

Lydec (Suez): Temporary Electrification of Shantytowns – Casablanca, Morocco

Summary

In 1997 Casablanca-based Lydec, a branch of the worldwide energy – water and waste services group, SUEZ, was charged by the Urban Community of Casablanca with managing the Casablanca electricity, water and sewage networks.

In Casablanca, more than 400,000 people live in slums, with no access to electricity and minimal access to water and sanitation. The first stage of the project – electrification - is detailed here, as priority was given to electricity provision due to the growing demand of the population. Cost-effective technologies were put in place and an appropriate tariff structure was defined in close relationship with local communities, neighborhood organizations and municipalities. Neighborhood associations of local inhabitants and private electricians were organized to become responsible for the street electricity supply for 20 houses as well as services ranging from technical management to bill collection. The company provided the materials and technical assistance, and local communities were able to reduce the cost of the project by providing labor.

So far, about 110,000 people have benefited from this program in about 40 districts. Work is on progress for 100,000 people spread over 45 districts. The innovative financial scheme that has been designed provides a sustainable economic system, based on the inhabitant's economical reality and allowing flexibility. The introduction of energy has also facilitated the creation of SMEs, and the new energy technologies introduced are helping to avoid the use of more polluting traditional energy sources like gas and small generating motors, reducing effect on health and environment. In addition, illegal connection have significantly decreased and thus, electrical risks and physical – often– deadly accident. This approach will be replicated for water and sanitation, with pilot projects planned in 2002.

Introduction

Company Profile

Suez is a provider of energy, water, and waste services. As a worldwide services group, Suez has locations in 130 countries and 190,000 employees. Its mission is to deliver the essentials of life in a sustainable way, particularly through public/private partnerships. Lydec is a Ltd company ruled under Moroccan law with 3600 employees. Its shareholders are SUEZ (35%), ELYO (24%), EDF International (18%), ENDESA International (18%) and AGBAR (5%).

Country Profile: Morocco

The Kingdom of Morocco lies on the northwestern corner of Africa below the Strait of Gibraltar and forms part of the North African

Region. The capital city is Rabat and other major cities are Marrakesh and Fes and the ports of Casablanca and Tangier. Over 30 million people live in Morocco where GDP is \$105 billion, and \$3,500 per capita. The official language is Arabic, however various Berber dialects are spoken, Spanish is also spoken in the north, and French is widely spoken in business, government and academic circles.

Morocco faces the problems typical of developing countries - restraining government spending, reducing constraints on private activity and foreign trade, and achieving sustainable economic growth. Drought conditions depressed activity in the key agricultural sector and contributed to a stagnant economy in 1999 and 2000. Long-

term challenges for the country include: servicing external debt; preparing the economy for freer trade with the EU; and improving education and attracting foreign investment to boost living standards.

Low income areas in Casablanca

Casablanca has 4.5 million inhabitants. Its population increased considerably in the past century (up from 20,000 inhabitants at the beginning of the 20th century). During this time many shantytowns were created - at first in the city's periphery, but over time they have become incorporated in the urban fabric. Several projects were initiated to reduce these illegal settlements, however, they met with little success. As a consequence, there are today more than 400 shantytowns - varying from a few homes to

5,000 households - in the perimeter of Casablanca, hosting a population of 400,000 inhabitants.

Water, sanitation and electricity in Casablanca's slums

In these neighborhoods, drinkable water is accessible from public standpipes, and absorbing wells or septic tanks are used for sanitation. Precarious networks set up either by the communes or by the population, that generally discharge wastewater in their natural surroundings, are also used.

Electricity is not provided to these neighborhoods, except for public lighting set up in some cases at the initiative of the communes. This lack of service has resulted in the creation of many illegal connections to surrounding networks. This has led to a number of accidents, in some cases fatalities.

Project Drivers and Objectives

The Casablanca Urban Community (CUC) that comprises 27 municipalities is in charge of the public services that are common to all municipalities (i.e. water, electricity, sanitation, main roads and their lighting, solid wastes, sport equipment etc).

In 1997 the CUC unanimously voted for the delegation of Casablanca' services of water, electricity distribution and sanitation to Lydec. In addition there were 12 peripheral communes that also supported this management contract.

Following the decision of the CUC, and the signing of the 30-year contract, Lydec took charge of the distribution of electricity, water and sanitation services in Greater Casablanca commencing on August 1st 1997.

The main objectives of the contract were to:

- Increase the individual connections rate
- Increase the customer service level
- Invest almost US\$ 3 billion
- Find a quick solution for Casablanca's sewage and drainage problems
- Implement a specific program for low-income neighborhoods

A population demand analysis conducted, identified a high need for electrification of the low-income areas. As a result, this was given priority for the first stage of the project commencing in 1998. This was largely attributable to the need to eliminate the major risks associated with the illegal connections being made through existing electricity networks.



The main objective of the electrification program was to provide electricity to 30,000 households in the shantytowns of Casablanca, using cost-effective technologies and an appropriate tariff structure defined in close relationship with local communities, neighborhood organizations and municipalities.

Given that these shantytowns were in fact illegal settlements, and the government's re-housing program was not effectively relocating a large proportion of people in the immediate future, temporary grid connection was chosen as the most appropriate and cost effective means of providing electricity.

Project Detail

The first stage of work centered on the provision of electricity to Casablanca's shantytowns. This was based on a system of extending the main electricity grid via temporary connections on a street-by-street basis to serve each house in the street. Under this project suggests a temporary network was set up, pending the achievement of public re-housing programs. The facilities could then be removed upon the request of public authorities.

The structure of the project is such that primary network are established by sub-contracted local enterprises. Private electricians then set up the individual street networks that connect each house. An elected street representative is responsible for managing the connection and electricity supply once established.

Lydec provided the necessary materials, such as the connection lines and the meter boxes. They also trained the electricians and street representatives and monitored the quality of the work being done in each area. The role of the company was be divided into two main areas:

- Managing the construction of grid connections
- Organizing implementation of street networks by private electricians under street representative authority

The investments were shared between Lydec and the inhabitants who pay 1550 DH (US\$130) per connection for access to service. On average, each neighborhood association became responsible for the street electricity supply for 20 houses as well as services ranging from technical management to bill collection.

Project phases

The first stage of the project was the identification and analysis of the context, the definition of the policy, and the technical and financial options. In this pre-implementation assessment phase, the needs of each district (up to 9,000 inhabitants) were studied in stakeholder meetings with the local authorities and local organizations. The needs analysis demonstrated that the expectations of inhabitants for electricity were very strong.

As a result planning activities were undertaken in consultation with the communes' authorities to establish the priorities for each neighborhood. This focused on identifying the extent of electrification needs, and the

institutional involvement of each neighborhood in the project.

For each neighborhood, the next stage was directed at developing awareness and understandings of the project within the commune. Meetings were held to present the program and provide information to representatives of the commune, elected members of the council and key neighborhood representatives. Following this, additional studies, such as a census, were conducted. To accelerate implementation a number of local consultants were engaged to carry out these studies.

The census was conducted by specialized Lydec teams, with the support of local elected representatives, to make evaluations of individual households. During this exhaustive census the project was explained to each individual. This aimed at answering all the questions that people had, and to ensure that the same level of information was provided to all.

Within each community a representative from each street was elected to assume responsibility for the provision of electricity to each street. Guided by local elected representatives, the community then chose their street representatives (respectable personality, educational level and renowned honesty were the key criteria for

selection).

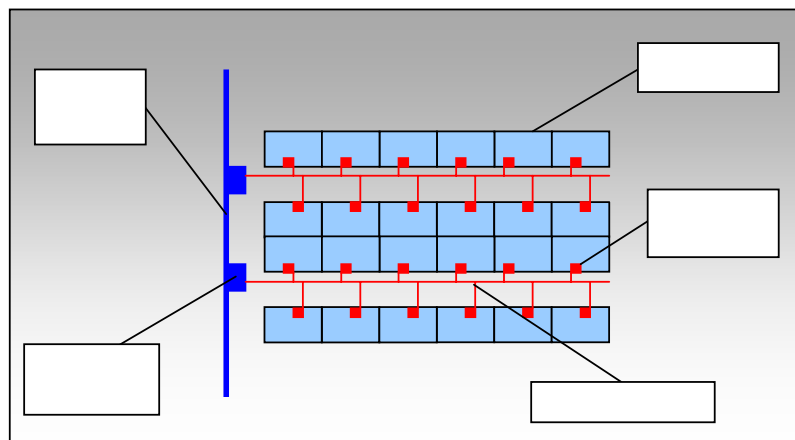
This street representative then became responsible for managing the network implementation in the street. Once the connection established, he/she became responsible for monitoring individual meters, issuing bills and collecting payments. She/he also ensured the network was functioning well and coordinated repair activities. This role generally constituted a part time job for the representative.

Technical and managerial assistance

Lydec provided materials and technical assistance to ensure standardization and the effective management of the supply networks over time. The company offered training to both the electricians and the representatives from each street. Electricians were trained in how to establish connections to the grid and provided with the necessary equipment to do so.

Technical guides were also provided. Street representatives were trained in managing the electricity supply once established. This included identifying problems with electricity supply, reading electricity supply meters and collecting monies owed from each household.

They were provided with a basic



training in electricity and safety, and with the work tools that were necessary to their activities.

Project Outcomes

To date, the project has seen 17,000 households - approximately 110,000 people - receive electricity.

Social and environmental impacts

There has been a significant improvement in living conditions by those now receiving electricity as a result of this program. Electricity is providing improved conditions for children's educations in shantytowns - children are now able to study inside during the evening, whereas before they would use candles or sit under streetlights. Plus, families that used candles and gas lamps for lighting in the past are now able to avoid the frequently occurring accidents such as burns.

The presence of television sets (often linked to a satellite receiver) has also increased considerably in these neighborhoods, providing these populations, that have for so long been marginalized, a window on the international environment.

Previously, many households were equipped with small generating motors that resulted in considerably high noises levels and air pollution. Even worse for the environment was the use of trucks batteries (24 Volts) to run television sets by those that could not afford the motors. As a result of the temporary grid connections a great deal of chronic air pollution is being

avoided, which in turn is contributing to a reduction in the number of respiratory diseases, such as asthma and bronchitis. In addition, as a result of this project there has been a considerable reduction in the number of illegal connections and the associated safety risks.

Moreover, this project allowed the creation of community networks, encouraging dialogue that is helping these communities develop institutional capabilities. In particular, the streets' representatives who manage electricity have become new social intermediaries.

Economic impacts

Inside the neighborhoods, many production and commerce activities (i.e. micro- enterprises, such as hairdressers and clothing outlets) have been created as a result of the electrification of the zones. This is enabling integration of the shantytowns into the city's economic fabric.

It is estimated that 200 jobs have been created in shantytowns for the street network set up and maintenance activities. 400 jobs were created in order to carry out studies and set up the main networks from which the street networks were extended.

In addition, the electrification cost is lower than the price of traditional power sources that was unable to supply power permanently to electricity powered household devices, such as refrigerators.

This project has seen a reduction in households' energy budget, from 200 to 300DH/US\$17 month (candles, batteries, butane gas) to about 70 DH/US\$6 month for payment of electricity

consumption. The global annual economy range from 30 to 50 millions DH (US\$2.5- 4.2mil) for the 17,000 households already connected.

Conclusion

Continuous and successive improvements have been made in the duration of the project to date. The different principles that were conceived and elaborated during the project have been integrated into Lydec's functioning mechanisms and were assimilated by its employees.

In addition, documentation of this project has made this an adaptable product to other contexts and services.

Three years after the beginning of this experience, the company has noticed, for example, a strong request for information from other utilities in Morocco, other developing countries and international institutions such as the World Bank.

This approach is soon to be replicated for water and sanitation in Casablanca's shantytowns.

Project Challenges

Gaining local support

In the early stages of the project the challenge was to gain people confidence. Results have to be shown very quickly to prove the reality of the project.

Gathering information

Census phase is one of the most important. People give right information or figures when they know the project in details and when they perceive real benefits from real concrete projects.

Timing

While it took some time to convince people that the service would be delivered and organize the networks, once the project did receive community acceptance and there was evidence of results, the demand for the service increased considerably. With this demand for the service came the expectation that it could be delivered immediately; realistically establishment of the networks took 3-4 months.

Local competencies

It was essential that there was a high quality of work when establishing the connections to deliver the electricity. It was vital that this was emphasized and that representatives sought out the most appropriate people to do the work.

Success Factors and Lessons Learned

Shared management

The traditional mission of a public services supplier, which consists in serving every customer, becomes very difficult and costly in slums. Gaining access can be difficult, and identifying homes is an extremely delicate matter for anyone stranger to the areas. In the case of individual supply, this leads to operation difficulties and to excessive costs that are not affordable by the low-income population.

An alternative, that is likely to overcome these hurdles, is a structure of shared management. This principle was adopted here in the form of a collective of sub-entities, managed by a

representative chosen by the inhabitants.

Community involvement

In order to make the best possible adaptation to the expectations of the community, involvement of community members in the project's conception was vital. In this instance, success was enhanced by having the community define both the level of service that it wished to receive, and the necessary commercial and financial modalities to set it up. Community representatives were the projects' keystones.

As gaining access to the shantytowns was difficult for people strange to the areas, these representatives facilitated the initial access. During implementation they acted as driving forces inside the neighborhood as well as communicating between Lydec agents and the inhabitants.

Cost reduction

In order to offer appropriate services that fit with beneficiaries' financing capacities, it was imperative to reduce costs. It was also necessary to reduce the investment costs. This was made possible through the delegation of a part of the work to the

neighborhood electricians whose expense structure is lower than those of a larger sized company. In addition, adaptation of standards to the town's architecture enabled cost reductions and the use of locally made equipment; such as frontage supports instead of 9 or 11 meters posts.

In a project to increase access to public services, even for the poorest, exemption from payment is never the best solution. The objective should be instead adaptation of the financing scheme based on an analysis of the beneficiaries' willingness and ability to pay for the given service.

Adaptation of equipment standards

In this kind of projects, Lydec estimated that it would be necessary to redefine technical standards to be specifically adapted to the neighborhoods.

Normally high standards are developed in accordance with the needs of all customers (residential, production and commerce activities etc). However, in these neighborhoods the project's success was centered on meeting basic needs at a low cost.

Number of electrified households (mar 2002)	17.000 households (110.000 people)
Engaged works or studies	15.000 households
Objective as to the end of 2002	25.000 households (160.000 people)
Global intended investment cost (30000 households)	DH 80 million (US\$6.6 million)
Achieved investment	DH 40 million (US\$3.3 million)
Expected annual turnover in 2002	DH 24 million (US\$2 million)
Estimated number of created jobs	600
Price paid by beneficiaries for service access	50DH/month (US\$4.16 p/month)
Reduction of annual energy costs for clients (US\$2.5-4.16 million)	DH 30-50 million/year

