

OIL PRICES, POLITICAL INSTABILITY, AND ENERGY SUBSIDY REFORM IN MENA OIL EXPORTERS

Jim Krane, Ph.D.

Wallace S. Wilson Fellow for Energy Studies

Francisco J. Monaldi, Ph.D.

Fellow in Latin American Energy Policy

June 2017

© 2017 by the James A. Baker III Institute for Public Policy of Rice University

This material may be quoted or reproduced without prior permission, provided appropriate credit is given to the authors and the James A. Baker III Institute for Public Policy.

Wherever feasible, papers are reviewed by outside experts before they are released. However, the research and views expressed in this paper are those of the individual researchers and do not necessarily represent the views of the James A. Baker III Institute for Public Policy.

Jim Krane, Ph.D.

Francisco J. Monaldi, Ph.D.

“Oil Prices, Political Instability, and Energy Subsidy Reform in MENA Oil Exporters”

Abstract

Since the nationalization of petroleum sectors in the 1970s, low, state-subsidized prices of energy products and services have been a policy fixture of Middle Eastern oil producers. Starting in late 2014, however, many oil-producing governments began to reduce subsidies. Prices of fuels and services have risen in the six Gulf monarchies, as well as in Iran, Algeria, and Egypt. These subsidy reforms followed successful test cases in Iran in 2010 and Dubai in 2011, when price increases were accepted by the public with minimal backlash.

Such reforms are understood to be politically illegitimate in autocratic settings where in-kind energy is supplied to citizens in lieu of public support for the government. Initial signs show that despite high personal incomes, energy demand is sensitive to changes in price.

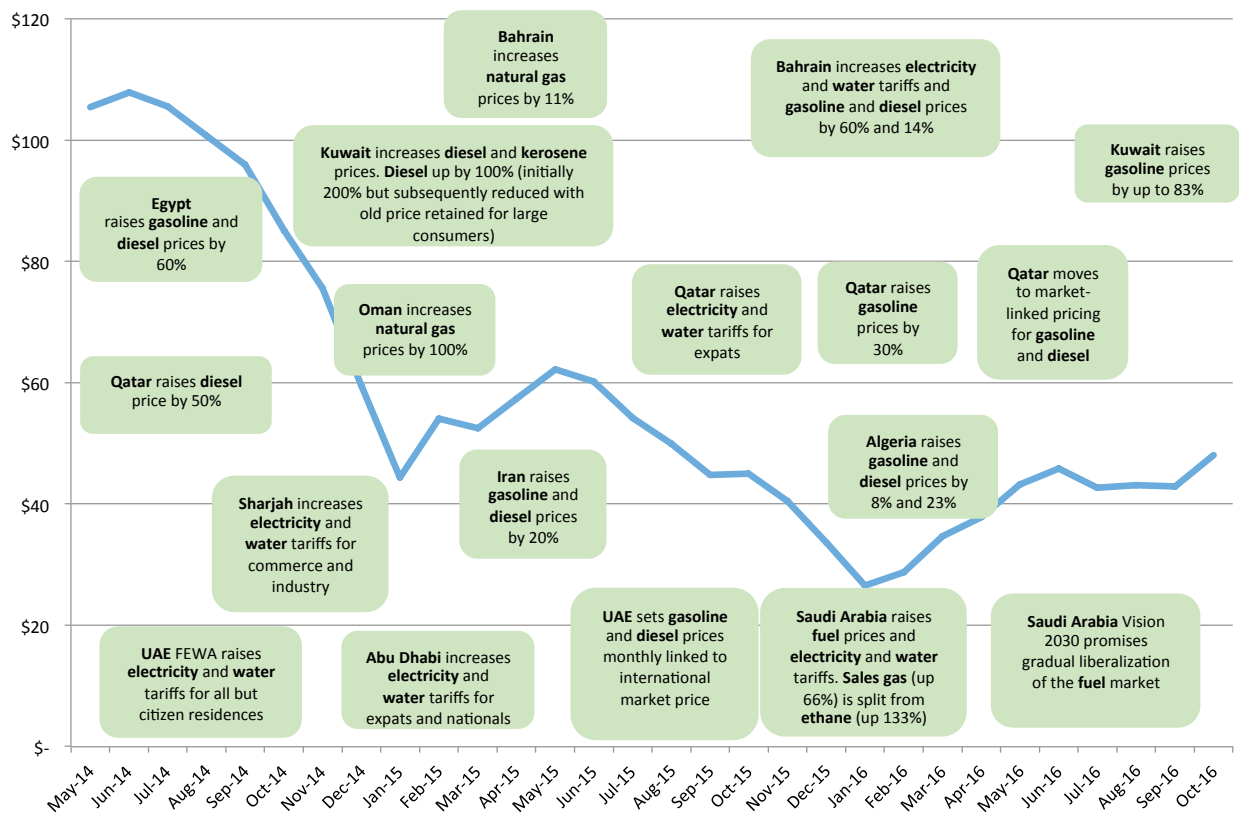
Why have so many states that previously resisted subsidy reforms decided to enact them now? What effects have the price increases had on demand? Furthermore, what do reforms say about the legitimacy of regimes that were understood to be based around subsidy provision?

We suggest that fiscal pressure from low world oil prices converged with regional instability and external pressure to enable the unprecedented reform. Energy price increases had long been advocated by technocrats seeking to avoid displacement of oil and gas exports by rising domestic energy demand. The actions signal a shift in state-society relations that challenges decades of academic and elite assumptions about the legitimacy of welfare retrenchment in autocratic polities.

Introduction

A major cross-regional reform of energy subsidies took place in the Middle East as oil prices fell in late 2014. At least 10 countries raised prices on energy products that had long been fixed by governments at very low levels (Figure 1). Among the reformers were Algeria, Iran, and Egypt, as well as the six Gulf Cooperation Council (GCC) countries—Saudi Arabia, the United Arab Emirates (UAE), Kuwait, Qatar, Oman, and Bahrain. The six GCC states are among the world's last remaining absolute monarchies, with political legitimacy of long-ruling families built around generous welfare benefits. These benefits are either funded by oil revenues or, in the case of energy subsidies, derived directly from in-kind distribution of domestically produced commodities. These states also leverage oil and gas export revenue and subsidized domestic energy within their state-society social compacts.

Figure 1. Recent GCC and selected MENA countries' energy subsidy reforms and international oil prices



Source: Lahn 2016; Baker Institute for Public Policy; OPEC.

The catalyst for the reforms is clear: the onset in late 2014 of persistently low global oil prices. Since governments in the region depend on oil revenues for up to 90% of their budgets, reduced oil revenues create pressure to reduce state spending.

However, oil prices do not explain the full story. Most of the states in question left domestic subsidies untouched during previous periods of low oil prices—most notably during the long oil bust that extended from the mid-1980s until 2003—despite pervasive fiscal pressure. When oil prices plunged in 2014, regimes responded quickly with seemingly coordinated subsidy reforms. Two of the wealthiest petro-states, Kuwait and Qatar, raised prices despite fully funded national budgets. Most of the others had crossed into deficit spending, but some retained substantial fiscal buffers.¹

¹ Some reformers had minimal fiscal buffers in 2015, including Bahrain and Oman. Saudi currency reserves were high but dwindling at an alarming rate.

Low oil prices were probably more useful in providing political cover for reforms than they were as a basis for the changes in price. Deeper concerns were also apparent. First among these was the realization that subsidies were exacerbating domestic hydrocarbon consumption, which over time was undermining the ability of Middle Eastern oil states to maintain exports. A second factor relates to external pressure from multilateral institutions. International groups have increasingly called for ending subsidies on fossil fuel—for economic and environmental reasons—and energy policymakers inside these states have aired similar views. Third, the Middle Eastern public may have grown more willing to forfeit energy benefits due to increasing concerns about regional wars and the spread of extremist violence. Incumbent governments that can provide political stability amid such turbulence are better positioned to convince citizens to make sacrifices. Fourth, leadership changes in some states handed power to younger leaders who appeared eager to reform long-standing social benefit practices that had outlived their usefulness.

At the time of writing, most price increases had been modest. Only Saudi Arabia increased energy prices across the board. In all but a few cases, post-reform prices remained significantly below world market levels. Table 1 illustrates changes in transportation fuel.

This paper documents price increases in the region and presents initial evidence suggesting that energy demand has responded to higher prices. We discuss several converging rationales that have allowed these reforms to move ahead where previous attempts had failed.

Table 1. Price changes for transportation fuel from 2015 to 2016

	Diesel (USD/gallon)			Gasoline (USD/gallon)		
	2015	2016	% change	2015	2016	% change
Bahrain	\$ 0.62	\$ 1.23	100%	\$ 0.81	\$ 1.62	100%
Kuwait*	\$ 0.69	\$ 1.42	106%	\$ 0.77	\$ 1.08	40%
Oman	\$ 1.68	\$ 1.85	10%	\$ 1.15	\$ 1.69	47%
Qatar*	\$ 1.04	\$ 1.46	41%	\$ 1.04	\$ 1.42	37%
Saudi Arabia	\$ 0.27	\$ 0.46	71%	\$ 0.46	\$ 0.92	100%
UAE*	\$ 2.60	\$ 1.85	-29%	\$ 1.81	\$ 1.77	-2%
Algeria	\$ 0.46	\$ 0.50	8%	\$ 0.85	\$ 1.04	23%
Egypt**	\$ 0.47	\$ 0.77	63%	\$ 0.38	\$ 0.69	80%
Iran***	\$ 0.31	\$ 0.37	20%	\$ 0.85	\$ 1.23	45%
* Fuel prices are linked to global market prices and adjusted monthly ** Fuel prices in Egypt increased in July 2014 ***The subsidized pricing is used for Iran's diesel						

Source: Baker Institute for Public Policy.

What Constitutes a Subsidy?

Estimating the size of an energy subsidy is a matter of calculating the difference between the domestic price of energy and the opportunity cost—meaning the best alternative price at which it could be sold—multiplied by the quantity domestically consumed. The opportunity cost for transport fuel such as gasoline is generally the international price FOB² plus the domestic costs of distribution. In the case of electricity and natural gas, when they are not exported or imported, the calculation is more complex because there is no international benchmark. It requires the estimation of the long-run marginal cost of production. Externalities like pollution and traffic should be accounted for in estimating the social opportunity cost.

In the case of a major oil exporter with significant influence on the oil markets, the evaluation of opportunity cost is more complex. For instance, a reduction in domestic demand, which allows additional barrels of exportable surplus, may not lead to an equivalent increase in exports. The reduction could also create additional spare capacity if the country decides it is optimal to increase exports by a smaller amount—particularly if policymakers feel that additional exports would result in a decline in the world oil market price and offset the total revenues generated. In general, this issue is only relevant for very large oil exporters or OPEC members that can coordinate output decisions. Saudi Arabia is a country that clearly fits this description. In such cases, the long-run marginal cost or an estimation of the future value of a barrel left in the ground might be the appropriate opportunity cost.

The Economic Case for Eliminating or Reducing Subsidies

A significant number of developing countries, including many outside the GCC and the Middle East and North Africa (MENA) region, subsidize energy consumption. In advanced economies, subsidies are practically non-existent, but in Africa, developing Asia, and Latin America they have been common, especially among oil exporters. Still, in no other region are subsidies as pervasive and as large as in the MENA, and particularly in the GCC countries. In 2010, the top 10 countries in terms of per-capita subsidies and subsidies as a percentage of GDP are all in the MENA region—except for Turkmenistan and Venezuela—and four are members of the GCC: Saudi Arabia, Kuwait, Qatar, and the UAE.

The trend to subsidize was particularly significant during the period of high oil prices that ended in 2014, because in many countries domestic prices lagged the rising international price. The International Energy Agency (IEA) estimated that in 2010, worldwide energy subsidies amounted to about \$400 billion, of which oil subsidies represented about half.³ The International Monetary Fund (IMF) estimated that total energy subsidies reached \$480 billion in 2011.⁴ About half of this total came from the MENA region. In the case of petroleum product subsidies, which were 44% of the total energy subsidies, more than half came from the MENA. Although oil exporters in the MENA subsidize more than oil importers, importers in the region have also been heavy subsidizers. This contrasts with

² I.e., “free on board,” where the seller pays delivery costs.

³ International Energy Agency, *World Energy Outlook 2010*, 2010.

⁴ International Monetary Fund, *Energy Subsidy Reform: Lessons and Implications* (Washington, D.C.: International Monetary Fund, 2013).

the rest of the world, where the countries that subsidize are largely oil and gas exporters, such as Venezuela, Nigeria, and Turkmenistan.

The widespread use of energy subsidies has been puzzling to economists who consider this one of the most wasteful forms of government intervention and spending. There exists extensive economics literature arguing that energy subsidies, especially transport fuel subsidies, are economically perverse. Subsidies are highly inefficient, as they can lead to wasteful consumption and increase the negative externalities of fuel use, which include pollution, traffic congestion, accidents, and greenhouse gas (GHG) emissions.⁵

Energy subsidies tend to reduce hydrocarbon exports since they stimulate domestic consumption and reduce the exportable surplus. Subsidies also stimulate smuggling to neighboring countries, which in some cases has been significant. The existence of subsidies tends to reduce energy investments, since they often impact the cash flow of national oil companies, which typically absorb most of the costs. Availability of subsidized energy inputs incentivizes firms to capture oil and gas rents by overinvesting in energy-intensive industries like petrochemicals or aluminum.

Energy subsidies in oil exporters typically represent a significant fiscal expense, often being higher than expenditures in health and education. Thus, eliminating these subsidies could represent a large source of state revenue. In fact, due to the inelastic nature of demand for energy, reducing subsidies is one of the most effective ways of increasing revenues without generating significant distortions. Moreover, due to the negative externalities mentioned, a well-designed tax on transport fuel consumption would increase efficiency. In addition, since transport fuel subsidies vary with the price of oil, they are pro-cyclical for oil exporters. During boom periods of high oil prices, governments end up spending more to provide subsidized energy. Fiscal policy thus exaggerates, rather than reduces, the cyclical effects. Therefore, from a fiscal perspective, reducing the subsidies and even imposing a tax is desirable.

In addition, energy subsidies are highly regressive in terms of income distribution. High-income families typically receive a disproportionate share of the subsidies. For example, it is estimated that 61% of the gasoline subsidies accrue to the top 20% of income earners, while the bottom 20% receives just 3%.⁶ However, even though the poor receive a smaller share of the subsidy, it does represent a larger proportion of their income. Subsidies are easier to eliminate if alternate compensation is directed toward the poor. On the positive side, since eliminating subsidies is highly progressive, policymakers can make the majority of the population better off by transferring a fraction of the revenues generated to them. The case of Iran below outlines such an attempt.

⁵ Ian W.H. Parry and Govinda R. Timilsina, "Demand-Side Instruments to Reduce Road Transportation Externalities in the Greater Cairo Metropolitan Area," *International Journal of Sustainable Transport* 9(3): 2012.

⁶ Javier Arze del Granado, David Coady, and Robert Gillingham, "The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries" (working paper 10/202, International Monetary Fund, 2010).

In sum, from a purely economic perspective, the rationale for eliminating subsidies is compelling. It would reduce wasteful consumption, smuggling, and the negative externalities associated with consumption. Higher energy prices represent an effective source of fiscal revenue that generates few distortions. In terms of income inequality, reforms would have a positive effect as long as the use of the revenues is more progressive than the energy subsidy, which would be easy to accomplish. In fact, a lump-sum cash transfer to every family or individual would suffice. Despite the strong economic rationale for eliminating subsidies, political calculus often presents strong incentives in the opposite direction.

The Political Economy Literature on Energy Subsidy Reform

One of the main reasons that the recent modest subsidy reforms in the Middle East have garnered attention is because these actions challenge decades of academic assumptions about political structures in autocratic polities. In the Gulf monarchies, energy subsidies have long been understood as rights of citizenship, provided by so-called “rentier” regimes in exchange for public acquiescence to autocratic rule.

Rentier state theory holds that autocratic petro-states avoid citizen participation in politics by funding national budgets with oil rents rather than by extracting taxes. Citizens who receive benefits without paying tax have fewer grounds to demand oversight of government policy.⁷ Welfare benefits, including subsidized energy, are therefore vital components of citizenship. Benefits are also the chief inducement for supporting the government.⁸ The literature depicts the social contract underpinning state-society relations as inflexible. Abolishing benefits without providing compensation is seen as sufficiently

⁷ A large body of political economy literature has made this case, under the rubric of rentier state theory and the resource curse. Works include: Hazem Beblawi, “The Rentier State in the Arab World,” in *The Rentier State*, ed. Hazem Beblawi and Giacomo Luciani (New York: Croon Helm, 1987), 85–98; Giacomo Luciani, “Allocation vs. Production States: A Theoretical Framework,” in *The Rentier State*, ed. Hazem Beblawi and Giacomo Luciani (New York: Croon Helm, 1987), 63–82; Jill Crystal, *Oil and Politics in the Gulf: Rulers and Merchants in Kuwait and Qatar* (Cambridge: Cambridge University Press, 1990); F. Gregory Gause III, *Oil Monarchies: Domestic and Security Challenges in the Arab Gulf States* (New York: Council on Foreign Relations, 1994); F. Gregory Gause III, “The Persistence of Monarchy in the Arabian Peninsula: A Comparative Analysis,” in *Middle East Monarchies: The Challenge of Modernity*, ed. Joseph Kostiner (Boulder: Lynne Rienner, 2000), 167–85; Kiren Aziz Chaudhry, *The Price of Wealth: Economies and Institutions in the Middle East* (Ithaca: Cornell University Press, 1997); Michael L. Ross, “Does Oil Hinder Democracy?,” *World Politics* 53 (2001): 325–61; Benjamin Smith, “Oil Wealth and Regime Survival in the Developing World, 1960–1999,” *American Journal of Political Science* 48, no. 2 (2004): 232–46; Michael Herb, “No Representation without Taxation? Rents, Development, and Democracy,” *Comparative Politics* 37, no. 3 (2005): 297–315; Oliver Schlumberger, “Rents, Reform, and Authoritarianism in the Middle East,” in *Dead Ends of Transition*, ed. Michael Dauderstadt and Arne Schildberg (Frankfurt: Campus Verlag, 2006), 100–13; Rolf Schwarz, “The Political Economy of State-Formation in the Arab Middle East: Rentier States, Economic Reform, and Democratization,” *Review of International Political Economy* 15, no. 4 (2008): 599–621.

⁸ Schlumberger, “Rents, Reform, and Authoritarianism in the Middle East.”

illegitimate that it would pose a challenge to the basis of the state.⁹ Retrenchment is seen as an invitation for the public to demand participation,¹⁰ or even to resort to violence.¹¹ Energy subsidies are therefore untouchable.¹²

Loss of benefits has long been understood as a catalyst for unrest regardless of governance type.¹³ This is because state provision of subsidies creates solidarity among beneficiaries who can rise up and threaten political leadership when their interests are jeopardized. Welfare societies maintain a constant potential for mobilization that raises the stakes of reform.¹⁴ The highly centralized composition of Middle Eastern regimes poses an additional obstacle to subsidy reform, since it concentrates accountability. Heads of state who push benefit reduction quickly find themselves exposed to the full force of public reaction.

Political risks are compounded by doubts about the effectiveness of price increases on reducing energy demand, particularly in settings where personal incomes are high. In the Gulf states, price elasticity estimates in the economics literature range from moderately inelastic to very inelastic.¹⁵ In general, energy demand is thought to be insensitive to price increases in the short run, since energy has few substitutes and rates of consumption are linked to existing infrastructure, which itself is based on past prices. In the longer run, demand is assumed to be more elastic, since consumers and product developers will have had time to respond to higher prices with greater efficiency.

⁹ Hazem Beblawi and Giacomo Luciani, introduction to *The Rentier State*, ed. Hazem Beblawi and Giacomo Luciani (London: Croon Helm, 1987), 16–17; Gause III, *Oil Monarchies*, 82, 61 specifically mentions state payment of citizen utility bills in this formulation; F. Gregory Gause III, “The Political Economy of National Security in the GCC States,” in *The Persian Gulf at the Millennium*, ed. Gary Sick and Lawrence Potter (New York: St. Martin’s, 1997), 61–84; Schwarz, “The Political Economy of State-Formation”; F. Gregory Gause III, “Saudi Arabia in the New Middle East,” *Special Report No. 63 New York: Council on Foreign Relations*, 2011.

¹⁰ Samih K Farsoun, “Oil, State, and Social Structure in the Middle East,” *Arab Studies Quarterly* (1988): 231; Crystal, *Oil and Politics in the Gulf*, 191–92; Gause III, *Oil Monarchies*, 147.

¹¹ Christopher M. Davidson, *After the Sheikhs: The Coming Collapse of the Gulf Monarchies* (London: Hurst, 2012), ix.

¹² Ayoub M. Kazim, “Assessments of Primary Energy Consumption and Its Environmental Consequences in the United Arab Emirates,” *Renewable and Sustainable Energy Reviews* 11 (2007): 426–46; Steffen Hertog and Giacomo Luciani, “Energy and Sustainability Policies in the GCC” (London School of Economics, 2009), 6–7.

¹³ Ted R Gurr, *Why Men Rebel* (Princeton: Princeton University Press, 1970), 338–40.

¹⁴ Paul Pierson, “The New Politics of the Welfare State,” *World Politics* 48 (1996): 143–79.

¹⁵ Academic estimates of price elasticity on various energy products in the Gulf range from zero to -0.46. See: Naief H. Al-Mutairi and M. Nagy Eltony, “Price and Income Elasticities of Energy Demand: Some Estimates for Kuwait Using Two Econometric Models,” *Journal of Energy and Development* 20, no. 2 (1995); M. Nagy Eltony and Naief H. Al-Mutairi, “Demand for Gasoline in Kuwait: An Empirical Analysis Using Cointegration Techniques,” *Energy Economics* 17, no. 3 (1995): 249–53; Paresh Kumar Narayan and Russell Smyth, “A Panel Cointegration Analysis of the Demand for Oil in the Middle East,” *Energy Policy* 35, no. 12 (2007): 6258–65; Tarek N. Atalla and Lester C. Hunt, “Modelling Residential Electricity Demand in the GCC Countries,” *Energy Economics* 59 (2016): 149–58. Dubai energy sector officials interviewed by the author estimated an average 3% decline per residential electricity user in 2011, which implies a rough short-run price elasticity of about -0.2. Data and full details were unavailable.

Alternate Hypotheses

Assumptions about the inelasticity of MENA energy demand may overlook the magnitude of price increases required to eliminate subsidies. Even at relatively low price elasticity, the price increases are so large that the resulting reductions in demand become significant. Previous work by Krane estimated substantial decreases in long-run energy demand from rationalized prices using a price elasticity estimate of -0.3. The most dramatic example was Kuwait, where *fully* abolishing the residential electricity subsidy would mean increasing prices by nearly 2,000%, which implies a 59% decrease in long-run power demand.¹⁶ Other estimates range from a 20% reduction in gasoline demand in Oman and electricity consumption by expatriates in Abu Dhabi (who pay higher electricity prices than citizens), to reductions of about a third in gasoline demand in Saudi Arabia and electricity in Oman, to a drop of 43% in citizen power consumption in Abu Dhabi (Table 2).

Table 2. Modeled long-run demand response to hypothetical price increases on energy products

	Actual Price (US\$)	Unsubsidized price (US\$)	% price increase to displace subsidy	% decrease in long-run demand at -0.3 elasticity
Kuwait: electricity	0.007	0.135	1829	-59
Kuwait: gasoline	0.23	0.65	183	-27
Saudi Arabia: gasoline	0.16	0.65	306	-34
Abu Dhabi: electricity (expatriates)	0.041	0.089	117	-20
Abu Dhabi: electricity (citizens)	0.014	0.089	536	-43
Oman: electricity	0.026	0.1	285	-33
Oman: gasoline	0.31	0.65	110	-20

Note: Electricity prices are per kilowatt-hour (kWh) and gasoline is priced per liter. Current prices and estimates of unsubsidized prices compiled by author. Price elasticity estimate is based on the lower figure used in Rodriguez et al. (2012). Demand effect calculations are based on the energy demand formula in Rodriguez et al. (2012), which uses a non-linear function that reflects effects of large price increases. Expatriates receive smaller energy subsidies in some countries.

The above results imply that very low energy prices have encouraged unusually wasteful consumption practices, some of which may be moderated by modest price signals and the availability of substitutes. One example is the demand for liquid fuels in Saudi Arabia. Diesel was priced so cheaply relative to commercial electricity that many building owners

¹⁶ Using a nonlinear price elasticity formula derived from the IMF. See: Jim Krane, "Rationalizing Energy Demand through End-User Prices in the GCC," *Oxford Energy Forum*, no. 101 (November 2015); Jim Krane, "Stability versus Sustainability: Energy Policy in the Gulf Monarchies," *The Energy Journal* 36, no. 4 (2015); Pedro Rodriguez, Joshua Charap, and Arthur Ribeiro da Silva, "Fuel Subsidies and Energy Consumption: A Cross-Country Analysis," in *Kuwait: Selected Issues and Statistical Appendix*, (Washington, D.C.: International Monetary Fund, June 2012).

opted to generate power using diesel generators rather than maintain purchases from the state electricity grid. When diesel prices rose by more than 200% in January, Saudi energy officials expected to see commercial property owners returning to electricity. A large short-run drop in diesel demand did take place (see Figure 12).¹⁷ A similar phenomenon played out in Dubai in 2011, when the imposition of a price for water led to a wave of conservation, with consumers taking action on leaks and wasteful habits. Within a year, water consumption dropped by an average of 7.2% per account.¹⁸

Energy Demand Structure in Mideast Producers

In general, household energy demand rises with income, as people build larger homes and buy energy-consuming appliances such as air conditioners. Rising energy prices signal to consumers that consumption should be reduced by various means, including by upgrading to more efficient appliances. Despite rising wealth in the energy-exporting Middle East, energy prices have remained constant, often not even adjusted for inflation. Prices have therefore encouraged inefficient behavior and capital stock. In the wealthiest oil exporters, the residential energy sector is split between citizen and expatriate households, with prices held constant for citizens while expatriate rates have been allowed to rise. Partly as a result, citizen homes on average consume about four times as much electricity and water as smaller expatriate households.¹⁹ Subsidies affecting the residential sector are the most difficult to reform, since governments receive the greatest political leverage from benefits accruing to citizens.

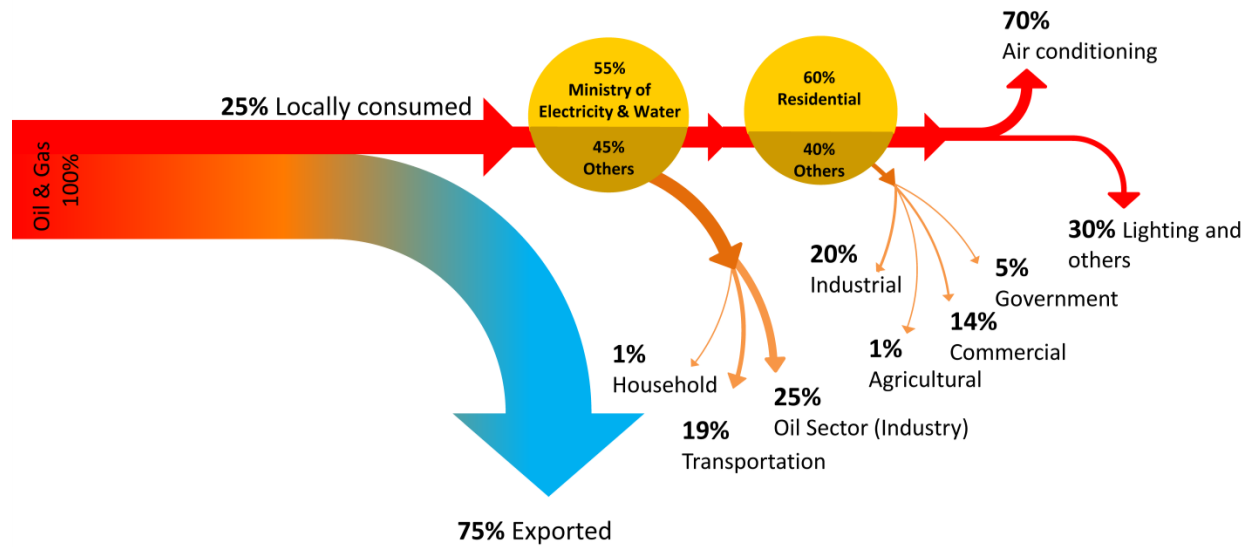
Energy demand in the industrial sector is less politically sensitive, despite its importance to foreign investment and economic diversification. Middle East oil states once employed energy subsidies to attract energy-intensive industries such as petrochemicals, aluminum, and fertilizer. More recently, some governments have begun raising industrial and commercial energy rates and rejecting investment proposals that depend on subsidies.²⁰ The transportation sector in the oil-rich Middle East is based around private automobiles and suburban development, with few mass transit options. These factors render transportation energy-intensive and vulnerable to short-term price changes. Over the longer term, vehicle fleets grow more efficient due to regulations in their countries of manufacture.

¹⁷ Jim Krane, interview with Saudi energy official on condition of anonymity, Dhahran, January 28, 2016.

¹⁸ Jim Krane, interviews with energy policy officials in Dubai government, 2012 and 2013.

¹⁹ Michael Wood, Kuwait Ministry of Electricity and Water, interview with Jim Krane, Kuwait City, March 25, 2012.

²⁰ Dubai has halted most preferential energy pricing for industry, while Oman has informed industrial consumers and would-be investors that prices will be rationalized and that investments should be based on world prices.

Figure 2. Energy flows in Kuwait: Oil and gas production and final consumption

Source: Jaffar, Oreszczyn, and Raslan, 2015.

Evidence of Price Reforms

Some observers of energy subsidies consider them “supply-driven,” meaning that governments have a larger interest in providing subsidies than recipients have in receiving them.²¹ The evidence in the energy-rich Middle East supports this hypothesis. Rulers direct subsidies to sectors of society that buttress their leadership. These characteristics have made Middle Eastern leaders reluctant to retract energy subsidies in spite of their harmful effects. Prior to 2010, price increases were limited to non-citizens or to the less influential commercial and industrial sectors.²² Recent reforms also reserved the largest increases for vulnerable sectors, but citizens were also targeted in most states.

²¹ David G. Victor, “The Politics of Fossil-Fuel Subsidies” (working paper, Global Subsidies Initiative, International Institute of Sustainable Development, 2009).

²² Abdullah M. al-Shehri, governor of Electricity & Co-Generation Regulatory Authority of Saudi Arabia, interview with Jim Krane, Dhahran, October 21, 2012. Saudi Arabia backed down from previous residential electricity tariff increases in 1985 and 1999. See also: Chaudhry, *The Price of Wealth*, 149, 274-5.

Iran

Iran acted first in December 2010, becoming a pioneer of sorts in subsidy reform by essentially exchanging one social contract benefit for another. The government made drastic cuts to subsidies on energy products²³ and replaced in-kind energy benefits with cash transfers.²⁴ The reform halved the world's largest energy subsidy burden, which was valued at around \$100 billion, or a quarter of the GDP. Iran managed a short-lived increase in oil exports due to reduced local demand, but soon after the reform Iran's oil trade was blocked by international sanctions on its nuclear program.²⁵

The reforms were aided by an effective government campaign to point out the wasteful and regressive nature of energy subsidies. The state simultaneously opened bank accounts for most Iranian families and deposited monthly payments worth about \$40 per person prior to the program's launch. Access to those payments was blocked until the day after prices were raised.²⁶

Remarkably, the Iranian reform generated little unrest, despite very large price increases. Diesel prices rose by more than 2,000%, from roughly six US cents per gallon (1.6 cents per liter) to \$1.40/gallon (37 cents/liter). Electricity rates went up for large residential consumers, with prices for consumption in excess of 600 kWh per month jumping from US 1.6 cents to 19 cents per kWh. Rising price bands were designed to encourage conservation and protect the poor, with the first 100 kWh of electricity per month remaining available for 2.7 US cents (see Figure 3).²⁷

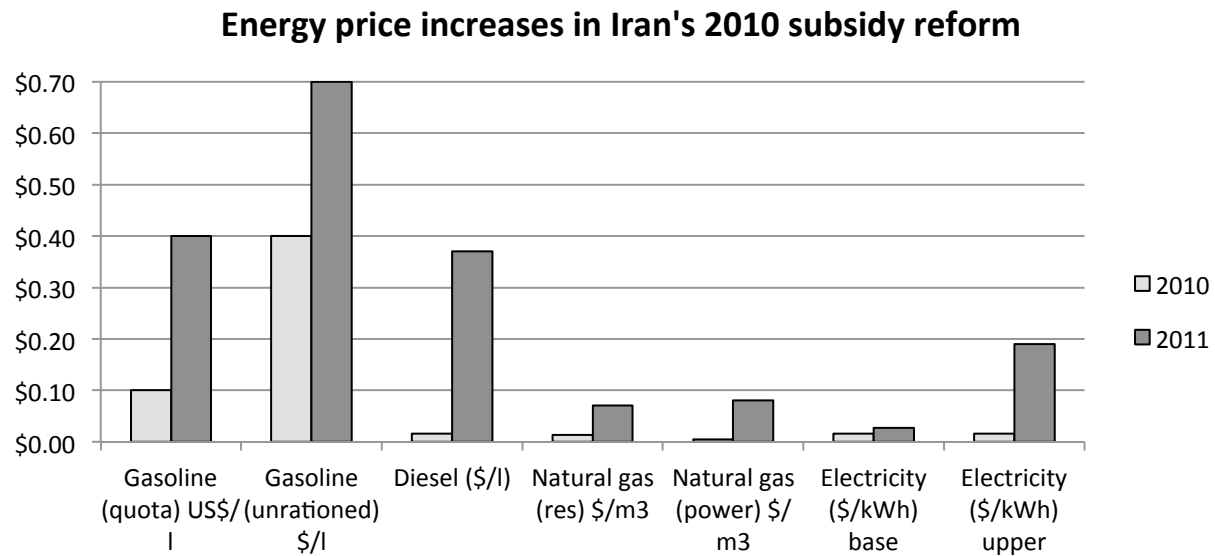
²³ International Monetary Fund, *Energy Subsidy Reform*; Dominique Guillaume, Roman Zyteck, and Mohammed Reza Farzin, *Iran: The Chronicles of Subsidy Reform* (Washington, D.C.: International Monetary Fund, 2011).

²⁴ Hamid Tabatabai, "The Basic Income Road to Reforming Iran's Price Subsidies," *Basic Income Studies* 6, no. 1 (2011): 1–24.

²⁵ "Second Phase Of Subsidy Reform Plan To Await Budget Approval," *Middle East Economic Survey*, April 30, 2012, 17–18. See also: "Petrol rationing saves Iran \$38 billion: Official," *Tehran Times*, December 31, 2011.

²⁶ Guillaume, Zyteck, and Farzin, *Iran: The Chronicles of Subsidy Reform*.

²⁷ Ibid. Note that 100 kWh is a fraction of Iran's average per-capita monthly consumption of 2,500 kWh.

Figure 3. Comparison of energy price changes in Iran, 2010-2011

Source: IMF (2011).

Although initial plans called for prices to be increased to 90% of international levels, the subsidy reform was postponed in 2012 by rising inflation and a lack of parliamentary support.²⁸ The overall outcome remains inconclusive. The IMF reported in 2013 that energy consumption growth was “initially stabilized” and describes the reform as “partially successful.”²⁹ Iran restarted its reform campaign in 2015 by raising fuel prices again.

United Arab Emirates

In 2011, the emirate of Dubai raised electricity and water prices by 15%, among other austerity measures enacted in the aftermath of the 2009 financial crisis (Figures 4 and 5).³⁰ Unlike Iran, Dubai did not offer a replacement benefit. Dubai’s expatriate majority had already undergone prior increases in electricity and water tariffs since 2008. But the 2011 reforms affected all consumer categories, including—for the first time—the sensitive citizen residential sector. During the peak summer season, a rash of complaints poured into media outlets and Dubai’s state-run utility company. The uproar led the ruler of Dubai to roll back electricity prices for low-income citizens while doubling citizens’ free water quota to 20,000 gallons per month,³¹ among other retractions. The changes left expatriates

²⁸ Najmeh Bozorgmehr, “Subsidy Dispute Adds to Iran’s Woes,” *Financial Times*, 2012; International Monetary Fund, *Energy Subsidy Reform: Lessons and Implications*.

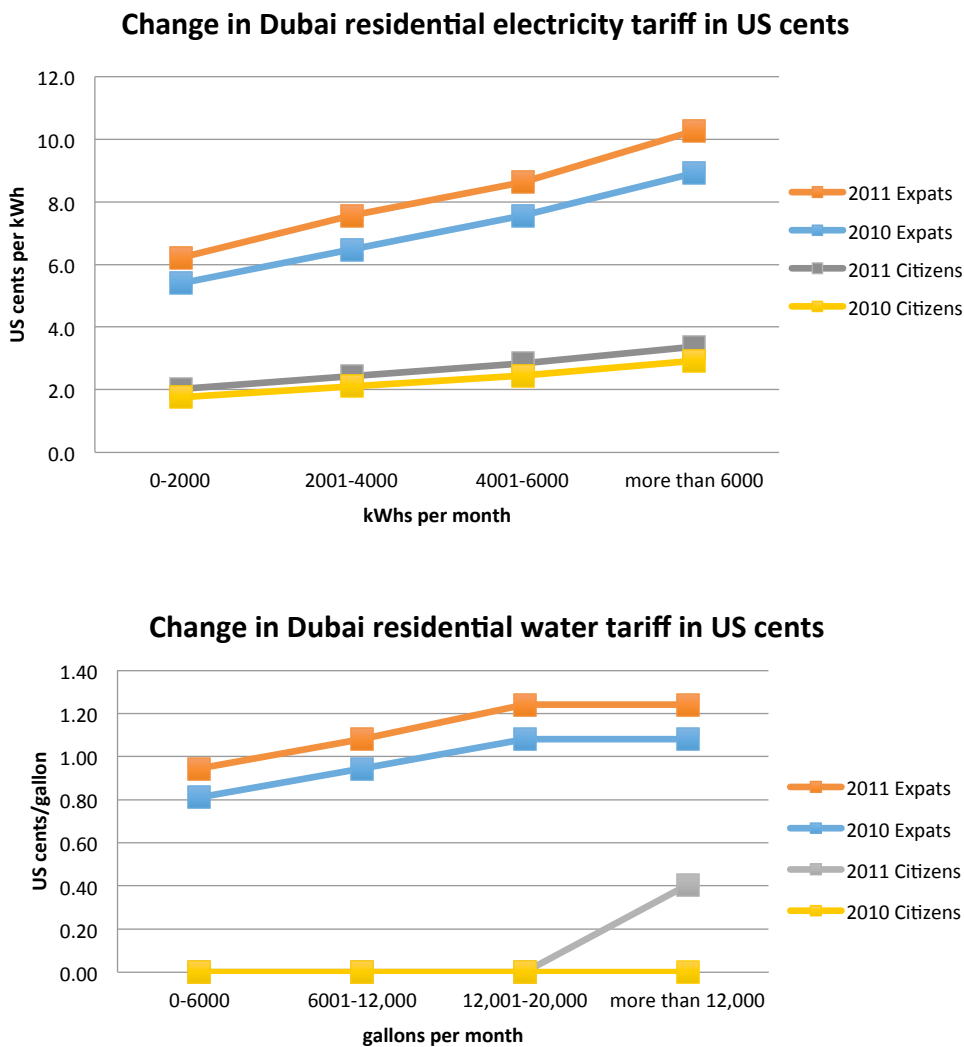
²⁹ International Monetary Fund, *Energy Subsidy Reform: Lessons and Implications*, 6.

³⁰ A detailed case study of the Dubai reforms is available in Jim Krane, “Stability versus Sustainability: Energy Policy in the Gulf Monarchies” (Ph.D. dissertation, University of Cambridge, 2014), <http://dx.doi.org/10.17863/CAM.5943>.

³¹ Media Office for Sheikh Mohammed bin Rashid al-Maktoum, 2011. Some customers never received an increase. These include households headed by members of the security services, or important tribal or ruling family members.

cross-subsidizing citizens by paying rates about four times as high. Despite the retractions, Dubai's 15% increase in electricity tariffs stayed in place for the majority of citizens. By 2012, power consumption had declined by an average of 3% per account and water consumption by an average of 7.2%.³²

Figures 4 and 5. Pricing change in Dubai residential electricity and water tariffs after January 1, 2011



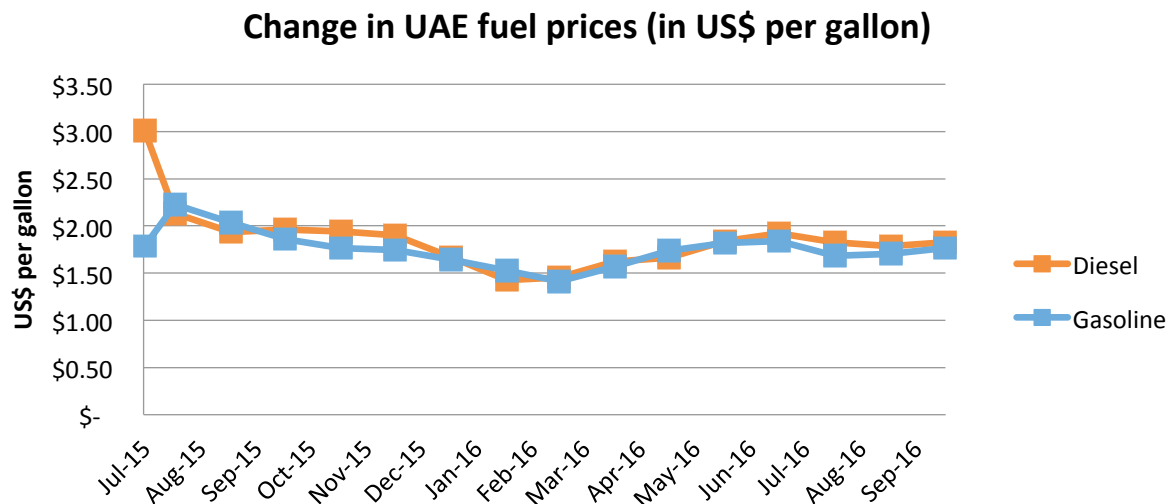
Source: Dubai Electricity and Water Authority.³³

³² Jim Krane, interviews with energy policy officials in Dubai government, 2012 and 2013.

³³ 2010 tariff retrieved from "Dubai residents complain of hikes in water, electricity tariffs," *Gulf News*, October 19, 2011.

In the UAE capital Abu Dhabi, a plan to raise energy prices emerged around the time of Dubai's reform but was not phased in until August 2015. The federal government abolished subsidies on transportation fuels, allowing prices to fluctuate monthly based on world benchmarks. The fuel price adjustment initially raised gasoline prices but reduced the diesel price, since the reform came alongside falling crude oil prices (Figure 6).

Figure 6. Change in UAE fuel prices



Source: UAE Ministry of Energy.

Abu Dhabi also increased water and electricity prices, reserving the biggest increases for foreign residents, who were already paying rates triple those of citizens. Abu Dhabi nationals received a tiny increase in the electricity rate and a modest rise for water, which, like in Dubai, had been free. Water tariffs for expatriates rose to *six times* the citizen levels: US\$2.85 per 1,000 liters, versus 46 US cents for citizens. Utilities in Sharjah and the northern emirates also raised power and water prices for foreigners and industrial and commercial customers.³⁴

Saudi Arabia

The broadest subsidy reform among Arab oil states took place in Saudi Arabia, the Gulf's dominant political and economic power. In 2015, Deputy Crown Prince Muhammad bin Salman announced his intention to raise energy prices to international levels by 2020.³⁵ In 2016, the government acted. Residential electricity and water prices rose for the first time

³⁴ Sharjah Electricity and Water Authority (SEWA) raised electricity and water rates for industrial and commercial users in 2014 but left residential rates unchanged. See "No power shortage in Sharjah: Sewa chief," *Emirates* 24/7, March 29, 2016; "Fewa bills increase by 5 fils per kw/h," *Gulf News*, December 15, 2014.

³⁵ Thomas L. Friedman, "Letter From Saudi Arabia," *New York Times*, November 25, 2015; The Economist, "Transcript: Interview with Muhammad Bin Salman," *The Economist*, January 6, 2016, http://www.economist.com/saudi_interview.

ever with water prices increasing more than 400% for the average household (see Figure 7). (see Figure 8) Water and electricity rates for commercial and industrial consumers increased at all tiers of consumption.³⁶ Saudi Arabia also raised prices on gasoline, diesel, and other products by an average of 122%. As Table 3 shows, most prices remain well below international benchmarks.

Table 3. Price changes of Saudi energy products after January 1, 2016

Product	2015	2016	% change	2015 benchmark (source)	Saudi 2016 price as percentage of int'l benchmark
Crude Oil for power generation (US\$/bbl)	\$4.23	\$5.87	39%	\$51.20 (2015 brent)	8%
Heavy fuel oil for power generation (US\$/MMBTU)	\$0.43	\$0.86	100%	\$7.25 (2015 US no. 6 residual fuel oil)	6%
Natural gas (methane) (US\$/MMBTU)	\$0.75	\$1.25	67%	\$6.53 (2015 NBP)	11.5%
Natural gas (ethane) (US\$/mmbtu)	\$0.75	\$1.75	133%	\$6.53 (2015 NBP)	11.5%
Gasoline (US\$/gallon)	\$0.46	\$0.92	100%	\$2.52 (2015 US)	18%
Diesel (US\$/gallon)	\$0.27	\$0.81	200%	\$2.71 (2015 US)	10%
Water (non-residential) (US\$/cubic meter)	\$1.62	\$2.43	50%	\$0.93 (2016 Tucson, AZ, US)	174%
Water (residential) (US\$/cubic meter)	\$0.03	\$0.04*	50%	\$2.43 (2016 Tucson, AZ,US)	1%
Electricity (US\$/kWh)**	\$0.03	\$0.05	67%	\$0.13 (2015 EIA)	23%

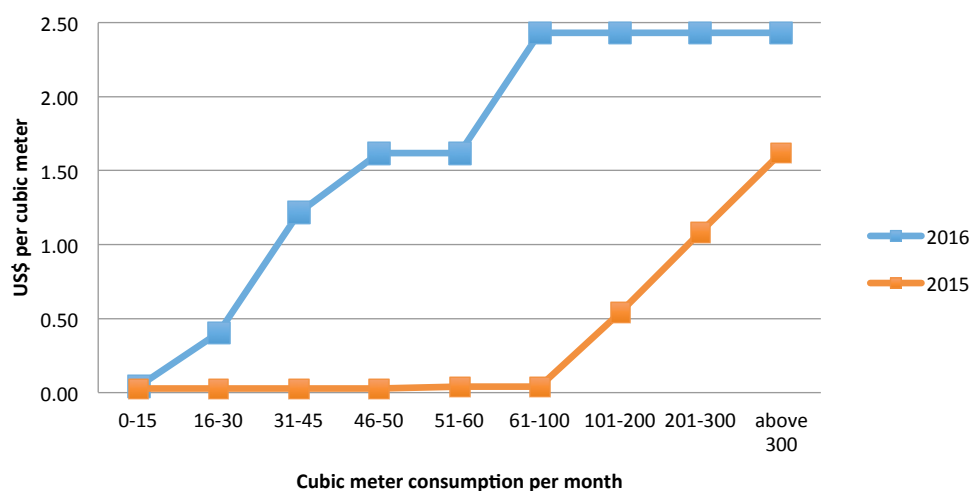
*Saudi 2016 price covers first 15 m³/month only

**Price for 4000-6000 kWh consumption tier only (All prices in US\$)

Source: MEES; Saudi Electricity Company; Baker Institute for Public Policy.

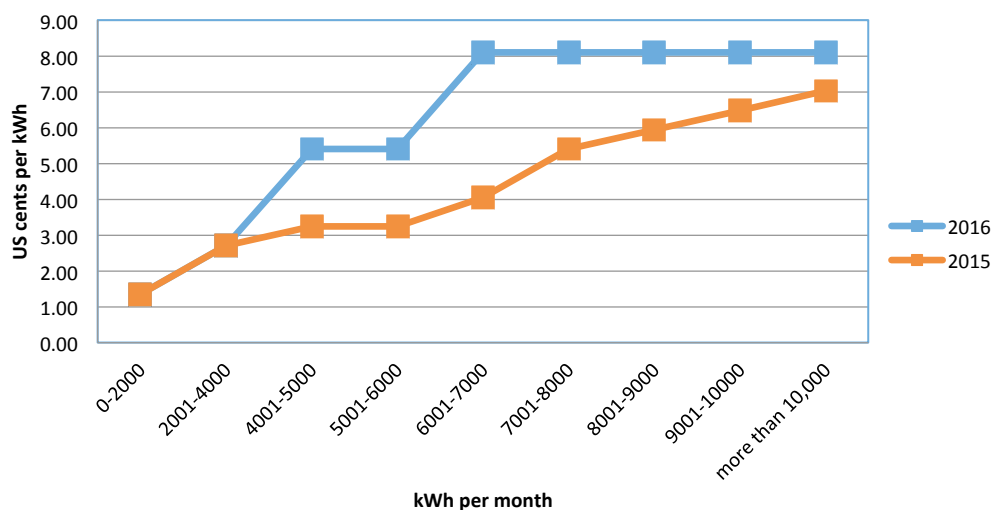
³⁶ Prices increased from 12 halala (US\$0.03) to 16 halala (US\$0.04) per kWh for commercial users and to 18 halala (\$0.05) per kWh for industrial users.

Figure 7. Pricing change in Saudi water tariff in US dollars



Source: Saudi National Water Company.

Figure 8. Pricing change in Saudi residential electricity tariff in US cents



Source: Saudi Electricity Company.

Kuwait

Energy prices in Kuwait have undergone the fewest adjustments. Most electricity prices have remained fixed for 50 years at just 0.7 US cents per kWh, which requires the government to pay 95% of the cost of provision, around 16 cents/kWh in 2015.³⁷ Rising demand for electricity has diverted ever-larger amounts of crude oil into the power sector, while leading Kuwait to begin importing LNG at world market prices. In 2016, the government proposed a means-tested electricity price that would reserve the largest subsidies for the poor. Parliament counter-proposed restricting increases to expatriates and businesses.³⁸ At the time of writing, prices had not changed.

Kuwait raised diesel prices in January 2015 from 69 US cents to US\$2.15 per gallon, but within a month readjusted the price to US\$1.42 per gallon. Businesses with “heavy demand” continued paying the original price.³⁹ In September, Kuwait increased gasoline prices for the first time since 1998, with prices jumping by 40%. The government has pledged to adjust fuel prices in line with market shifts every three months. Regular gasoline rose from 77 US cents to US\$1.08 per gallon (from 20 to 28 US cents per liter), while premium jumped from 81 cents to \$1.35 per gallon (from 21 to 35 US cents per liter).⁴⁰ These increases have been challenged by Parliament and a Kuwaiti court.

Qatar

Wealthy Qatar faces no serious fiscal pressure but has still raised transportation fuel prices and pledged to index them to world prices. In 2014, diesel prices rose from US\$1.04 to US\$1.58 per gallon⁴¹ while gasoline increased by 30%, from US\$1.04 to US\$1.38 per gallon.⁴² Qatar is the last remaining Gulf state in which electricity and water remains free for citizens, but expatriates have been singled out for two price increases over the past decade. Most recently, in October 2015, electricity prices for foreigners rose slightly—from 2.16 to 2.43 US cents per kWh—for monthly consumption between 2,000 and 4,000 kWh. Prices rose more for higher rates of consumption. Water charges jumped from US\$1.20 to at least US\$1.50 per cubic meter for consumption beyond 20 cubic meters per month.⁴³

³⁷ B. Jaffar, T. Oreszczyn, and R. Raslan, “A Framework to Evaluate the Energy Efficiency Potential of Kuwaiti Homes,” *WIT Transactions on Ecology and The Environment* 186 (2014): 25–38.

³⁸ Proposed rates for expatriate homes would rise from 2 fils to 15 fils (0.7 US cents to 5 US cents) per kWh, with business rates rising from 2 fils to 25 fils (8 US cents) per kWh. See: “Kuwait to raise power, water price on expats,” *Agence France-Presse*, April 13, 2016, <http://gulfnews.com/news/gulf/kuwait/kuwait-to-raise-power-water-price-on-expats-1.1711225>, citing Ministry of Electricity and Water Undersecretary Mohammad Bushahari. See “Decision to Raise Prices of Fuel Pushed Back Six Months,” *Arab Times (Kuwait)*, January 7, 2016.

³⁹ “Kuwait cuts diesel fuel prices after political pressure,” *Reuters*, January 28, 2015.

⁴⁰ Habib Toumi, “Kuwait joins GCC countries in raising fuel prices,” *Gulf News*, August 31, 2016.

⁴¹ “30% to 50% hike in Qatar petrol prices from Friday,” *Gulf Times*, January 14, 2016.

⁴² “Qatar to hike petrol prices by more than 30 per cent,” *The National*, January 15, 2016.

⁴³ “Qatar’s Kahramaa hikes water, electricity tariffs,” *NRICafe*, October 14, 2015.

Oman

Oman is struggling to reduce energy demand and fund a national budget that has slipped into deficit. In 2015, the sultanate doubled natural gas prices to US\$3 per million BTUs while also requiring additional yearly rate increases of 3%. In 2016, Oman increased water prices by 17% for the government, commercial, and industrial sectors.⁴⁴ The residential sector has been exempted from subsidy reform. In 2016, gasoline prices increased 20% to US\$1.15 per gallon and diesel rose by 10% to US\$1.62 per gallon. Oman also plans to review fuel prices monthly.⁴⁵

Bahrain

In March 2016, the island kingdom of Bahrain raised electricity, water, and transportation fuel prices. Citizens were exempt from increased electricity rates as less influential expatriates and commercial users bore the brunt. Water and electricity prices for non-citizens are to increase every year until 2019, when they would reflect the actual cost.⁴⁶ Following similar moves by its neighbors, Bahrain raised transportation fuel prices for the first time in over 30 years. Gasoline prices were increased by 57%, from US\$0.81 to US\$1.27 per gallon. Increases in diesel and kerosene prices are planned.⁴⁷ The price of natural gas was also raised in 2015 from US\$2.25 to US\$2.50 per MMBTU, with a target price of US\$4 per MMBTU in 2021.⁴⁸

Algeria

Algeria, a country facing declining oil and gas exports amid a subsidy-fueled rise in domestic demand, also reduced energy subsidies in 2016. Algeria raised its fuel and electricity value added tax (VAT) rate from 7% to 17% and increased fuel prices by 36% on average.⁴⁹ Even after the increase, gasoline prices remained among the world's lowest, US\$1.04 per gallon (27 US cents per liter), and diesel costing just 50 US cents per gallon (13 cents/liter).⁵⁰

⁴⁴ From 0.7 US cents to 0.9 cents (3 to 3.5 Omani baiza) per gallon. "Oman's Public Authority for Electricity and Water announces hike in water tariffs," *Times of Oman*, March 15, 2016.

⁴⁵ "Petrol price hike: Oman to fall from ninth cheapest fuel in world to 13th," *Times of Oman*, January 11, 2016.

⁴⁶ "New Tariff for Water & Electricity," *Hello Bahrain*, January 15, 2016.

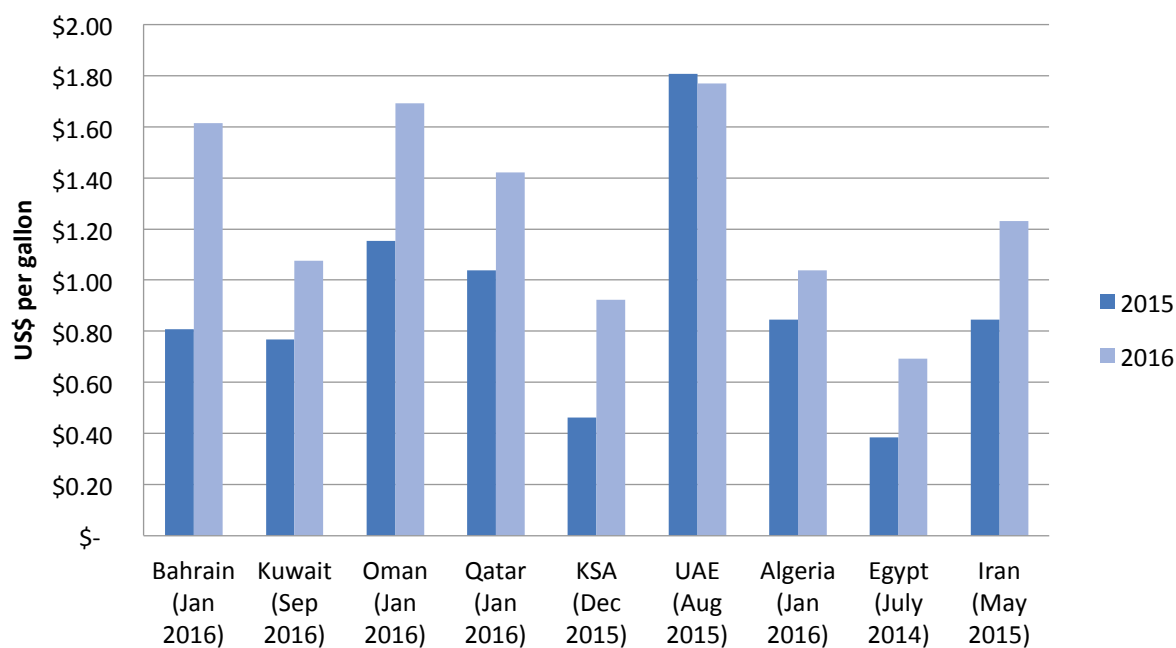
⁴⁷ "Bahrain approves 'gradual' increase of diesel prices," *Trade Arabia*, December 28, 2015.

⁴⁸ "Bahrain natural gas prices for industry rise 25 cents per MMBTU—agency," *Reuters*, January 30, 2015.

⁴⁹ Algeria raised the VAT on diesel, electricity (for consumption exceeding 250 kWh per quarter), and natural gas (for consumption exceeding 250 MMBTU per quarter) from 7 percent to 17 percent. Masami Kojima, "Fossil Fuel Subsidy and Pricing Policies Recent Developing Country Experience" (policy research working paper, World Bank, Washington, D.C., January 2016).

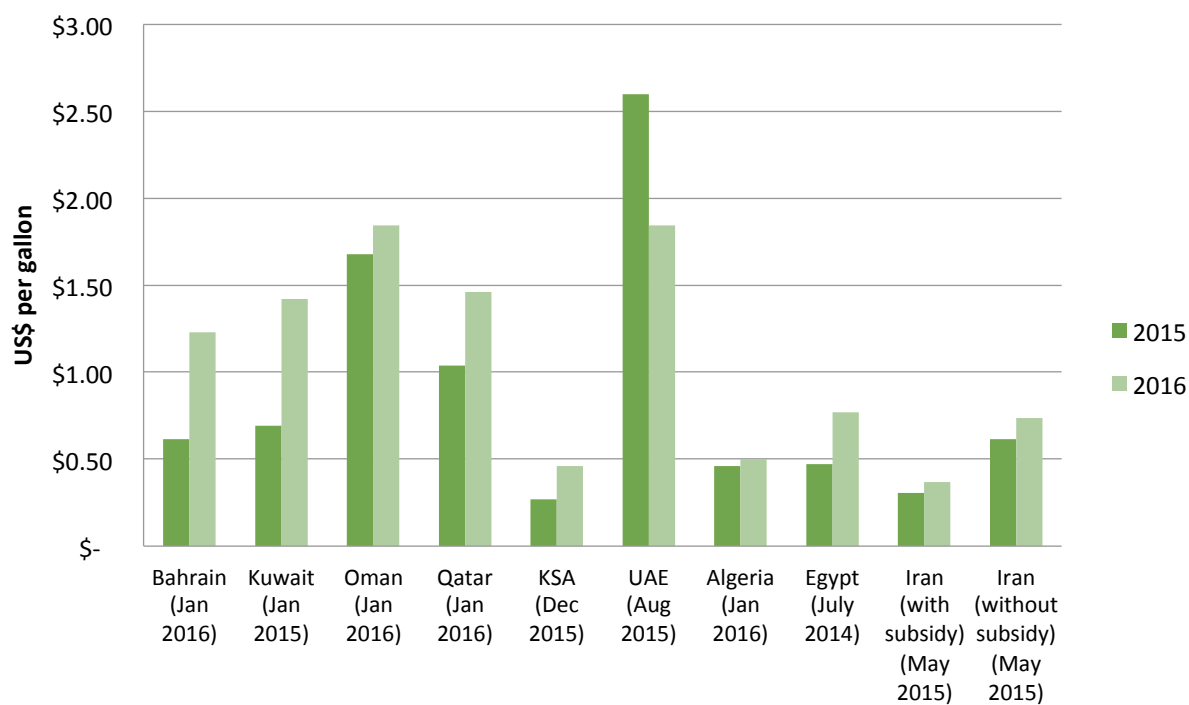
⁵⁰ Jose R. Lopez-Calix and Irum Touqueer, "Algeria: Comparing the Last Two Oil Shocks and Policy Responses," *Topics in Middle Eastern and African Economies* 18, no. 2 (September 2016), <http://www.luc.edu/orgs/meea/volume18/pdfs/26-Algeria%20Comparing%20the%20Last%20Two%20Oil%20Shocks%20and%20Policy%20Responses.pdf>.

Figure 9. Changes in regular gasoline prices after subsidy cuts



Source: Baker Institute for Public Policy.

Figure 10. Changes in diesel prices after subsidy cuts



Source: Baker Institute for Public Policy.

The subsidy reforms above show that autocratic Middle Eastern governments were able to challenge citizens by taking away long-held social benefits. Citizens accepted these reforms without resorting to physical protest or demands for increased political participation, although many did signal displeasure via social media. Regime success (in what has been described as an ongoing agenda of retrenchment) challenges scholarly depictions of political boundaries in these rentier polities.

Evidence of Demand Reduction

For policymakers, concerns are more practical. Decades of low fixed prices have created path-dependence on structurally high levels of energy demand.⁵¹ Can higher prices budge these demand structures? Or have consumption levels been “locked in” by energy-intensive institutions?

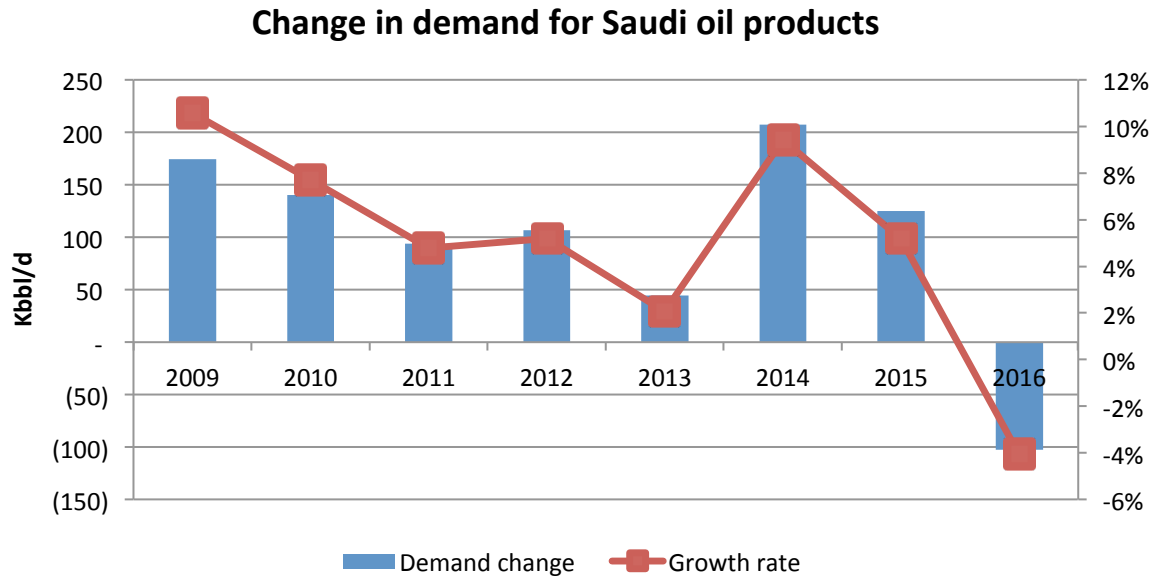
Data emerging at the time of writing provided anecdotal signs of change. In Saudi Arabia, refined product consumption dropped 4% in 2016 from 2015 levels (Figure 11), led by a more than 10% drop in diesel fuel demand. Gasoline demand remained roughly flat, dropping by 0.8% below 2015 levels (see Figure 12). Electricity demand also declined for the first time in the 16-year history of the Saudi Electricity Company.⁵² Saudi oil demand growth reached its lowest levels since at least 2010. The IEA expects oil demand to slip into negative territory by the end of 2016.⁵³ Saudi Energy Minister Khalid al-Falih attributed the drop to two factors: increased prices of electricity and fuels, and increased production of natural gas, which substitutes for oil in power generation.

⁵¹ Fouquet argues that energy systems are particularly susceptible to strong and long-lived path dependence due to technological, infrastructural, institutional, and behavioral lock-ins. Roger Fouquet, “Path Dependence in Energy Systems and Economic Development,” *Nature Energy* 1 (July 11, 2016): 16098.

⁵² “SEC Set for Split by Year-end,” *Middle East Economic Survey* 59, no. 36 (September 9, 2016): 7.

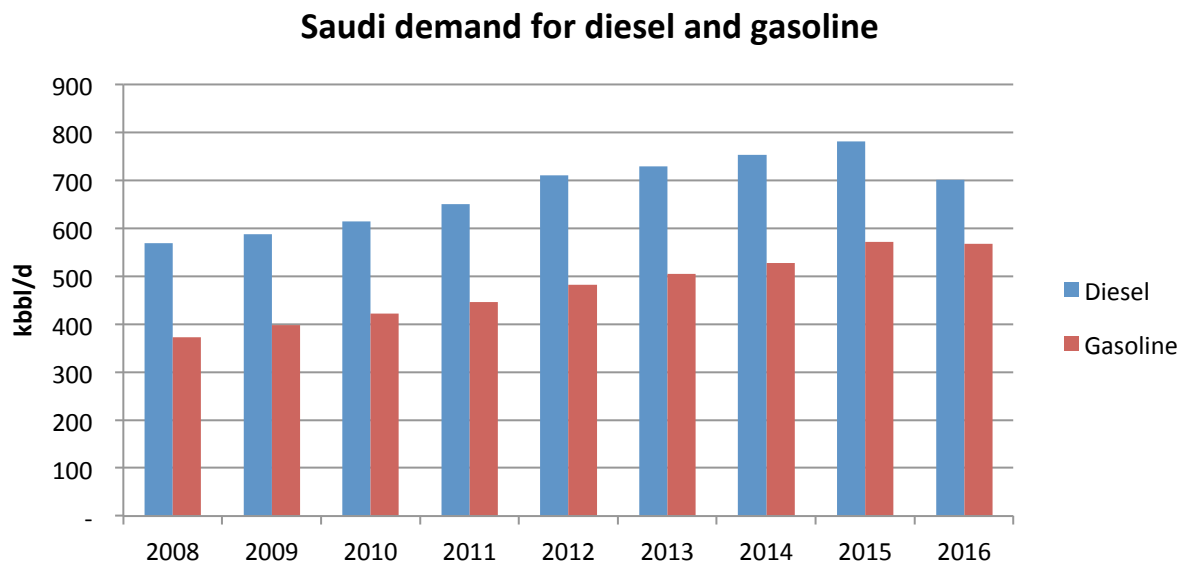
⁵³ Mohammed Sergie, “Saudi Arabia Oil Demand Growth at 6-Year Low on Slowdown,” *Bloomberg*, July 31, 2016.

Figure 11. Overall demand for refined products in Saudi Arabia dropped 4% in 2016.



Source: Joint Organisations Data Initiative (JODI), 2017.

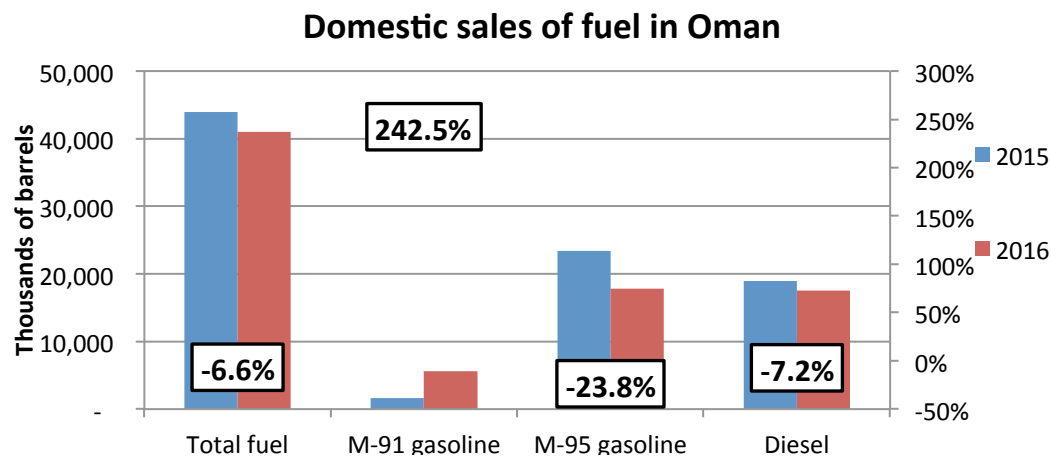
Figure 12. Diesel demand in 2016 was at its lowest level since 2011. Gasoline demand dropped slightly.



Source: JODI, 2017.

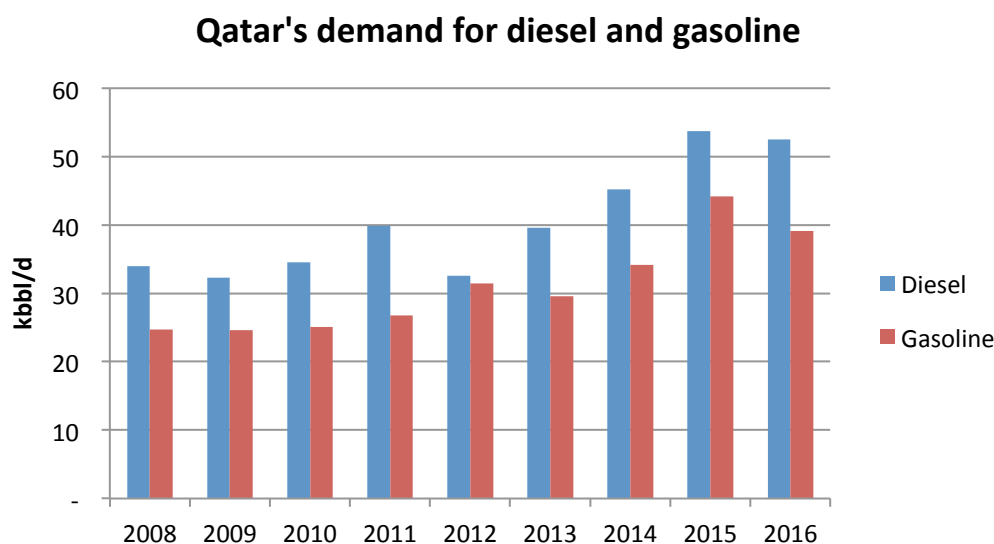
In Oman, after a decade of nearly 10% yearly consumption growth, 2016 transportation fuel demand dropped by 6.6% from 2015 levels. Motorists switched en masse from premium gasoline to lower-priced regular fuel, while diesel demand fell more than 7% (see Figure 13). Qatar's increased gasoline and diesel prices also appear to have reduced 2016 demand by 11.5% for gasoline and 2.3% for diesel (Figure 14). Qatar's small increases in expatriates' electricity and water prices were insufficient to reduce overall demand but may have contributed to small declines in per-capita consumption (Figures 15 and 16).

Figure 13. Drivers in Oman switched from premium to regular gasoline and consumed less gasoline overall in 2016.



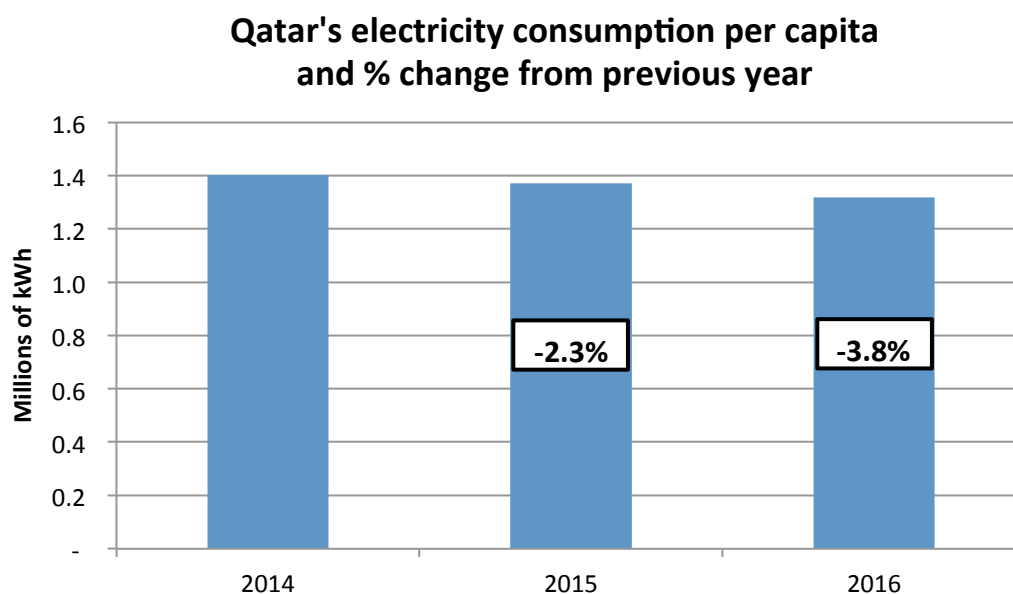
Source: Oman National Center for Statistics and Information, 2017.

Figure 14. Qatari gasoline demand dropped 11.5% after prices were increased 30% in January 2016.



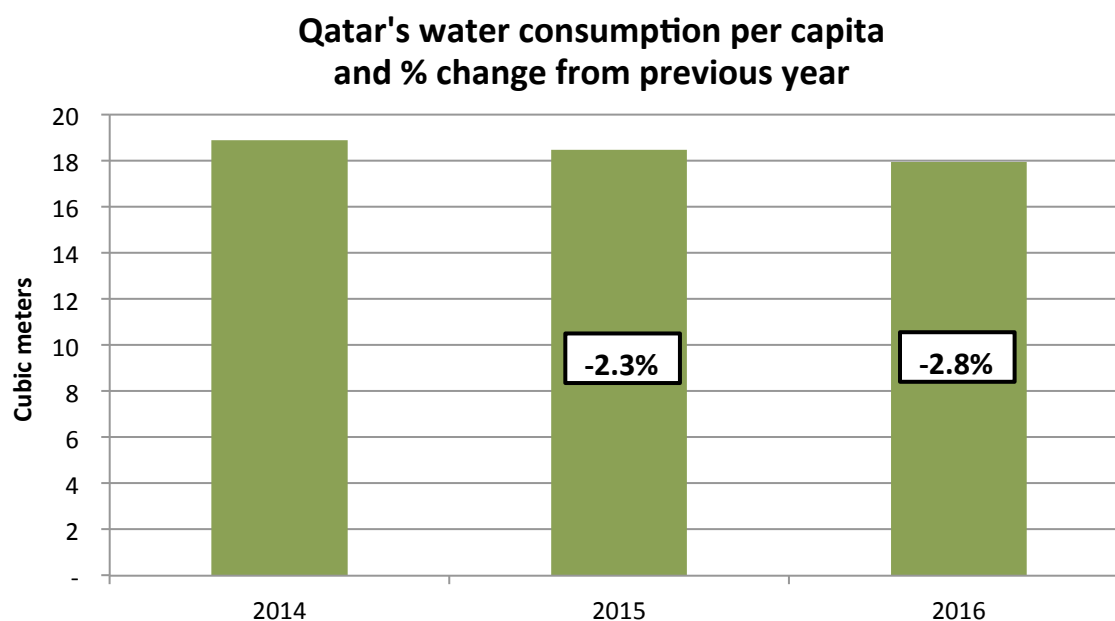
Source: JODI, 2017.

Figure 15. Qatari electricity demand increased overall but showed small declines on a per-capita basis.



Source: Qatar Ministry of Development Planning and Statistics, 2017.

Figure 16. Total water demand also increased but showed small declines on a per-capita basis.



Source: Qatar Ministry of Development Planning and Statistics, 2017.

In Egypt, where diesel prices were increased in July 2014, consumption plummeted by nearly 25%, probably because smuggling was discouraged. The country has declared an intention to phase out fuel subsidies within three years.⁵⁴ However, it has abandoned previous price reforms in the face of public protest.

Discussion: Political Economy of Energy Policy in the Middle East

The subsidy reforms that swept across the oil-exporting MENA region appeared to have been catalyzed by low oil prices and, in some cases, pushed through by younger leaders worried about long-term implications of rising domestic demand and subsidy outlays. While regime reactions appeared spontaneous, the changes in pricing policy followed a long period of preparation. In the mid-2000s, regimes drew up reform agendas at the urging of national oil companies, ministries, and electricity and water regulators. Energy officials argued that continued 5% to 10% increases in yearly demand were unsustainable.⁵⁵ Price reforms were an indispensable component of reforms that also upgraded building and appliance efficiency standards. These messages were bolstered by studies predicting that if nothing was done, domestic demand would begin to displace oil exports of even the biggest producers.⁵⁶ Rapid population growth implied that oil and gas exports per capita were declining in most exporters in the region, and the only factor allowing for an increase in real expenditures was the booming price of oil. Thus, the technocrats knew that the day of reckoning would come if the oil price collapsed, which it did in 2014.

Zeroing in on Subsidies

Subsidy-fueled energy demand has already displaced oil and gas exports in several countries, among them Algeria, Egypt, Indonesia, Oman, and arguably Iran. In the Gulf, policymakers publicly acknowledged that meeting continued growth in demand would require unsustainable levels of capital investment in oil and gas production and utility infrastructure. Saudi Arabia's former oil minister, Ali al-Naimi, called for a "highly efficient rationalization program" to reduce consumption.⁵⁷

Oman's energy minister was the most blunt: "We are wasting too much energy in the region and the barrels that we are consuming are becoming a threat now, for our region particularly... I think we have a serious problem," Mohammed bin Hamad al-Rumhy said in a speech to other Gulf energy ministers. "What is really destroying us right now is

⁵⁴ "Egypt plans to end fuel subsidies within three years: sources," *Reuters*, August 23, 2016, <http://www.reuters.com/article/us-egypt-economy-subsidies-idUSKCN10Y0OP>.

⁵⁵ Jim Krane, interview series with energy officials in the Gulf region, 2010-2013.

⁵⁶ Brad Bourland and Paul Gamble, "Saudi Arabia's Coming Oil and Fiscal Challenge" (research report, Riyadh: Jadwa Investment, 2011), 22; Glada Lahn and Paul Stevens, "Burning Oil to Keep Cool: The Hidden Energy Crisis in Saudi Arabia" (London: Chatham House, 2011); Dermot Gately, Nourah Al-Yousef, and Hamad M.H. Al-Sheikh, "The Rapid Growth of Domestic Oil Consumption in Saudi Arabia and the Opportunity Cost of Oil Exports Foregone," *Energy Policy* 47 (2012): 57-68; Heidy Rehman, "Saudi Petrochemicals: End of the Magic Porridge Pot?" (Citibank research report, Citi Equities Research, Dubai, 2012).

⁵⁷ Kate Dourian, "Saudi Arabia Warns Domestic Oil Use Growing at 'Frightening Level,'" *Platts*, November 26, 2012, <http://www.platts.com/RSSFeedDetailedNews/RSSFeed/Oil/7284877>.

subsidies... We simply need to raise the price of petrol and electricity. In some countries in our region electricity is free and you leave your air conditioning for the whole summer when you go on holiday. That is really a crime. Our cars are getting bigger, our consumption is getting bigger and the price is almost free. So you need to send a signal to the pockets of the public."⁵⁸

Several academic studies placed the blame for high levels of demand growth squarely on subsidized pricing. Alyousef and Stevens describe low prices in Saudi Arabia as “*the single most obvious explanation for the extremely high levels of energy use in the Kingdom.*”⁵⁹ Mehrara finds that subsidies in oil-exporting countries explained their otherwise “implausibly high energy intensity.”⁶⁰ Bourland and Gamble show that Saudi Arabia uses ten times the global average of oil per unit of GDP, and argue that the “*key reason for the rise in consumption is very low energy prices.*”⁶¹ Deutsche Bank finds that subsidies were the largest factor in driving OPEC per-capita energy demand four times higher than the world average.⁶² As shown above, our price elasticity calculations attribute roughly a third of regional demand for energy products to heavily subsidized prices.⁶³

Excessive fuel demand also exacerbated negative externalities. For example, road accidents in Iraq, Iran, Oman, and Saudi Arabia are significantly above average,⁶⁴ and traffic and pollution in some cities in the region has gotten significantly worse.⁶⁵

Low Oil Prices

The fall in oil prices in late 2014 provided both the fiscal impetus and the political cover for regimes to take action.

The fiscal pain was genuine. Falling oil revenues followed several years of increased state spending, particularly on social benefits aimed partly at suppressing democratic aspirations intensified by the Arab Spring. As a result, fiscal dependence on oil rose alongside the oil price required to balance national budgets. By 2014, the IMF estimated that Saudi Arabia, Oman, Bahrain, Algeria, Iraq, Iran, and Yemen needed oil prices beyond \$100 per barrel to balance budgets.⁶⁶ In 2015, all of those countries—along with the UAE and Egypt—ran budget deficits that were between 30% and 85% of required revenue (Figure 17). Saudi

⁵⁸ Daniel Fineren, “Oman oil minister slams Gulf culture of energy subsidies,” *Reuters*, November 10, 2013, <http://www.reuters.com/article/2013/11/10/gulf-energy-subsidies-idUSL5N0IV07V20131110>.

⁵⁹ Yousef Alyousef and Paul Stevens, “The Cost of Domestic Energy Prices to Saudi Arabia,” *Energy Policy* 39 (2011): 6900–05, emphasis added.

⁶⁰ Mohsen Mehrara, “Energy Consumption and Economic Growth: The Case of Oil-Exporting Countries,” *Energy Policy* 35 (2007): 2939–45.

⁶¹ Bourland and Gamble, “Saudi Arabia’s Coming Oil and Fiscal Challenge,” emphasis added.

⁶² Mark C. Lewis and Michael Hsueh, “Crude Oil: Iceberg Glimpsed off West Africa” (Energy market research report, Deutsche Bank, Paris, 2012), 13–14, emphasis added.

⁶³ Krane, “Rationalizing Energy Demand through End-User Prices in the GCC.”

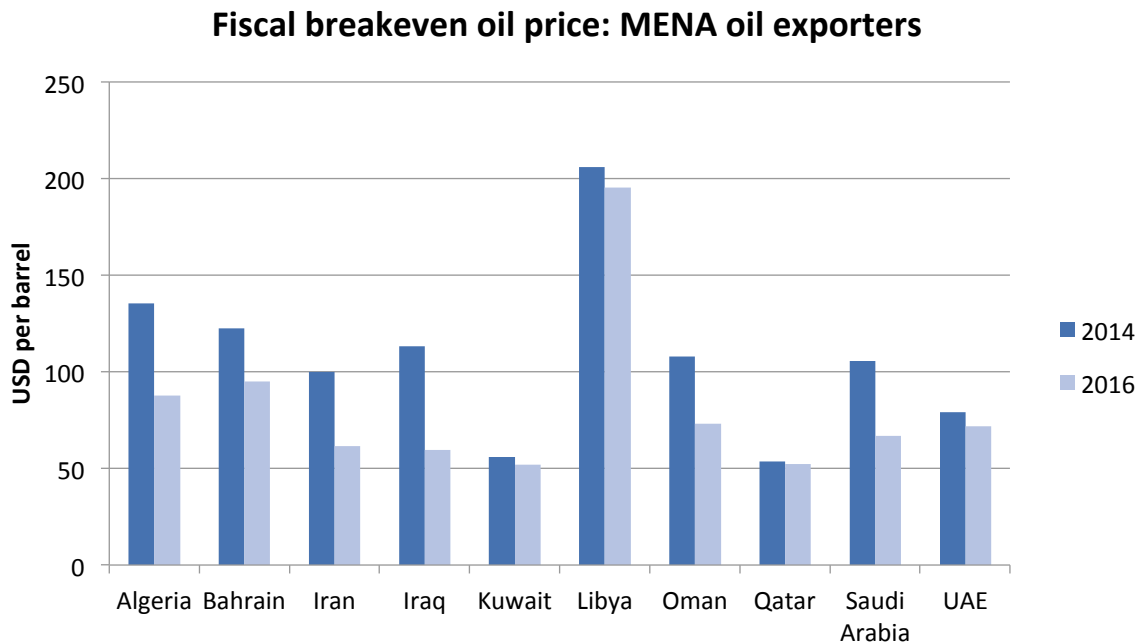
⁶⁴ World Health Organization, *Global Status Report on Road Safety*, 2013.

⁶⁵ Parry and Timilsina, “Demand-Side Instruments.”

⁶⁶ International Monetary Fund, *Statistical Appendix: Regional Economic Outlook Update: Middle East and Central Asia* (Washington, D.C.: International Monetary Fund, 2015), 7, <https://www.imf.org/external/pubs/ft/reo/2015/mcd/eng/pdf/mreost0115.pdf>.

Arabia's 2015 deficit reached a staggering \$98 billion, and Kuwait and Qatar joined their neighbors in deficit territory in 2016. Expectations that oil prices may stay low for an extended period have added to the pressure.

Figure 17. Spending cuts by MENA oil producers were insufficient to allow reduced oil revenues to cover full government expenditures. All produced budget deficits by 2016.



Source: IMF Regional Economic Outlook: Middle East and Central Asia, 2016.

Low oil prices present an opportunity for fiscal discipline and policy corrections that may have been politically unviable while budgets were in surplus. Government reactions differed from previous oil bust periods, when regime survival strategies retained patronage spending in the face of economic decline and cuts focused on capital projects and infrastructure.⁶⁷ This time, the internal consensus has targeted social benefits, particularly those related to energy.

In addition, some countries had to choose from politically unattractive alternatives to increase government revenues, such as raising taxes. Thus, hiking energy prices was the most appealing from an economic perspective, particularly since the studies and preparatory work to implement this policy had already been done in most countries. The fact remains that no oil-exporting state in the Middle East has decided to eliminate all energy subsidies, in large part due to fears of political backlash.

⁶⁷ Schlumberger, "Rents, Reform, and Authoritarianism in the Middle East."

Outside Pressure

Additional political cover for action has come via the growing chorus of international organizations condemning the harmful effects of fossil fuel subsidies. The Gulf monarchies' status as large suppliers, consumers, *and* leading subsidizers of fossil fuels exposes them to international opprobrium on climate change.

Subsidy removal has been advocated by the G-20, the Organisation for Economic Cooperation and Development, the Asia-Pacific Economic Cooperation, the IMF, the World Bank, the IEA, and the World Economic Forum, along with environmental, religious, and insurance pressure groups and regional associations affiliated with the United Nations and the League of Arab States. In 2009, the G-20—of which Saudi Arabia is a member—pledged to phase out fossil fuel subsidies in the “medium term.” The group reaffirmed this goal in 2013.⁶⁸ The Paris climate agreement of 2015 added pressure on countries to end support for GHG-emitting fossil fuels.

Like low oil prices, outside pressure assists centralized regimes in taking difficult policy actions. Rulers can point to international demands for subsidy reform to shield themselves from blame.

Climate Change

Climate change may have also have played a more direct role in willingness to cut subsidies. All of the major Middle East oil producers are signatories to the 2015 COP21 Paris climate accord, despite the economic threat posed by the treaty's potential to reduce global oil demand.

But climate change does not only undercut long-term prospects for monetization of the region's natural resources. A warming climate also threatens the region's viability as a place that can support human life, as high summer temperatures are reaching the limits of human tolerance. On July 22, 2016, the high temperature in Kuwait was 129.2°F (54°C), the hottest ever measured in the Eastern Hemisphere and the highest ever recorded outside Death Valley, California.

If climate action fails, rising temperatures could render much of the Gulf region uninhabitable by 2070.⁶⁹ For now, there is scant regional pressure to reduce emissions or acknowledge that the region's chief business is worsening already uncomfortable summers.

⁶⁸ G-20 St. Petersburg Declaration, article 94, September 6, 2013, <http://www.g20.utoronto.ca/2013/2013-0906-declaration.html>.

⁶⁹ Jeremy S. Pal and Elfatih A. B. Eltahir, “Future Temperature in Southwest Asia Projected to Exceed a Threshold for Human Adaptability,” *Nature Climate Change* 6, no. 2 (February 2016): 197–200.

Indeed, the GHG reduction plans submitted by Saudi Arabia and other major producers have been panned as inadequate, given the high per capita emissions in the region.⁷⁰

Among policymakers, however, compliance with the Paris accord is another useful argument in reshaping policy to discourage wasteful energy consumption.

Security Provision in Social Contract

The post-Arab Spring chaos is also reshaping state-society relations, providing regimes with an opening to curb social spending in ways that once would have seemed illegitimate. Syria, Libya, and Yemen are in the midst of grinding civil wars, with no end in sight. The Islamic State has captured territory and launched—or inspired—attacks across the region and beyond. Mosque bombings have taken place in Saudi Arabia, while an unprecedented attack on a Kuwait City mosque in June 2015 killed 27 worshippers and wounded hundreds.⁷¹ This infiltrating chaos has left citizens feeling vulnerable and more appreciative of autocratic leaders, who, at a time of low oil prices, accrued additional political capital to seek sacrifices in the name of political stability.

The social contract appears to be in flux. State-provided subsidies on energy and other goods may no longer be the “single most important source of political legitimacy” for regimes, as Schlumberger wrote in 2006.⁷² Subsidies appear to have been overtaken by a rising public desire for stability and order. For instance, the proportion of Qatari nationals choosing “maintaining order and stability” as their top national priority rose from 37% in 2011 to 75% in 2014.⁷³ “Taxation in exchange for ensuring the security of citizens in an increasingly dangerous neighborhood might be the new accepted social contract,” writes al-Qassemi.⁷⁴

⁷⁰ See, for example: Mona Sami, “Where do Petroleum Exporters Stand on COP21?” (Williams College research paper, undated), <https://sites.williams.edu/cop21/blog-posts/where-do-petroleum-exporters-stand-on-cop21>; James A. Russell, “Saudi Arabia: The Strategic Dimensions of Environmental Insecurity,” *Middle East Policy* 23, no. 2 (2016): 44–58, doi:10.1111/mepo.12194. Also see Suzanne Goldenberg, “Saudi Arabia Accused of Trying to Wreck Paris Climate Deal,” *The Guardian*, December 8, 2016, <https://www.theguardian.com/environment/2015/dec/08/saudi-arabia-accused-of-trying-to-wreck-the-paris-climate-deal>.

⁷¹ Ahmed Hagagy, “Islamic State suicide bomber kills 27, wounds 227 in Kuwait mosque,” *Reuters*, June 26, 2015, <http://www.reuters.com/article/us-kuwait-blast-idUSKBNOP618L20150626>.

⁷² Schlumberger, “Rents, Reform, and Authoritarianism in the Middle East.”

⁷³ National survey results cited in Justin Gengler and Laurent A. Lambert, “Renegotiating the Ruling Bargain: Selling Fiscal Reform in the GCC,” *The Middle East Journal* 70, no. 2 (2016): 321–29.

⁷⁴ Sultan al-Qassemi, *The Gulf's New Social Contract* (Middle East Institute, February 8, 2016), <http://www.mei.edu/content/article/gulfs-new-social-contract>.

Conclusion

The difficult work of retracting subsidies has made surprising progress in the oil states of the Middle East. Low oil prices and other converging factors have assisted regimes in reversing damaging pricing policies that have outlived their decades-old patrimonial origins. Initial demand responses have been encouraging, with data revealing a robust short-run reaction to higher prices on some products, particularly in Saudi Arabia and Oman. Since domestic demand is a determinant of export capacity, further reforms may extend the longevity of oil and gas exports.

Conversely, a return to higher oil prices and revenues could reinvigorate public demands for cheap energy. Oil-exporting states should prepare for renewed pressure by drawing up replacement benefit packages that reduce risks to the environment and to commodity exports. Suitable strategies include the “citizen’s income” options that have emerged in Alaska, Iran,⁷⁵ and more recently, Saudi Arabia.⁷⁶ Other options include subsidized public transportation and replacing some energy subsidies with favorable pricing on other services that do not generate the same level of negative externalities, such as the internet and telecommunications bandwidth.

Regardless of the path that future subsidy reform takes, the actions to date represent a serious break with theoretical assumptions about governance parameters in the region. State-society relations appear more flexible and less tied to fixed-benefit menus or democratic concessions than commonly portrayed. Consumption data also suggest that the short-run decline in fuel demand may mean that academic expectations of price-insensitivity may have also been off base.

Finally, for a region that faces the twin dilemmas of natural resource dependence and a warming climate, rationalization of energy demand provides a necessary first step toward a more sustainable approach to these predicaments.

⁷⁵ Todd Moss, Caroline Lambert, and Stephanie Majerowicz, *Oil to Cash: Fighting the Resource Curse with Cash Transfers* (Washington: Center for Global Development, 2015); Steffen Hertog, “Rent Distribution, Labor Markets and Development in High-Rent Countries” (LSE Kuwait Program Paper Series, London School of Economics, July 2016).

⁷⁶ Glen Carey and Vivian Nereim, “Saudi Arabia’s Full Statement to Bloomberg on Its 2017 Agenda,” *Bloomberg*, March 6, 2017, <https://www.bloomberg.com/news/articles/2017-03-06/saudi-arabia-s-full-statement-to-bloomberg-on-its-2017-agenda>.