge by the village panchayat or villagers. HPCL renovates the area and provides the stoves, utensils and cylinders. Normally 10 to 12 families in a village use the community kitchen for cooking their daily meals. For taking forward this Rasoi Ghar concept, HPCL has tied up with various ground level organizations such as NGO's, various self help groups, village panchayats, who all work alongside HPCL and carry out the preliminary survey for identifying locations and for setting up the kitchens based on local conditions. HPCL then subsequently open the community kitchens along with assistance from these various local bodies.

## A1.4 Transporting Cylinders by Trucks, Jeeps, Motorcycles and Boats in Brazil

Ultragas is a privately owned company and exclusively handles LPG. It is the largest LPG marketer in Brazil and has a market share of over 24%, supplying around 1.542 million tons of LPG every year to the industrial, commercial, agricultural and residential markets across the country. The only area that it does not supply is the Amazon region. Ultragas is involved in the whole supply chain from bulk distribution, cylinder refilling and local distribution.

The Brazilian market for LPG was liberalised some years ago and is today highly competitive. There is no control of prices or subsidies. Ultragas supply some 80,000 tonnes a year to the rural residential market representing just over 5% of total sales. In Brazil, around 81% of the population is urban with 19% being rural dwellers. Firewood remains the dominant traditional household fuel in Brazil and wood represents some 38% of total household fuel usage across the country. In rural areas wood usage rises to some 50% of all fuel used by rural households. The total number of rural households is around 7.5 million with about 2.4 million households, mainly rural, still without electrical energy. Cooking is the main use of LPG in rural households although space heating and lighting are also used in certain regions but on a fairly limited scale. There is also an agricultural use for poultry rearing and crop drying.

LPG reaches almost 100% of the national territory and is a very well known fuel. Typical cylinder sizes, that are branded, are 2, 5, 13, and 45 kg. In Brazil there are 21 marketing supply companies, 25,000 distributors and 270,000 retailers or points of sale for end users including rural householders. Generally there is no differentiation between urban and rural supply arrangements. Around 200,000 of the point of sale retailers are informal. The raw material distribution chain consists of 4 companies, that produce LPG at 35 sites in Brazil in natural gas processing plants, oil refineries and petrochemical plants, and 1 importer company.

In a huge country such as Brazil that covers 8,456,510 sq km's to achieve almost 100% coverage and accessibility to LPG has entailed an extensive supply infrastructure. In Brazil virtually every type of topography is to be found ranging from mountainous regions to great planes. The number of Brazilian cylinders is about 99 million. Ultragas fills about 20 million cylinders at 16 filling sites and deliver them to distributors, retailers and final customers. They have bulk road carriers and many conventional LPG transport down to the local level distributors and to final customer. Sales in bulk can be made directly to customers with a variety of trucks. In transporting cylinders, Ultragas use a wide variety of transport, each geared to local conditions in order to ensure cylinder supply to distributors, points of sale/retailers and end users. Alternatively retailers collect filled cylinders from the distributors.

The customers can take LPG away directly from the points of sale/retailers or they can buy it from their vehicles on the street like small trucks, cars or pickups. They use barges in part of the Amazonian area with sand banks in the dry season, creating special distribution challenges. With many poor roads and mountainous terrain, they use jeeps. Motorcycles are also used to convey small quantities of cylinders in more local settings.

They use a variety of transport to return empty cylinders from clients and collect filled cylinders from the many point of sales/agents including farm vehicles and other kind of vehicles. There is a very porous and ubiquitous local supply infrastructure. This leads to challenges that Ultragas have to manage especially in the borders with Bolivia, Paraguay, Colombia and Venezuela with cross border sale of their cylinders.

## A1.7 Small Cylinder Packs for Low Income Households in Sri Lanka

Shell Gas Lanka Ltd (SGLL) is a joint venture company where Shell owns 51% of the equity with the balance being owned by the Government of Sri Lanka. With a market share of 85% and annual LP Gas sales of almost 150,000 metric tons SGLL supply the industrial, commercial, autogas and domestic market sectors. The company is involved in the importation, bulk storage, onward bulk distribution to filling plants and industrial customers; and, cylinder refilling and distribution. SGLL covers the entire geographical area of the island of Sri Lanka. At present, there is only one active competitor who claims around 15% share of the total LP Gas market.

The residential usage penetration of LP Gas is estimated at around 30% overall although it is not uniform in all provinces. Out of the eight provinces, the Western Province accounts for nearly 60% with the most underdeveloped geographical areas in the North East and the Uva Province. There are over 1 million households on the island that has a total area of 65,650 sq km's. LP Gas for residential use is a price controlled item and subject to the provisions of the Consumer Affairs Authority Act.

SGLL own branded cylinders and operate a deposit system with a refundable and non- refundable component. They have 1840 point-of-sale outlets and on average there are approximately 640 households per retailer. Rural residential customers are divided into two segments in Sri Lanka. Middle income households that have a number of common characteristics such as large extended families, decisions made by husband, mainly single story 3 to 4 bedroom houses with large kitchen and garden, mostly with grid electricity, dispersed housing, grows own vegetables, spices and fruits, owns a paddy field, listens to radio and watch TV, reads newspapers, buys provisions from village fair and many women are employed as village school teachers. In contrast, the other group, the low income households, may be characterised as being influenced by income, not brand conscious, daily wage earners, often manual and heavy duty labourers, living in single room temporary dwellings, no access to electricity (unless illegally tapped from grid), 2 to 4 children per family and dwellings very close to each other. Firewood, wood shavings/sawdust are the most popular fuels among this segment. Kerosene is also used where it is dangerous to use firewood in their small dwellings.

As a developing country there is economic growth and rural masses are gradually migrating into middle income groups. This process is facilitated by lifestyle changes and use of LPG often is a catalyst in the process. It frees up their time from gathering firewood for more productive activities. The main barrier to switching from firewood to LPG cooking is the initial investment needed to purchase a cooker, gas cylinder and the accessories. However, most households in the rural areas end up becoming 'dual' fuel users whenever the price of LPG escalates.

In order to encourage the conversion of non LPG users to a Shell Gas user SGLL have developed a special cooker package which includes a low cost basic single burner cooker, 2.3.kg cylinder, regulator, hose and clips. Certain distributors also offer this package on easy payment terms, thus bearing the total liability of the deal. The special cooker package is sold at a special price to encourage new users to switch to LPG. Although the low income household segment is highly influenced by fluctuations in the retail price of LPG, the promotion of the affordable cooker packages consisting of 2.3 kg cylinder + single burner cooker in rural areas has significantly assisted in the conversion from firewood to LPG usage for cooking among poor households.

## A1.9 Facilitating a Low Income Household LP Gas Programme in South Africa

In South Africa there are very low rates of Residential LP Gas usage per capita (1.9 kg/year) and up until 2004, no major programmes had ever been or were planned for the marketing of LP Gas in rural areas.

During April 2004, a UNDP/WLPGA Rural Energy Challenge workshop was held in South Africa, which for the first time brought all the players around the table and initiated discussion on barriers to delivery, plus what should be done. Following the workshop, the proceedings were prepared and circulated, and that is where it could have so easily ended. With the typical post conference syndrome transpiring and all delegates returning home to their normal duties and responsibilities, delivery to the poor somehow receives low priority.

Fortunately, one or two of the LP Gas industry players were starting to look at the commercial opportunity in earnest, but complexity of delivery within the South African market and a lack of a facilitating policy framework was a significant barrier. Discussions within the LP Gas Safety Association of South Africa during June of 2004, culminated in the appointment of facilitating agents to assist in the development of a peri-urban and rural delivery programme.

The first obstacle faced was formulation of a combined Industry position and the commitment of as many of the suppliers as possible. This took the form of a series of unilateral discussions to independently ascertain company aspirations, interests and agendas. Next, a draft document was prepared with an initial common position and communicated independently to potential participating suppliers, giving opportunity for confidential feedback. Following a second iteration of the document, all the participating suppliers were able to meet, agree on the contents and jointly commit to initial delivery targets. The document called "A Low Income Household Market Enabling Framework" was presented to the department and Minister of Minerals and Energy.

Next, extensive work was carried out, formulating an implementation framework under which the participating suppliers would be able to agree on what would be delivered, together with the way results would be measured and reported. The actual delivery models, operational matters and market areas were left entirely up to the individual players, thereby harnessing competitive commercial drive. A total of four suppliers have launched products in the market, with nearly 60 000 households switched to LP Gas under internal supply company pilot projects.

Further efforts were made to raise a suitable appliance grant subsidy to help customers to switch to LP Gas. A commercial route was followed with a demand side management proposal to the electricity utility, whereby the roll out of LP Gas cooking and water heating appliances would switch households from using electricity or prevent those on traditional fuels from switching to electricity.

In parallel there have been ongoing interfacing activities with the Department of Minerals and Energy. At the Annual budget speech in April 2005, the South African Minister of Energy specifically referred to the proposed programme. The last hurdle to be overcome before the entire programme launches hopefully in November 2005, is final agreements between the Industry and the Ministry of Energy.

Throughout the process credible impartial facilitation has been central to the establishment of this private public partnership, together with the promotion of a common vision.