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KNOWLEDGE BRIEF STIMULATING ENERGY DEMAND IN LOW- AND MIDDLE-INCOME COUNTRIES

What can history teach us about stimulating energy demand?

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This Knowledge Brief makes up part of a series of three exploring issues of electricity demand in low- and middle-income countries, which can be read together or as self-contained pieces. This Knowledge Brief describes historical and contemporary strategies from around the world that have been used to increase demand [here](#). The first Knowledge Brief examined the key barriers to boosting electricity demand in sub-Saharan Africa (SSA) and is available [here](#). Readers can learn about potential solutions in the third Knowledge Brief, which is available [here](#).

NOTE ON METHODOLOGY

This series of three Knowledge Briefs is based on 10 semi-structured interviews with energy sector stakeholders with experience and expertise across SSA – particularly Rwanda, Kenya, Ethiopia, Uganda, Zambia and South Africa – and a synthesis of the existing literature. The interviewed experts included academic researchers, practitioners, and consultants and representatives of electric utilities, private sector energy companies and NGOs. Where the evidence stems from literature, relevant references are cited. All other statements throughout the series are supported by the findings from the expert interviews. For readability, those findings are generally not attributed to individual experts in the text.

Key Messages

- Countries with universal access to electricity and high levels of consumption have historically undertaken steps to stimulate demand;
- Raising awareness of electricity and its uses among connected consumers has been prioritised in the examined countries;
- Electric appliance demonstrations and marketing have been supported by utilities and electrification partners in Europe and the US, helping boost household electricity demand;
- Utility-enabled financing schemes have been successful in boosting affordability of appliances across Europe, Asia, and Latin America;
- Public service provision (including electricity access) which targets households' socio-economic wellbeing has unlocked electricity demand in China;
- Dedicated business development support to small and micro enterprises has encouraged productive uses of energy in Indonesia and Peru.



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Introduction

Numerous high- and middle-income countries have undertaken interventions to stimulate demand in their electricity sectors. As a result, in many such countries, access to electricity is universal and electricity demand is high. Interventions were typically initiated when electricity was a relatively new service, and households and businesses did not consume much electricity (eg [Woolf, 1987](#); [FEPC, ND](#)). As explored in the [first Knowledge Brief](#) in this series, countries where electricity has been extended to most of the population in the last few decades have often struggled with limited uptake and consumption (eg Kenya ([Tesfamichael, 2020](#)); India ([Khosla, 2018](#))). Rural areas have consistently lagged behind urban areas, both in terms of connections to electricity and lower levels of demand ([Ritchie et al., 2024](#)).

There are valuable lessons that can be learnt from the approaches and initiatives various utilities have applied to boost demand, and thus increase their revenues. Through a literature review, we have identified five examples from different time periods and regions:

1. Germany and France during the 20th century, where electrical **appliances** were at the core of marketing strategies to boost electricity consumption.
2. The United States of America (USA) and its rural electrification efforts in the 1930s and 1940s, which came with a significant educational component to raise **awareness** of electricity uses and benefits.
3. China in the 1990s and beyond, a country which has been experiencing growing demand and rapid economic development, and one which has thought strategically about how to absorb its excess manufacturing goods into the local

economy while expanding **access to public services** to boost demand.

4. Indonesia and Peru, which undertook a Business Development Services approach, stimulating demand by conducting dedicated **outreach programmes** focusing on **productive uses of electricity** to small and micro enterprises.
5. Colombia from the 2000s onwards, an example of how utilities and loan providers can design socially orientated programmes to facilitate **access to financial services** for increased uptake of electrical appliances and improved living conditions for low-income households.

These strategies provide insights into how electricity demand stimulation has been supported in different countries and regions at different stages of their economic and social development. These examples, briefly described below, can offer valuable learnings for countries seeking to incentivise demand, including in SSA. While having the potential to inform strategies to tackle the demand challenge, the five case studies should not be seen as blueprints, but rather as ideas that could be adapted to specific country contexts.

Marketing strategies in 20th century Germany and France

Between 1910 and 1970, Bewag, the German utility, built a close relationship with its customers by placing electricity consuming appliances at the core of its marketing strategy. It did this by collaborating with appliance manufacturers whom Bewag supported with their marketing strategies ([Mollers and Zachmann, 2021](#)). For example, the utility promoted novel appliances, such as washers, fridges, and induction stoves, through public space advertisements, magazines, and

cookbooks. They offered kitchen fittings, relevant training, and rental schemes for appliances to entice consumers and, as a result, raise electricity consumption. These appliances were promoted with visions of modern lifestyles, leisure, and freedom – aspirations which Bewag wanted individuals and households to embrace.

In France, Électricité de France (EDF) invested in filmmaking to stimulate electricity consumption. EDF created promotional films which propagated the narrative of energy equating to prosperity and affluence between 1950 and 1990 ([Bouvier, 2010](#)).

In both countries, these efforts were challenged during the oil crises of the 1970s. Bewag adapted to the new reality and re-developed its marketing methods, loading electricity promotions with ‘green’ and ecologically responsible meanings. EDF, on the other hand, shifted from appliances towards the promotion of ways to save energy. Consumers were now given advice on how to retain abundant lifestyles by practicing energy saving behaviour (without giving up the ‘indispensable’ electrical appliances) ([ibid](#)). Promoting energy efficiency within electrification programmes will also be critical to build resilient energy systems.

However, history shows us that promotion on its own is not enough – a lesson that applies to SSA today as an increasing amount of funding goes into awareness raising and marketing initiatives. To spark these high-energy societies, it took not only promotional activities and awareness- raising among the consumer base, but also targeted training to build the necessary skills. It also required support for the development of supply chains of electrical appliances and adequate models to facilitate access, such as the German utility’s appliance rental schemes ([Mollers and Zachmann, 2021](#); [Bouvier, 2010](#)).

Consumer education and appliance loans in the US in the 1930s and 1940s

In 1936, the Rural Electrification Act was enacted in the US. The Federal Government provided loans for the installation of electrical distribution systems to rural and isolated areas of the country, with funding channelled through cooperative electric power companies ([REA, 1947](#)). As is the case with other countries, the arrival of electricity services did not immediately result in high consumption. Different activities were undertaken to promote the use of electricity. The Rural Electrification Administration (REA), for example, organised appliance roadshows to increase awareness of electricity and the new technologies that it could power, such as farming equipment, washing machines and electric cookstoves. Different appliances were displayed and newly connected households were educated on how they could benefit from them ([McCall and Santana, 2018](#); [REA, 1947](#)). Similar awareness-raising demonstrations on electric cooking have been carried out more recently in Kenya (eg [Shamba Shape Up, E-Cooking Hubs in Kenya](#)) and have proven effective in boosting uptake of e-cooking appliances ([MECS, 2022](#)).

However, as in SSA today, in the USA at that time, the high upfront cost of appliances and industrial equipment was a significant barrier. Hence, in the 1930s and 1940s, a new government agency – the Electric Home and Farm Authority – was created in conjunction with the cooperative power companies with the goal of supporting the purchase of home appliances. The Authority bulk-purchased appliances directly from producers to lower costs, and it made appliances available for purchase to the end-users with the help of loans through local cooperatives. This programme made appliances more available to rural consumers with limited access to markets while at the same time making them more affordable and accessible through the loan scheme ([Field, 1990](#)). Considering the important

role savings and credits cooperatives (SACCOs) play in SSA ([SEEP et al., 2018](#)), similar schemes could be rolled out in countries struggling with the uptake of electric appliances and in general across SSA to increase affordability of such appliances. In SSA, rent-to-own models in the off-grid solar sector could additionally offer valuable lessons learnt ([IRENA, 2020](#)).

Excess appliances and public service provision in China, 1990s and beyond

Developments in the Chinese electricity system were closely linked to its fast-growing economy, of which the manufacturing industry was (and is) a key part ([Jiahua et al., 2006](#)). During the deflation period of late 1990s, it was critical for China to boost electricity demand, particularly in the rural segment of the population, due to its size and relatively low consumption levels.

Low income was among the main factors driving low consumption, but the deficiency of public services also played an important role. This was reflected in the low demand for electric durable goods despite the excess capacities in the manufacturing sectors in the 1990s when China was experiencing an economic peak ([Rong and Yao, 2003](#)). It was advocated that the Government provide public services in rural areas to improve the country's macroeconomic standing and absorb excess capacity from the electronic industries. The motivation for Chinese utilities to drive higher electricity consumption was to absorb excess manufactured goods, thus strengthening the economy while also improving wellbeing of those outside urban centres ([ibid](#)). As SSA governments strive to build up their manufacturing capacity (eg through special economic zones such as those in [Rwanda](#), [Kenya](#) or [Zambia](#)), lessons from the Chinese example could be invaluable. They could inform the creation of partnerships between appliance manufacturers and electric utilities, and target regions with low electricity demand

and low appliance ownership. Adding financing schemes, such as the one in Colombia presented later, could add value.

Utility-provided Business Development Services (BDS) in Indonesia in the 1990s and Peru in the 2000s

In the 1990s, Indonesia's national distribution utility, Perusahaan Listrik Negara (PLN), via the World Bank, supported Rural Electrification I and II projects, and awarded contracts to 26 Non-Governmental Organisations (NGOs) to promote electricity for income-generating activities among small and micro enterprises. The main identified constraint to increasing loads and profitability was insufficient awareness of market prices and technical options among electricity users. The BDS programme, led by the NGOs, therefore focused on outreach to small and micro businesses and developed a marketing strategy for PLN, addressing issues such as a lack of information, tariff barriers, and quality of service. Studies have shown that the BDS programme assisted 66,000 enterprises and contributed to the creation of over 20,000 jobs ([Fishbein, 2003](#); [GIZ, 2013](#)).

In Peru, a similar BDS programme was launched in the mid-2000s. Through the World Bank – supported Rural Electrification Programme ([World Bank, 2019](#)). A pilot initiative, modelled on the Indonesian example, was implemented to increase productive uses of electricity in rural areas. The Peruvian BDS programme, which was also a partnership between the distribution utility and NGOs, assessed potential uses of electricity in the market and offered business development services to small and micro enterprises to highlight those opportunities. Three pilot projects, covering 4,760 micro enterprises, showed an increase in electricity use of 1,863 MWh/year ([Finucane et al., 2002](#)). In SSA, the last few years have seen several similar projects and programmes being rolled out to

support productive uses of electricity, particularly in rural areas and businesses (eg [Beyond the Grid Fund for Africa](#)). These programmes offer funding for small- and medium-size enterprises and include tailored technical assistance to improve business viability, productivity, and community impact. Drawing on these lessons from Peru and Indonesia could further inform the design of such programmes in the future.

Utility-enabled credit and appliance loans in Colombia in the 2000s and beyond

Traditional financial providers often face high costs to expand their services to low income households. Furthermore, such households may be characterised by no or limited credit households ([Waldron & Hacker, 2020](#)). In Colombia in the early 2000s, Codensa – an electric utility company – realised that the majority of its customers belonged to the lowest three economic strata (of six) ([Leon, 2016](#)). Recognising that providing electricity to households where even the basic living conditions are not met, Codensa established the Credito Facil scheme to enable its customers to access financial services and improve their wellbeing through access to household goods. Codensa initially partnered with one of the largest retailers of household

appliances in Colombia and subsequently expanded to other retailers. Customers were offered a low-interest credit card with an approved loan amount which they could use at partnering stores. Additionally, Codensa partnered with Colpatría – a bank – to continue Crédito Fácil and expand its offering of credit cards and loans (*ibid*). With high approval rates (40–50%), credit lines of \$110–\$3700, and three-quarters of its borrowers accessing formal credit for the first time, Crédito Fácil's 30-day portfolio at risk in 2019 stood at only 4.4% ([Waldron and Hacker, 2020](#)). With customer repayments also reported to Colombia's credit bureau, around 23% (~300,000) of Codensa's and Colpatría's customers were able to access other formal financial services (*ibid*). The success of Crédito Fácil in Colombia hinged on customer-centricity. Similar to China's approach, it was understood that without satisfying basic needs and enabling access to financial services, low-income households would be unable to afford higher electricity consumption. Rather, households would prioritise other competing needs. Programmes like this could inform similar initiatives in SSA. This could be particularly impactful as access to credit in SSA remains low ([African Development Bank, 2013](#); [Napier, 2018](#)).

What Can We Learn From History?

The strategies demonstrate that energy utilities can play an active role in demand stimulation. They highlight the existence of different approaches that could inform the strategies of utilities seeking to address low demand, while also noting the need for building energy efficiency into those strategies from the start. The examples presented in this Knowledge Brief also point towards some universal barriers to boosting demand that exist across contexts and regions. First, there is a lack of awareness of the uses of electricity and their potential benefits.

Second, access to appliances may be limited. Support will be required to facilitate take up. This Knowledge Brief has provided examples of how utilities can support or lead this, for example through financing, rental, or bulk purchase schemes. Third, financial inclusion is limited. This will require partnerships with stakeholders who to date have been less involved in the electrification challenge, such as appliance retailers and commercial stakeholders. [Knowledge Brief 3](#) in this series builds on these insights to identify opportunities for overcoming low energy demand in SSA.



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