

The Impact of Electricity and Water Subsidies in the United Arab Emirates

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The United Arab Emirates (UAE) has some of the highest electricity and water consumption rates in the world. A driving factor is the presence of electricity and water subsidies and their impact on the investment in efficiency, technology adoption, and implementation of best practices. Decades of subsidization have made Gulf Cooperation Council (GCC) businesses some of the world's most inefficient energy and water consumers. There is a growing consensus in the UAE that a comprehensive conservation plan (CCP) is needed. However, any successful CCP must include tariff reform as a cornerstone. The social and political issues associated with tariff reform are not trivial. A comprehensive approach needs to be developed and implemented while energy prices are low and the initial impact on customers can be minimized.

Current Landscape and Barriers

Following the oil boom of 1970s, the UAE witnessed an explosion of wealth and population. The Emirates used their oil revenues to improve the quality of life of their citizens. Much of the Emirates' focus during this period was on business development rather than environmental and sustainability issues, as reflected in the emphasis on rapid growth, a prevalence of subsidies, and lax environmental regulations. For example, from 2001 to 2008, Dubai's electricity demand grew at 10% or more annually. In 2007 alone, demand soared by 17%.¹

This policy brief is a synopsis of a research paper written by the authors and included in the 2016 Emirates Wildlife Society–World Wide Fund for Nature (EWSWWF) publication: *Harnessing the Invisible Fuel: How to Unlock Energy and Water Efficiency Potential of the UAE Private Sector* (<http://uae.panda.org/news/publications/?uNewsID=265910>). Reprinted with permission. This brief presents findings from a survey of building energy and water managers in the UAE commercial sector and is intended to inform key stakeholders and motivate government agencies to accelerate tariff reform to promote conservation.



Key Policy Implications

- Subsidies for electricity and water are leading to overconsumption in the United Arab Emirates (UAE) and throughout the Middle East.
- Lack of awareness about the existence of subsidies is also a problem.
- Subsidies are part of a much larger interconnected network of barriers that have distorted price signals and limited the development of robust markets for high-efficiency products.
- Tackling these issues requires a comprehensive approach:
 - developing a federal roadmap for tariff reform to manage and inform expectations;
 - monitoring the impact of tariff reform on awareness, perceptions, and consumption; and
 - developing transparent, true-cost calculations and promoting awareness of these true costs.

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Today, authorities in the UAE acknowledge that the Emirates' breakneck pace of development has stressed natural resources and is no longer sustainable without fundamental changes to energy and water consumption. Historically, tariff rates for electricity and water in the UAE have not reflected actual production costs. Therefore, they create disincentives for end users to make energy-efficiency investments, resulting in an inefficient consumption of resources.* Although Abu Dhabi has introduced new utility bills that separate electricity and water and show the actual supply cost, amount of subsidy, and customer bill (i.e., the difference between actual cost and subsidy), other Emirates have not engaged in such awareness activities, nor do they disclose or publicly communicate the true cost.

To support and incentivize many of the desired behaviors required for a per capita reduction in consumption, cost-reflective tariffs are necessary. When combined with appropriate education and awareness programs, tariff reform has been shown to be an effective component of a demand-side management (DSM) strategy to reduce energy and water consumption.

Challenges to Tariff Reform

The continued presence of UAE subsidies for electricity and water, as well as the uncertainty in calculating the true size and source of subsidies, contributes to an overall environment that presents challenges for tariff reform and investments in efficiency. In 2015, the Emirates Wildlife Society–World Wide Fund for Nature (EWS-WWF) (see box)† conducted a survey of commercial companies in three Emirates (Abu Dhabi, Dubai, and Sharjah) to obtain information on their practices for energy and water management.² The survey found that two out of three businesses track their consumption of energy and water in the office space, and in general, companies perceived the size of their utility bill to be significant for their operations. Approximately half of the companies had set targets to reduce electricity and water consumption. These findings were relatively constant across corporate size, with larger corporations tending to be slightly more concerned about their utility bills. As Table 1 shows, the survey found that the perceived significance of utility bills, in terms of financial impact or social importance, was less in Abu Dhabi, where subsidies are the greatest. This finding indicates that business

EWS-WWF Survey

To understand the barriers to the adoption of energy and water efficiency, EWS-WWF conducted 363 face-to-face interviews with employees in commercial companies tasked with energy and water management.² The survey is the first statistically representative survey of the private sector on energy and water efficiency barriers in the UAE. Following the survey, a series of three roundtable meetings were held with a wide range of sector-specific stakeholders from the UAE to gather feedback on the issue papers to enhance understanding of what is required to unleash large-scale energy and water efficiency.

perceptions are driven by the tariff rate being paid, as opposed to the true cost of subsidized electricity and water.

Table 1. Perceived significance of utility bill

Significance variable	Dubai	Sharjah	Abu Dhabi
Somewhat to very significant	72%	92%	49%
Not significant/don't know	27%	8%	51%

Another survey finding was that the utility bills for the population were approximately 10% lower in Abu Dhabi than in Dubai and Sharjah. That tariff rates in Abu Dhabi (at the time of the study) were approximately 40% less implies that usage is approximately 30% greater in Abu Dhabi than in Dubai and Sharjah. Although this difference may be an extension of corporate economics, in that lower prices lead to greater consumption and less incentive to invest in efficiency, it could also reflect a lack of awareness of the subsidies.

Addressing this point, the survey also asked respondents about the awareness of subsidies in relation to reform. Table 2 shows the percentage of respondents that consider lack of awareness of the need for conservation—and the awareness of subsidies specifically—a barrier to energy and water efficiency. The survey found that companies in the Emirates with higher tariff rates were more aware of past subsidies and viewed their utility bills and the awareness of subsidies as more important. This could be because they feel they are already paying close to the true cost of electricity. Respondents in Abu Dhabi considered awareness less of a barrier, but those in Dubai considered awareness most important. In part, the latter finding could be a result of Dubai being more aggressive at targeting at the commercial sector with marketing/education campaigns that promote the need for conservation.

In Abu Dhabi, information on the size of companies' subsidies has been available, but as reported in the survey, it does not appear to have had a significant impact on consumption. This might be because the degree to which demand changes

* The IMF recently estimated that energy subsidies represent 13%–18% of regional GDP in Middle East, North Africa, Afghanistan, and Pakistan (MENAP) region, and that the UAE has some of the highest subsidies in the region.³

† A full description of the survey methodology, sample and findings are available at <http://www.uae.panda.org/news/publications/?258990/what-is-holding-back-the-private-sector%3F>

Table 2. Percentage of respondents that consider lack of awareness a barrier to energy and water conservation

Emirate	Lack of awareness barriers	Awareness of subsidies
Dubai	58%	28%
Sharjah	37%	23%
Abu Dhabi	33%	18%

in response to price changes has depended historically on a number of factors, including

- the ability to influence consumption (if they are leasing, what control does the company have over technology/efficiency?);
- short-term versus long-term perspectives of business opportunities and occupancy decisions; and
- the availability of resources, both financial and staff, to investigate and pursue efficiency opportunities.

Overall, the study findings indicate that because of subsidization, companies may not be incorporating fully the true cost of electricity and water. This in turn may reduce the incentives to make consumption and/or efficiency investment decisions a priority. A lack of awareness creates a barrier to adopting efficient technologies and best practices. Essentially, the low tariff rates reduce a customer’s perceived benefit (i.e., the return) of investing in efficiency, which make high-efficiency products seem more expensive, thereby dampening the market and limiting availability. Basically, even when investments make sense from a social perspective, they may not be implemented if a company perceives them as less economical.

Similarly, if the general perception is that electricity and water production are relatively inexpensive, efforts to increase tariff rates likely will be met with resistance. Recent increases in tariffs across the Emirates have helped send the proper pricing signal to end users and should have a direct impact on consumption and the amount of subsidy required by the electricity and water sector. However, because tariff reform has not proceeded at the same pace in all Emirates, the existing level of subsidy varies.

Opportunities and Solutions

In 2015, survey respondents identified and discussed opportunities and solutions to issues related to subsidies at a series of roundtable meeting held in Dubai and Abu Dhabi. They offered three main suggestions.

- *An awareness campaign to raise the knowledge level of subsidies would ensure that companies and their management/workers are fully aware that the tariff rate they are paying*

does not cover the full cost of electricity and water. Whereas most customers know that electricity and water have been subsidized in the past, they may be under the misperception that recent tariff increases have eliminated that problem. It is unclear whether the attempts to communicate the true cost of subsidies have been effective in increasing awareness of subsidies and whether increasing awareness has had a measurable impact on consumption levels.

- *Workshops and seminars would be helpful in communicating the true cost of electricity and water production.* These workshops could be linked to existing business conferences and, potentially, be a focus of the upcoming Dubai Expo 2020. Existing workshops and seminars on energy, sustainability, and green measures have been widely implemented in Abu Dhabi and Dubai, with perhaps less emphasis in Sharjah. Whether the workshops and seminars have had an impact should be further investigated to identify whether demand from the private sector has, in fact, changed. In addition, more investigation should be done on the type of content or topics the private sector would value to help them reduce consumption.
- *White paper reports to encourage energy efficiency were cited by survey respondents as being an important part of the information dissemination plan for subsidy awareness.* Public announcements about efficiency goals and targeted reduced consumptions are typically vague, and results go uncommunicated. A more robust documentation of the true cost of electricity and water and a transparent discussion of the level of subsidies and their impact on economic activity is needed. The cost-reflective tariff needs to include environmental and social externalities.

All three of the solutions identified by survey respondents have merit; however, each has already been under way over the past few years, to varying degrees. Although they are important components of a comprehensive plan, they will not drive a reduction in consumption by themselves. What is needed is the parallel documentation and public dissemination of the true cost of electricity and water and that current subsidies and unsustainable. Subsidy transparency, consistent calculation methodology (uniform across Emirates), and a statement that the UAE has a road map to move to full-cost pricing would have the greatest impact.

Conclusion

The traditional state-society relations in the UAE and other GCC countries reflect a social contract where leaders provide their citizens with the necessities of life and an acceptable standard of living. This has meant that subsidies for electricity and water, as well as other sectors of the economy, have been a historical reality (and expectation) of the population. This

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expectation has spilled over into the commercial and industrial sectors, where government subsidies have been used as a policy mechanism to provide economic growth and employment for the population. However, governments are now recognizing the negative impact of distorted price signals and that the level of subsidies are simply not sustainable.

The practice of subsidies has influenced many of the other barriers to adopting energy and water efficiency. For example, subsidies have stunted the markets for high-efficiency products by reducing the benefits to consumers and making new, more efficient technologies appear to be more costly than they are relative to standard efficient products. Survey respondents appear to believe that increasing customers' awareness of subsidies is one of the important first steps in acknowledging this underlying factor, which is a key driver for many of the other barriers to adoption identified in the survey.

However, increasing awareness alone will not be as effective as tariff reform that reduces the level of subsidies and leverages market forces to promote adoption. Increasing the awareness of subsidies requires commercial companies and their employees to be willing to act on altruistic motivations, which may be a challenge in the face of more economical alternatives. Moving beyond the promotion of best practices to inform business about the true cost of electricity—and that tariff reform is coming—is important to incentivize the corporate sector to invest in efficiency.

Another area for discussion is the continued lack of transparency and uncertainties regarding the true levels of subsidies due to differences in calculation methods, which will hinder the process of both awareness and implementation of tariff reform. To address this, the UAE must create a standardized approach to calculating the true cost of electricity and water and communicate this effectively to the public sector. Cost components of the true (full) cost of electricity and water are shown in Figure 1 along with the associated entities involved in the system. This calculation approach should include accounting for all direct and indirect subsidies included in submarket fuel prices and other government services used as inputs to production (e.g., electricity consumed for pumping water). Ideally, this true cost eventually would be tied to tariff rates. In the interim, communicating the actual subsidy being provided by the government and the full accounting of resources linked to consumption of electricity and water would help set the stage for future policy initiatives.

Figure 1. Component of the true cost of power and water

	Dubai	Components	Abu Dhabi
System payments		Supply management	ADWEA/ADWEC
	DEWA	Distribution	ADDC/AADC
		Transmission	Transco
	IWPPs	Generation	IWPPs
		Variable O&M Capital payments Fuel payments Fuel subsidies	
Subsidies		Land and other input subsidies	
		Financing subsidies	
		Externalities (CO ₂ , PM, NO _x)	

Notes: AADC = Al Ain Distribution Company; ADDC = Abu Dhabi Distribution Company; ADWEA = Abu Dhabi Water and Electric Authority; ADWEC = Abu Dhabi Water and Electric Company; DEWA = Dubai Electric and Water Authority; IWPPs = Independent Water and Power Producers.

Source: These components were identified during the subsidy roundtable meeting held in Abu Dhabi, September 7, 2015.

Finally, the extent to which activities are organized at a federal- versus Emirate-level must be addressed. Admittedly, the Emirates within the UAE are different in terms of their customer base and the resources available to invest in DSM, and they may have different views on tariff structure subsidies. Coordinated efforts at the federal level would likely be more efficient for companies working in multiple Emirates across the UAE and mitigate issues/claims of regional competitive advantages when Emirates have different tariff structures. Given the interconnected nature of electricity and water supply in the UAE, an optimal policy should be based on the conditions and trends across all the Emirates.

In summary, the barriers to energy efficiency created by subsidies is not unique to the UAE. A United Nations report on Arab countries found that “low energy prices have resulted in real economic costs, both in energy importing and exporting countries.”⁴ These subsidy policies distort prices, encourage overconsumption, and channel government funds from needed social investments. Whereas many countries are concerned about public welfare and their populations' standard of living, there are more efficient approaches for social welfare and fighting poverty besides subsidizing energy. Policymakers need to be made aware of the inefficiency, and these concepts need to be communicated to the population.

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