

Photo: Charcoal stove

CASE STUDY - Senegal

Impact of the Removal of Subsidy on LPG

The Case of Dakar in Households, Small Production Companies and Market Services

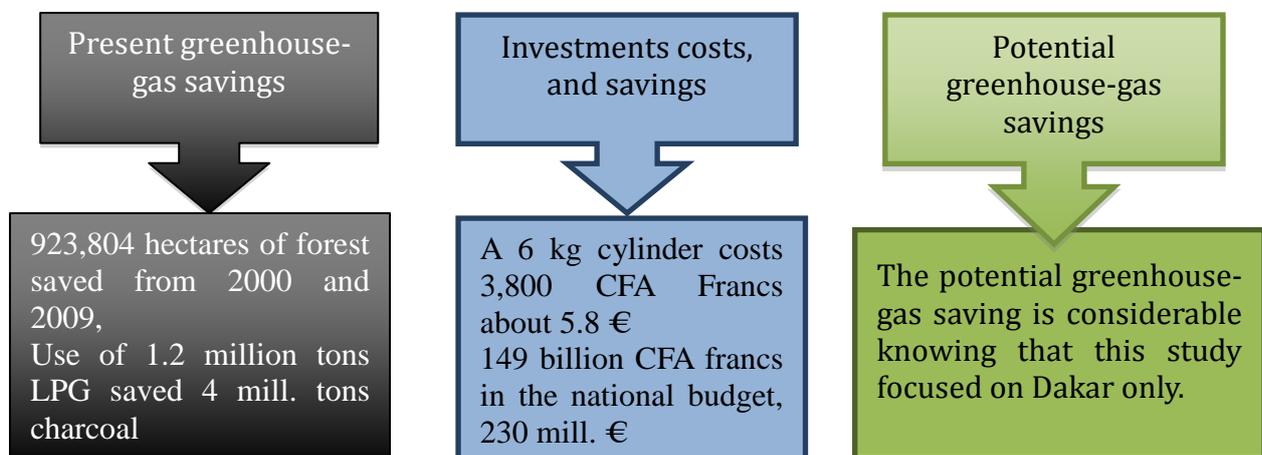
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Summary

This case study on a programme promoting butane gas, a process called 'butanisation' in Senegal, and specially the impact of the removal of subsidies, is to show the process of large-scale distribution of butane gas and how the subsidy reform affected household behavior as well as small the activities of production companies and of market services. The study shows that the butane-gas subsidy policy initiated in Senegal for three decades has produced satisfactory results both in terms of the promotion of a new clean energy and in preserving the plant cover. This policy brought savings in the national budget by avoiding the expense of reforestation of degraded forests.

At the household level, the removal of gas subsidies has caused a return to charcoal, which seems cheaper, with a utilization rate increasing from 77.8 % to 90.2 %. Thus, there has been an increase in expenditure for the acquisition of cooking energy. The share of cooking energy in food expenditure increased by 3.7 %, while at the same time the share of LPG in energy expenditure has declined by 11.2 %, which is due to purchase by households of small quantities of charcoal. The removal of the subsidy has also contributed to the deforestation of nearly 77.4 hectares of forests from 2009 to today. Thus, the return to charcoal also triggered a return to improved stoves.

It is therefore recommended to develop strategies to supply the domestic market with clean and affordable energy solutions for cooking with stable prices.



Presentation of the Case and the Context

The complete removal of the subsidy to LPG by the State of Senegal in 2009 put an end to the policy of 'butanization', that is to say, the promotion of butane gas as clean energy and preservation of the vegetation cover of the country, which was seriously threatened by logging.

So it is important to investigate and identify the direct and indirect effects of the removal of subsidy, including on households. It is in this context that this case study aimed to analyze the impact on the poor in urban and peri-urban areas, especially on households, small production companies, and merchant services. Importantly, this case study will show how the lifting of the subsidy influenced access to LPG, forms of energy, and energy equipment. The objectives of the study are, among others, to evaluate the effects of the subsidy removal and then to make recommendations to stakeholders and policy-makers.

The ultimate goal of energy policies initiated in Senegal is to satisfy national energy needs as well as to comply with the acts and decisions adopted within the framework of international and sub-regional cooperation (CILSS, UEMOA, ECOWAS, etc.). Since 1998, the energy sector has undergone several reforms.

In the area of domestic energy, given its fairly specific nature, a policy strategy was also developed in 2008. Its purpose was to promote the development of the sub-sectors of domestic fuels and rural electrification in view of their economic, social and environmental impacts. It aims, among other objectives:

- to integrate logging into a system of rational management of forests,
- to promote effectively other alternative energies,
- to rehabilitate the institutional, regulatory and tax framework in the light of past and / or current experiences, and
- to capitalize on experiences for dissemination of best practices.

The introduction of the subsidy for butane gas was undertaken in Senegal since 1974 mainly in order to reduce pressure on forest cover, a traditional source of energy for cooking (wood and charcoal). It was a measure to extend the use of butane by users from all socio-economic groups because of the massive use of traditional biomass.

Socio-Economic impact: The use of butane gas allowed avoiding the expense for reforestation of degraded forests due to the production of charcoal and firewood.

Environment impacts: The forest cover was preserved to a great extent by the use of butane gas.

Link to Climate Change and Analysis of the Effects

In terms of impact on the preservation of vegetation and in the fight against climate change, consumption of butane gas amounted to 1.2 million tons between 2000 and 2009. It is supposed to have saved nearly 4 million tons of charcoal.

This gives a savings of CO₂-emissions of around 1.4 million tons/year, if the wood harvest is depleting forests and there is no re-growth of the wood used for charcoal. Since there is deforestation in Senegal, the reduction of charcoal use can lead to reduction of wood use to a more sustainable level, where re-growth is possible on the level of the wood harvest.

The CO₂ reductions are estimated with the assumption that use of 0.12 million tons of LPG/year creates 0.4 million tons of CO₂/year, while use of 0.4 mill. tons of charcoal/year creates 1.2 million tons of CO₂/year and the production of charcoal from wood creates additionally 0.6 million tons of CO₂/year. The emission reductions are then around $1.2 + 0.6 - 0.4 = 1.4$ million tons CO₂/year.

The relation between the budget costs and the CO₂ savings are that the annual subsidy budget of CFA Franc 16.5 billion (€ 25 million) led to savings 1.4 mill. tons of CO₂ from charcoal, equal to 18 €/ton of CO₂, and to related reductions in deforestation.

On the economic plan, the use of butane gas has led to savings in the national budget by avoiding the expense for reforestation of degraded forests due to the production of charcoal and firewood.

The comparative analysis of the relative changes in consumption of cooking energy showed that between 1997 and 2004, there was a fluctuation in the consumption of wood products and a continued increase in butane gas. This change in forest products is the result of the implementation of a new policy of rational management of forest products by setting annual harvest quotas, and for butane gas, it is linked to the policy of promoting LPG in households.

However, the removal of the subsidy resulted in a significant change in the mix of energy for cooking in households, the overall rate of use of butane has experienced a recession from 97.4 % to 85.2%, with coal and wood that have increased from 77.8% to 90.2 % and 12.8 to 16.8 %, respectively. Behavior change has resulted in a return to coal and firewood at the household level. It also means that coal increased in the scale of importance of energy cooking.

Thus, the removal of the subsidy has had effects on the different uses of domestic energy. It has resulted in a change in the behavior of households with regard to the offer of energy services. Despite the tax exemption granted to butane as an accompanying measure, the transition to this product has been discontinued especially among the poor, who turned back to coal, a move that was mainly dictated by their financial means, since they can buy small amounts coal.

The removal of the butane gas subsidy has also had negative effects on the forest cover. It has led to the resurgence of charcoal and firewood. At the level of small production companies and commercial services, the removal of the subsidy was characterized by a reduction in the monthly consumption of butane gas.

Lessons and Recommendations

The 'butanization' policy initiated by Senegal put in coherence two key sectors of our development, namely the energy and forestry sectors. The intent was to meet the energy needs of the population while preserving forest resources through increased involvement of local communities, and thus to fight against desertification and climate change.

From 2000 to 2009, consumption of 1.2 million tons of LPG helped preserve 923,804 hectares of forests and the economy of 149 billion CFA francs on the national budget, that is, 16.5 billion per year (corresponding to the annual amount of the grant).

The removal of the subsidy was marked at the household level by the return to charcoal, which seems cheaper because it is bought in small quantities. The rate of use of charcoal has increased from 77.8% to 90.2 %, an increase of 12.2%. There has also been a change in

the priority given to cooking energy with the fall of gas as the main energy, and the rise of the position of the charcoal.

Despite the tax exemption (VAT and custom duties) given to butane, the transition to this product has been discontinued, especially among the poor. These have switched to the use of charcoal, given their limited financial resources and the opportunity for the acquisition of the wood-fuel in small quantities.

The main recommendations are as follows:

- Developing sourcing strategies of the national market through economies of scale will help reduce the cost of LPG by improving national logistics;
- Extend the mission of the Special Support Fund to domestic energy fuels such as butane gas;
- Study the possibility of return to the subsidy for the 2.7 kg of LPG through the establishment of technologies that are suitable for local cooking habits by industrializing the production of accessories;
- Review the chain of distribution of butane gas;
- Promote the concept of 'energy shops' for the local supply of gas;
- Promote energy efficiency in poor households as well as in small production companies and commercial services in urban areas with a view obtaining definitive transition to butane gas;
- Promote the use of improved cookstoves and alternative energy sources such as biogas in the households.



Photo: Small biogas plant