



A QUARTERLY JOURNAL FOR DEBATING ENERGY ISSUES AND POLICIES

This issue of the *Oxford Energy Forum* is devoted to energy pricing reforms in the MENA. It has been nearly three years since the collapse in global oil prices and there have been mixed outcomes for the MENA. While some countries (which had already initiated reforms) benefited from the low oil price, in others it triggered a spate of pricing reforms following fiscal crises. Although there is now an unequivocal consensus over the necessity for these reforms, their manner and pace of implementation thus far has evoked fresh debates over their long-term sustainability and ensuing impact on the region's rigid economic and social structures. The first four articles in this issue of the *Forum* explore overarching questions related to MENA energy pricing reforms, while the last seven delve deeper into country-specific experience.

The issue opens with an article by *Steffen Hertog* who looks at the history of wealth-sharing in the MENA. He argues that, in contrast with conventional political economy arguments on the social contract, energy subsidies are better understood as part of a broader regime of quasi-welfare in which policies like subsidies and excessive public employment are used in lieu of conventional social welfare tools to distribute wealth in the region's authoritarian systems. This quasi-welfare system has created rigid systems

of entitlement and expectations, complicating the transition to a less distortive welfare system. The author uses cross-country data to explore the links between state and regime type and subsidies, suggesting that while the use of subsidies as an authoritarian patronage tool is a global phenomenon, the effect is stronger and more significant for countries with rents. Moving towards a new, broader social contract that replaces subsidies with conventional income support and active labour market policies will be hardest in the most statist republics with the deepest nationalist-populist legacy – ironically, the same regimes that set out with the greatest ambitions of development and welfare more than half a century ago.

Rahmat Poudineh argues that while the MENA's copious natural capital has transformed its economies over the last century, opportunity costs are mounting. Further, the conventional 'social contract' argument is frequently used to analyse the complexities of energy price (or subsidy) reforms, and while this explains the need for rent distribution, it does not account for why subsidies have been chosen over other social welfare instruments. Energy price reform is but one element of several interrelated components in a sustainable energy strategy, which include investment in energy efficiency and alternative energy,

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and an integrated energy sector strategy. The author examines each of these components in the MENA context, arguing that the traditional view of energy strategy (where electricity, oil products, and gas are placed into separate silos) no longer works, as the end market for these energy carriers can no longer be separated. The author argues for a rethinking of energy policy for a twenty-first century context, in which unconstrained growth fuelled by cheap hydrocarbons is unsustainable. Sound communication and mitigation strategies are critical for the successful implementation of energy price reforms, in order to assure the public that it is only the form of rent distribution that changes, and not the rent distribution itself.

Jonathan Walters tests the veracity of the popular argument that renewable energy has not been able to compete with subsidized fossil fuels in MENA, and that the use of renewable energy will therefore grow only as fossil fuel subsidies are reduced. Using a line of Socratic questioning, the author argues that while there are few MENA markets where energy is traded competitively and where market structures have not evolved even to the point of wholesale competition, fossil fuel subsidy removal could improve the economics of solar energy in these markets (in areas such as rooftop solar and water heating), with the extent of the outcome being contingent upon the competitiveness of the renewable technology itself. There are, however, external factors that could deliver a renewables expansion in MENA markets even without a reduction in fossil fuel subsidies, these include: rapid technological advances and cost declines in renewable energy storage, the spread of replicable renewable energy auctions across Europe, and scale economies resulting from interconnections with the European renewable electricity market. In the final article dealing with

overarching issues, *Jun Rentschler* and *Martin Kornejew* look at the impact of energy pricing reforms on firms (a departure from the predominant focus on households). The removal of subsidies is transmitted through to firms' costs through two channels. The direct channel raises the price of energy inputs used by firms leading to an instantaneous rise in costs, whereas the indirect channel applies through supply chains, following an increase in the prices of intermediate inputs. The authors discuss four potential responses by firms to such price shocks: absorption (through accepting lower profit margins), substitution (with cheaper fuels), improvements in resource (energy and materials) efficiency, and price pass-on (through adjustments in the sale price of output). The authors conclude with important policy considerations for the design of fossil fuel subsidy reforms – such as enabling firms to substitute towards alternative fuel types or increasing the efficiency of energy and material usage by providing technical, informational, and financial assistance.

Articles on country-specific experiences begin with *Anupama Sen*, who looks at GCC energy pricing reforms, arguing that fiscal pressures were building long before the oil price collapse. The 2008 financial crisis and 2011 'Arab uprisings' led GCC governments to increase expenditure in order to pre-empt social unrest. Together with a higher reliance on oil revenues to fund this, their economies were exposed further to price volatility. These pressures were not uniform across the GCC so that, following the price collapse, the fiscal adjustment mechanisms available to them also varied and reforms have therefore been implemented at varying paces. Briefly assessing the experience of Saudi Arabia, the author concludes that reforms thus far have constituted a relatively easier initial phase – the

impact of declining revenues was clearly represented by the plummeting oil price, and since increases were from a low base they remained amongst the cheapest in the world. However, as the market moves into a new equilibrium where prices could remain lower for longer, further reforms to reflect full opportunity costs will involve additional testing of the 'social contract' and striking a balance between its fiscal, economic, and political elements.

Tim Boersma and *Steve Griffiths* review experience in the UAE which, in implementing electricity and water price reforms more than eight years ago, stands out as a leader among its GCC peers. The authors focus on Dubai and Abu Dhabi, where reforms were triggered by a combination of increasing LNG imports, rising domestic energy demand, and falling oil revenues. The two emirates have demonstrated several examples of best practice, which are now being replicated across the GCC. These include communication of the need for subsidy reforms before implementing them, gradual introduction of pricing increases, and tiered pricing based on usage (thereby letting the largest consumers carry the heaviest financial burden). Similar practices – which include the rapid removal of subsidies when opportunity strikes (such as the 2014 oil price collapse) and price setting according to international benchmark prices – have been applied to transportation fuel subsidies. Because of these practices, electricity, water, and transportation fuel pricing in the UAE is steadily advancing toward cost-reflective and more transparent pricing.

Manal Shehabi's article examines Kuwait's energy pricing reform in response to the recent oil price fall, with reference to an economy-wide model using a computable general equilibrium (CGE) framework which captures key structural features of its economy and



interactions between its industries. The author argues that Kuwait has two primary stabilization valves that partially absorb the negative impacts of oil price shocks; the first is (intended) inflows from its Sovereign Wealth Fund (SWF). The second, seldom discussed in the literature, is (unintended) expatriate labour exit. A negative oil price shock is contractionary for economic activity, forcing industries whose performance and profits are impacted to cut costs, including labour costs. As wages tend to be sticky in the short run, employment levels will adjust instead. Most Kuwaitis are employed by the public sector where contracts are rigid. In contrast, the flexibility of expatriate labour contracts allows affected industries to adjust their employment level. The expatriate labour market will thus adjust and its employment levels fall. This mechanism is unique to Kuwait and other GCC petrostates with similar labour market compositions. The author argues that slashing subsidies further pushes up costs for industries that use energy as an intermediate good, leading to additional adjustments through the expatriate labour channel, and a further contraction in the overall output of the impacted industries. While expatriate labour exit acts as an adjustment mechanism, it will cause an inevitable loss in available skills and resources for certain occupations – an important implication which should be taken into account in the design of energy pricing reforms.

Ali Aïssaoui focuses on Algeria, where the recent collapse of global oil (and later, gas) prices and a near-halving of state revenues is accompanied by concerns over long-stagnating production, rising domestic demand, and a fall in hydrocarbon export volumes. In response, the government has adopted three strategic priorities: the revival of exploration on the supply side, rationalization of consumption

on the demand side (of which energy pricing reform is a cornerstone), and replacement of gas with renewables in power generation. The author concludes that since price increases are made from such a low base, they are insufficient to either exert any meaningful influence on consumption (gasoline and diesel), or to cover the operating deficits of utilities (electricity and gas). The strategy lacks a coherent pricing structure along the gas and electricity value chains, and is impeded by lack of regulatory coordination. Algeria's 2030 renewables target of 22 GW has been pushed to 2035 and raised to a national priority, accompanied by a Feed-in Tariff (FiT) scheme funded through a combination of hydrocarbon royalties and taxes. A medium-term target to auction 4 GW to foreign investors should generate interest due to the almost completely reformed power sector, but the country's poor overall investment environment could prove an impediment. Policymakers do not appear to be preparing for a transition from subsidy-based to market-based incentives, which poses risks to the strategy from further fiscal deterioration.

In the next article, *Tom Moerenhout* considers Egypt's experience, where the transformation of a decades-old social contract represents a balancing exercise which relies on a very thin economic, fiscal, and sociopolitical safety net. Egypt introduced 'big bang' pricing reforms comprising massive fuel price increases in July 2014. Although considered a risky move which countered the 'social contract', these reforms were implemented without much difficulty as politico-economic conditions were favourable due to three factors: a massive fiscal crisis with subsidies amounting to 8.5 per cent of GDP, the lack of political opposition, and President Sisi's ability to garner support from the army (which has been historically

involved in the energy sector). Reforms were implemented following a strategic campaign communicating the regressive nature of subsidies. After this initial success, however, the government's support among the poor has been eroded by institutional and political obstacles which have impeded development of the targeted social safety nets necessary for sustainable reforms, while economic activity remains flat. Further reforms in August 2016 pushed inflation to a record 20 per cent even as Egypt secured an IMF loan to follow through on implementation, on the back of Saudi investments to support the Egyptian economy which, the author argues, it considers 'too big to fail'. The author concludes that Egypt has little policy space and no room for error in engendering the necessary trust-building measures to shepherd the economy through this austere period to stronger growth.

Sara Bazoobandi places Iran's 2008–9 landmark energy price reform programme (aimed at replacing subsidies with cash handouts) in historical context; as an economic mechanism allowing the distribution of wealth across society to support the poor, subsidies became a fundamental element of the Islamic Revolution's ethos. Subsidy reforms were motivated by budget deficit concerns, wasteful domestic consumption, worsening air quality, and a goal to halve the country's energy intensity by 2021. In the first phase of the subsidy reform programme, the government's financial savings proved insufficient to cover the cost of implementation, which led to additional pressure on the budget, forcing the government to cut some recipients out of the payments system. The author argues that a combination of sudden energy price increases, increased liquidity due to government cash handouts, and devaluation of the riyal (IRR) due to international

sanctions led to very high inflation during the first phase, with little impact on consumption behaviour. Although the new government, elected in 2013, opted to continue cash payments it faced the same difficulties with implementing the second phase; it eventually had to cut payments to wealthier citizens and signal plans for a further reduction in monthly payment recipients for 2017. The author notes that, unlike other MENA countries, subsidy reforms in Iran were implemented without social unrest, partly due to the strained economic and political environment at the time. Faced with an upcoming election in

2017, the current administration, the author argues, is unlikely to persist with a further scaling back of its cash payments.

The issue closes with *Ferdinand Eibl's* article on Tunisia and Egypt. The author challenges the popular attribution of governments' reluctance to reform energy subsidies (fear of public unrest), arguing that this narrative is incomplete without giving due attention to another collection of beneficiaries from energy subsidies. These – namely Politically Connected Businessmen (PCBs) and the army – have become an important lobbying group against

major reform. Using a novel dataset, the author demonstrates three pillars to his argument: first, this group of beneficiaries has a significantly higher presence in sectors that benefit from energy subsidies; second, the presence of energy subsidies is a key determinant for the entry of these beneficiaries into energy-intensive sectors; and third, there is anecdotal evidence to suggest that this group of beneficiaries has used its leverage to lobby against subsidy reductions. These results are indicative of the important veto powers that politically connected actors wield in the context of subsidy reform.

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Subsidies and the political economy of wealth-sharing in the MENA

Steffen Hertog

Energy subsidies in the MENA region have been much discussed from a technical perspective. Some of the literature hints towards the political economy of subsidies, but typically the discussion remains very high-level, with non-specific references to the fact that subsidies have created vested interests, or to an authoritarian ‘social contract’ underpinned by subsidies.

Both points are valid, yet they constitute only a starting point for understanding the political forces that have been keeping MENA energy subsidy systems in place; these forces need to be analysed if such systems are to be reformed without social and political disruption. This article argues more specifically that energy subsidies in the region are part of a broader regime of quasi-welfare in which policies like subsidies and excessive public employment are used in lieu of conventional social welfare tools to distribute wealth in the region’s authoritarian systems.

The quasi-welfare system reflected in subsidies is rooted in the political struggles of the post-World War II period and has created rigid systems of entitlement that are difficult to overcome. It has also created expectations – vis-à-vis the state – that remain particularly high, further complicating the transition to a less distortive welfare system. That being said, this article also presents some preliminary evidence that high energy subsidies are part of an authoritarian strategy that also exists outside the MENA region, if usually on a smaller scale.

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‘THE QUASI-WELFARE SYSTEM REFLECTED IN SUBSIDIES ... HAS CREATED RIGID SYSTEMS OF ENTITLEMENT THAT ARE DIFFICULT TO OVERCOME.’
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The history of wealth-sharing in the MENA

The MENA region, and Arab countries in particular, stand out in several regards in comparison with other developing regions:

- they have typically achieved faster increases in school enrolment and quicker reductions in child mortality in the post-World War II era (see ‘Why are some oil dictators nice to their people?’, Ferdinand Eibl and Steffen Hertog, Draft paper, London, 2016);
- they typically provide higher levels of public employment (‘Is there an Arab variety of capitalism?’, Steffen Hertog, London, 2016);
- they have provided more extensive subsidies (of both energy and food) than most other developing countries (‘Subsidy reform in the Middle East and North Africa’, Carlo Sdradevich, Randa Sab, Younes Zouhar, and Giorgia Albertin, Washington, DC: International Monetary Fund, 2014).

Independent of whether the specific tools were in line with good development practice or not, in all these key regards the region’s governments have evinced particularly strong efforts to spread welfare widely.

While the origins of this extensive, and often distortive, distributive regime remain to be researched in more detail, it is clear that it emerged in the era of Arab nationalism and intensive ideological competition between Arab countries. As Ferdinand Eibl has shown, domestic elite splits at times of instability led political rivals to engage in wide-ranging welfare promises (‘Social dictatorships: the political economy of the welfare state in the Middle East and North Africa’, Ferdinand Eibl, DPhil thesis, University of Oxford, 2016). At the same time, the populist promises of state employment

and welfare by Nasser and other Arab nationalist leaders also put the region’s conservative rulers – some of whom fell to, or were threatened by, nationalist coups – under pressure to expand provision. Wide-ranging patronage came to be seen as a key tool for maintaining authoritarian rule, be it republican or monarchical.

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‘MENA QUASI-WELFARE REGIMES ARE ROOTED IN THE POPULIST NATIONALISM OF THE 1950S AND 1960S ...’
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In line with the hypothesis that MENA quasi-welfare regimes are rooted in the populist nationalism of the 1950s and 1960s, it is indeed the socialist–populist republics like Egypt, Syria, Algeria, and Libya that tend to have the most widespread subsidy regimes and, outside the GCC, the most expansive state employment. Most food and energy subsidy regimes were created in the turbulent 1950s and 1960s – although it was only with the oil shock of the 1970s that energy subsidies became particularly costly, at least for energy-poor Arab countries.

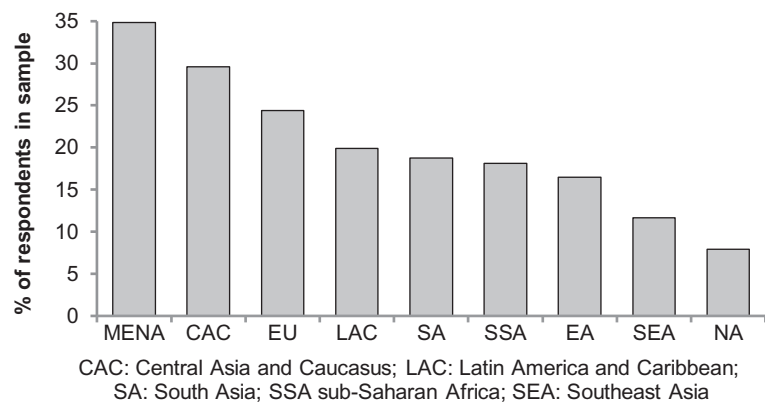
Why did regimes choose subsidies and not other – conventional – welfare tools for wealth-sharing? The coverage of unemployment insurance, health insurance, pensions systems, income support payments, and other tools of welfare is highly uneven across the region (‘Inclusion and resilience : the way forward for social safety nets in the Middle East and North Africa – overview’, Victoria Levin, Joana Silva, and Matteo Morgandi, World Bank, Report no. 72975, 1 September 2012; ‘Pensions in the Middle East and North Africa: time for change’, David Robalino, Orientations in Development Series, Washington, DC: World Bank,

2005). Investment in such instruments pales in comparison to the cost of excess public employment and energy subsidies. Again, answering this question with confidence will require further research, but likely causes include:

- the symbolism and immediately tangible nature of 'in-kind' benefits;
- the relative administrative ease with which subsidized prices can be administered – in comparison with the complexity of creating modern social security systems – a particular political benefit at times of acute instability;
- the visible universality of subsidies, compared to means-tested welfare that can be exclusive in practice;
- the absence, at the time, of models for modern anti-poverty tools such as conditional or unconditional cash grant systems.

Finally, economic distortions created by subsidies were less well understood at the time, while the opportunity costs of energy subsidies, in particular, were often lower in the initial phase. Since then, the quasi-welfare systems have become so costly that resources for conventional, less economically distortive, and socially inclusive welfare policies have become very scarce.

The bias of state employment and energy subsidies in favour of the politically critical urban middle class probably also helped make them politically attractive. This is not to say, however, that the basic intention behind subsidies was not inclusive. One of the considerations behind the expansion of subsidies in 1970s Tunisia, for example, seems to have been that the informal sector would also benefit from them ('The socioeconomic impacts of energy reform in Tunisia: a simulation approach', José Cuesta, AbdelRahmen El-Lahga, and Gabriel Lara Ibarra, Policy Research Working Papers. World Bank, June 2015).



Preference for government provision across different world regions, 2010–14

Note: Respondents were asked 'Government responsible that everybody is provided for?' on a 10-point scale. Percentages in graph represents share of those who 'agree completely'.

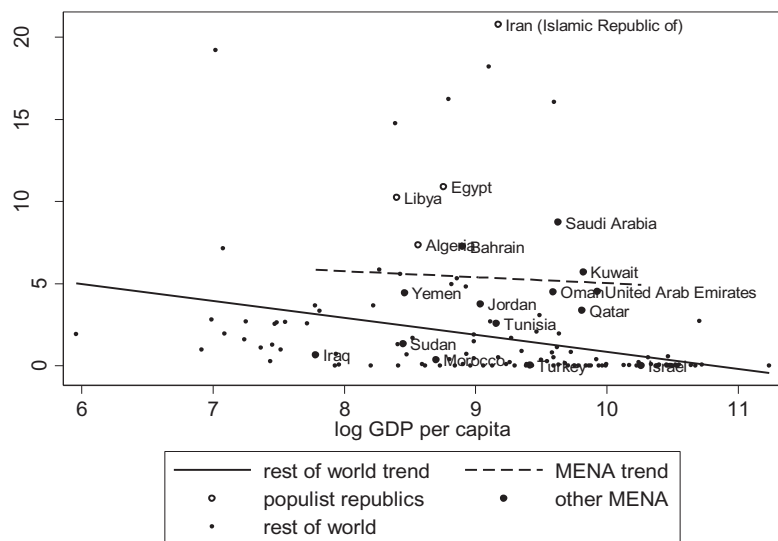
Source: World Values Survey Wave 6

Remarkably, the period of relative economic liberalization that many Arab countries went through in the 1970s (sometimes called 'infatih') changed little in the region's basic wealth-sharing system. If anything, subsidies and state employment grew and liberalization merely added another layer of business cronyism and corruption to systems that remained, in many ways, predicated on state-orchestrated protection and wealth-sharing. All of the above reasons supporting the provision of in-kind welfare benefits continued to apply, and

arguably still apply today. At the same time, popular expectations vis-à-vis government welfare provision remain particularly deeply engrained in the MENA region (see figure above).

State and regime type and subsidization

The figure below shows that in the scale of energy subsidies, the MENA – and Arab countries in particular – does indeed stand out globally. Also, in comparison with the rest of the world, the share of energy subsidies in GDP in the MENA region barely declines with



Pre-tax energy subsidies as share of GDP, 2013

Source: IMF and World Bank



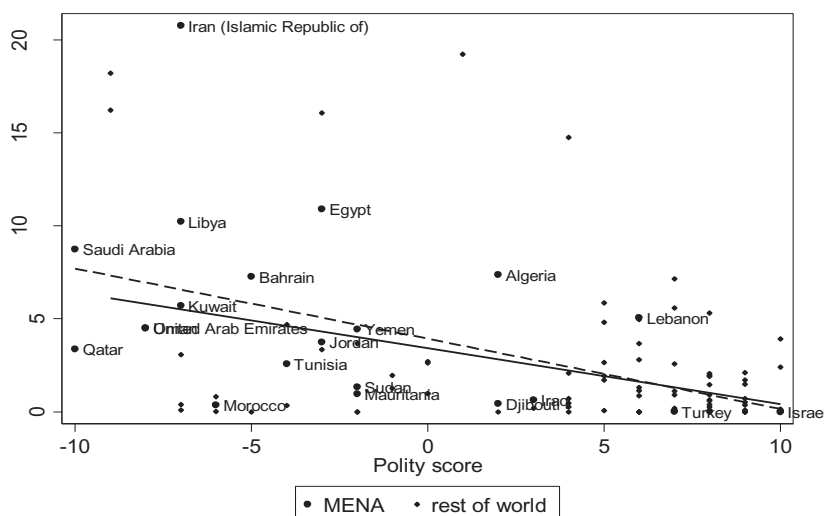
higher values for GDP per capita. This is probably an outcome of the fact that the richer countries in the region derive much of their wealth from oil income, which in turn has tempted them to provide cheap domestic energy, even if this has ceased to be economically rational in the decades since the 1980s oil glut.

As expected, authoritarian republics with a deep legacy of populist–nationalist ideology – namely Algeria, Egypt, Libya and (although not an Arab case) Iran – stand out in particular. (Note that Iraq has a low subsidy figure only because data on petroleum subsidies are missing from the IMF dataset; as transport fuel is kept cheap in Iraq, actual subsidies are likely to be high in this case too.) Countries with less of a populist–socialist history (Tunisia, Jordan, and Morocco) have lower subsidies. The pattern is very similar for food subsidies ('Subsidy Reform in the Middle East and North Africa', Carlo Sdravovich, Randa Sab, Younes Zouhar, and Giorgia Albertin, 2014, Washington, DC: International Monetary Fund).

Cross-national data also suggests a link between energy subsidies and authoritarianism: countries with lower Polity scores – in other words, the more authoritarian countries – tend to provide higher subsidies (see figure above). The link for the MENA region appears similar to that for the rest of the world, suggesting that the use of subsidies as an authoritarian patronage tool is a global phenomenon.

We cannot be sure, however, that the link is causal:

- oil-rich countries tend to be more authoritarian (*The Oil Curse: How Petroleum Wealth Shapes the Development of Nations*, Michael L. Ross, Princeton University Press, 2012);
- at the same time, oil-rich countries might be more likely to provide energy subsidies, independent of their regime form.



Polity scores and energy subsidies

Source: Polity, IMF

Simple exploratory regression shows, however, that the correlation between authoritarianism and subsidies is robust even if we control for oil and gas rents per capita as well as GDP per capita (see **Model 1** in the table below). (The inclusion of GDP per capita is standard practice but somewhat problematic, as the GDP of oil-rich countries is in part determined by their oil rents – the two variables are not independent from each other.) Authoritarianism is in fact

the only fully statistically significant predictor of subsidies. The dummy that indicates whether a country is Arab has barely any impact; the same is true for a MENA dummy that is not shown here. So at least descriptively, the authoritarian nature of the region seems to account for the generally elevated level of subsidies – although the extremely high subsidies in some of the MENA republics continue to stand out even in this model.

Correlates of energy subsidies as share of GDP (IMF), 2013

	Model 1	Model 2
Polity 2 score	-0.30*** (0.076)	-0.093 (0.14)
Log of GDP per capita	-0.41 (0.38)	-0.67* (0.40)
Arab country	0.16 (1.19)	-0.26 (1.20)
Resource rents per capita (logged)	0.22* (0.13)	0.39** (0.16)
Polity*rents interaction		-0.036* (0.02)
Constant	6.52* (3.36)	7.71** (3.38)
Observations	103	103
R2	0.37	0.39

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$

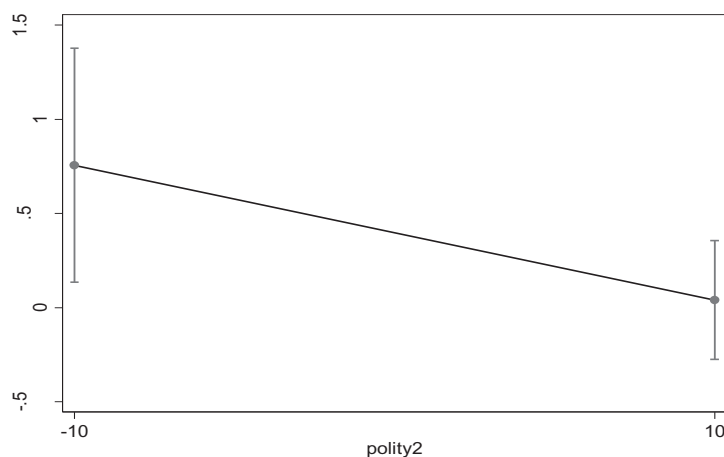
Note: Standard errors in parentheses

Could it be that rents and authoritarianism interact, notably in the sense that the use of energy subsidies is limited to authoritarian regimes with natural resource rents? **Model 2** (the second column in the table) tests this hypothesis. As interaction terms are difficult to interpret, the figure below graphically illustrates the marginal effect of rents conditional on how authoritarian a country is. The result is indeed that only in more authoritarian countries (those with a negative Polity value, left side of graph) is there a significant, positive link between hydrocarbons rents and energy subsidies. The effect is substantial: our (logged) measure of resource rents per capita can reach up to 10 units in resource-rich countries, which would imply extra subsidies of more than 7 per cent of GDP.

By contrast, democratic countries, on average, do not provide increased energy subsidies even when rents are available. This increases our confidence somewhat that the link between subsidies and authoritarianism is not just incidental. A further marginal effects test (not shown) reveals that authoritarian systems in general tend to have higher energy subsidies, but that the effect is stronger and more significant for authoritarian countries with rents.

In the interaction model (**Model 2** in the table), the Arab dummy variable again does not have a significant impact. This all suggests that subsidies in the region are so pronounced not because the Arab world is fundamentally different, but simply because it contains many cases that combine authoritarianism with high levels of rent. The average incidence of energy subsidies for authoritarian countries in the rest of the world is pulled up by outlier cases Kyrgyzstan, Venezuela, Turkmenistan, Uzbekistan, and Zimbabwe, all of which (bar Zimbabwe) are resource-rich.

One should not draw firm causal conclusions from simple cross-country regressions. The above results are hence merely suggestive. They are, however, in line with existing qualitative research which claims that subsidies are used to bolster authoritarianism. It remains to be investigated whether rents and authoritarianism also account for other features of Arab distributional systems – such as excessive government employment or above-average public goods provision in education and health. Preliminary research suggests that the conversion of rents into broader public goods like education and healthcare only happens in authoritarian countries whose rulers



Average marginal effects on subsidies (as % GDP) of a one unit log increase in rents: dictatorship and democracy compared

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'... LARGE PARTS OF THE REGION REMAIN BEHIND THE CURVE IN BUILDING THE INFRASTRUCTURE FOR MODERN SOCIAL SAFETY NETWORKS.'

are threatened by political subversion ('Why are some oil dictators nice to their people?', Ferdinand Eibl and Steffen Hertog, Draft paper, London, 2016).

Consequences for subsidy reform

The deep political roots of subsidy systems were illustrated when Arab regimes, both under old and new leaders, reversed subsidy reforms or increased subsidies after the Arab uprisings of 2011. This reflexive resort to old distributional patterns indicates that subsidy regimes are seen as a cornerstone of political stability. Given Arab citizens' heightened expectations vis-à-vis the state and the patchy nature of other welfare mechanisms, this perception is probably not wrong.

The partial adjustments of subsidy regimes that have happened since 2011 have occurred under great fiscal pressure, and then only reluctantly. Compensation measures have often been ad hoc, as large parts of the region remain behind the curve in building the infrastructure for modern social safety networks. Even historically very unequal regions, such as Latin America, have by now built up more experience with modern anti-poverty tools such as cash grants.

If further reforms are to succeed, governments and international organizations need to tackle subsidies as part of a broader system of skewed wealth distribution that will require wholesale reform. Citizens in many Arab countries express disproportionately high levels of distrust vis-à-vis their governments, which will not make the task of distributional



reform easier and which puts a premium on immediate and tangible compensation ('Is there an Arab variety of capitalism?', Steffen Hertog, Economic Research Forum, Working Paper 1068, London, 2016). The region is in need of a broader social contract that provides conventional income

support and active labour market policies, in lieu of exclusive, costly, and regressive subsidies and government employment. In the long run, the chances for an inclusive social contract also appear better in democratic regimes that are less reliant on patronage through in-kind benefits for

their political survival. Moving towards such a new social contract will probably be hardest in the most statist republics with the deepest nationalist-populist legacy; these, ironically are the regimes that set out with the greatest ambitions of development and welfare more than half a century ago.



Rethinking energy policy in the MENA's hydrocarbon economies

Rahmat Poudineh

Background

The Middle East and North Africa (MENA) is a unique region in many respects, but never more so than when it comes to the issue of energy: it contains roughly 60 per cent of world oil reserves and 45 per cent of world gas reserves. Over the last century, this copious natural capital has enabled MENA countries to transform their economies, boost their standards of living, support population growth, and develop industries that rely heavily on energy to function. However, there is no opportunity without cost, and these costs are now becoming clearer. While energy demand in most of the developed world is stagnant/declining, various forecasts show the MENA and the Asia Pacific region to be the main sources of global energy consumption growth. The issue of energy intensity fares even worse in comparative terms. According to the *BP Energy Outlook (2016)* the Middle East will become the most energy-intensive region of the world by 2030. Moreover, high dependence on oil/gas revenues has led to economic performance that fluctuates with oil price cycles, compromising economic stability. Furthermore, hefty implicit and explicit energy subsidies have resulted not only in severe distributional

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 '... UNCONSTRAINED ECONOMIC GROWTH FUELLED BY CHEAP HYDROCARBON RESOURCES IS NO LONGER SUSTAINABLE.'

issues and a wider gap between the poor and the rich, but they have also placed many of these countries on a fiscally unsustainable path, with the IMF predicting narrowing fiscal balances or budget deficits through to 2020. Additionally, the Paris Climate Agreement, which came into effect in November 2016, implies that in the long run, the future of fossil fuels is at least uncertain, even if peak oil demand does not materialize in the foreseeable future.

In this context, the main contention of this article is that the MENA's oil and gas economies need to rethink their energy policy for the twenty-first century, where unconstrained economic growth fuelled by cheap hydrocarbon resources is no longer sustainable. Revision of energy policy will shape their wider economic and industrial strategy and improve their place and future in a rapidly changing global energy landscape. A sustainable energy policy for the region can have multiple dimensions but should include at least the following key *interrelated*

components (discussed below in subsequent sections):

- energy price reform,
- investment in energy efficiency,
- investment in alternative energy,
- a comprehensive energy sector-level strategy (rather than one that is disaggregated across energy vectors).

However, things are easier said than done.

This article has four main conclusions.

- 1 Successful energy price reform and elimination of fossil fuel subsidies require an understanding of the logic of subsidies; it is not just about politics as we always hear, the economic context matters a great deal.
- 2 Energy efficiency is one of the biggest challenges facing the region; the correction of price signals can only partially resolve this due to the presence of other factors such as path-dependency, market failure, and elements of consumer behaviour.
- 3 Investment in alternative energy requires that careful consideration is given to the balance of market and government roles in providing investment incentives for renewables.

4 The traditional view of energy strategy (where electricity, oil products and gas are placed into separate silos) no longer works. This is because the end market for these energy carriers can no longer be separated.

Energy price reforms

Energy subsidies in the MENA’s resource-rich countries have been always explained around the idea of ‘no taxation and no representation’ or alternatively, ‘rent distribution in return for political support’. This was believed to constitute an important part of the social contract (although in practice the social contract also has other dimensions, such as security) between rulers and citizens/subjects in the region’s oil economies. This argument has also repeatedly been used to explain the difficulty of removing energy subsidies without introducing political reforms. While the argument based on the social contract rightly points to the need for rent distribution, given the political structure in these countries, it tells us nothing about why one particular form of rent distribution (subsidizing a commodity in this case) should be preferred over others. In fact, rent distribution can be of any form, from subsidizing commodities or services to providing insurance and cash payments. Social welfare theory tells us that any rent in excess of basic governmental administration costs should be distributed as lump sum grants and be used to finance essential services such as compulsory education, health, or their equivalents. The fact that the MENA’s resource-rich countries have chosen to subsidize energy carriers rather than follow social welfare theory for rent distribution, has more to do with their economic context than their political context.

There are at least two economic reasons why resource-rich countries subsidize commodities rather than

follow social welfare theory:

- These countries have limited capacity to invest resource rents locally without creating inflation or other adverse macroeconomic impacts.
- Populations in these countries may not have the confidence that a Sovereign Wealth Fund (SWF) would bring any benefit, not least because the discount rate that the public would apply to a SWF would exceed the likely return of these funds (because of uncertainty in future revenues and risk attitude).

A better understanding of the economic logic of subsidies would thus help to reduce or eliminate them in the future.

- First and foremost, the economic infrastructures (including communications, transportation and distribution networks, financial institutions and markets, and energy supply systems) in the MENA’s hydrocarbon countries need to be better prepared for a transition away from commodity-based subsidies to other forms of rent distribution.
- Second, communication with the public and a mitigation strategy are key here. Sound communication is needed to assure the public that the removal of energy subsidies implies only that the form of rent distribution changes (to the advantage of the public) and not the rent distribution itself. Mitigation measures such as cash payments are thus needed to reassure the public of the government’s commitment to rent distribution.

Energy efficiency: the ‘invisible fuel’

The MENA resource-rich economies are among the most energy-intensive countries of the world – even though improved energy efficiency (considered an ‘invisible fuel’) is often considered the cheapest way to curb unconstrained energy demand. In the

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 ‘... IMPROVED ENERGY EFFICIENCY (CONSIDERED AN “INVISIBLE FUEL”) IS OFTEN CONSIDERED THE CHEAPEST WAY TO CURB UNCONSTRAINED ENERGY DEMAND.’

electricity sector, the cost of saving one kilowatt hour (kWh) is a fraction of the cost of producing it. There are many factors that affect energy efficiency, these include energy prices, technology, information, consumer behaviour, and path-dependency (given the long life of energy consuming assets). However, among these various factors analysts often focus only on under-priced energy as the reason for exceptionally high energy intensity in the MENA region. While price is an important driver of energy demand and associated investment decisions, the effect of non-price factors is substantial when their overall effects are considered. This suggests that even if price distortions are eliminated, a significant amount of energy inefficiency in the MENA economies will remain if non-price factors are not addressed.

For example, **path-dependency** is very important. Current energy consumption is influenced by the investment decisions that have been made in the past. Consequently, a range of fixed factors affect energy demand:

- the characteristics of the existing built environment in the region,
- the fleet of transport alternatives,
- population,
- the pattern of human settlement.

However, these cannot be changed solely through rationalizing end-user prices. These mean that there is some form of ‘structural energy inefficiency’ in the MENA economies that a price signal cannot easily eliminate. The problem of path-dependency is unique



to resource-rich countries, in that their economies have developed around the idea of cheap and abundant fossil fuels.

There are two other problems relating to energy efficiency that are relevant in every context. These are behavioural barriers and market/organizational failures.

Behavioural barriers are related to hidden costs and attitude towards risk. Investing in energy efficient appliances is often costlier and riskier (due to uncertainty in the payback period) and this may cause people to forgo such an option. Moreover, the cost of energy, even after removing subsidies, is a tiny fraction of households' expenditure in resource-rich countries, which creates hardly any economic incentive for behavioural change.

Market and organizational failures are related to lack of information, information asymmetry, and incentives. Few programmes exist in the region to create consumer awareness around high energy consumption levels or to mandate energy efficiency labels on appliances and energy performance certificates for homes. Even in places where such programmes exist, their implementation has been sluggish or inconsistent. There are also issues related to the misalignment of incentives for energy efficiency investment, such as those between landlords and tenants, or between governments and their departments.

Therefore, while energy efficiency is much needed in the MENA's resource-rich countries, its realization is one of the most onerous tasks for its governments. Analysts often highlight the challenges of removing subsidies in the region, but correcting the price signal is just the first step towards promoting energy efficiency. Much remains to be done to promote energy efficiency even after all energy prices are fully rationalized.

Alternative energy sources

The issue of renewable investment in the MENA's hydrocarbon economies has been the subject of various studies in recent years, but little attention has been given to the key questions of why renewable investment is needed in these countries and how the incentives for investment need to be provided. The need for renewable investment in resource-rich countries has been previously justified in terms of:

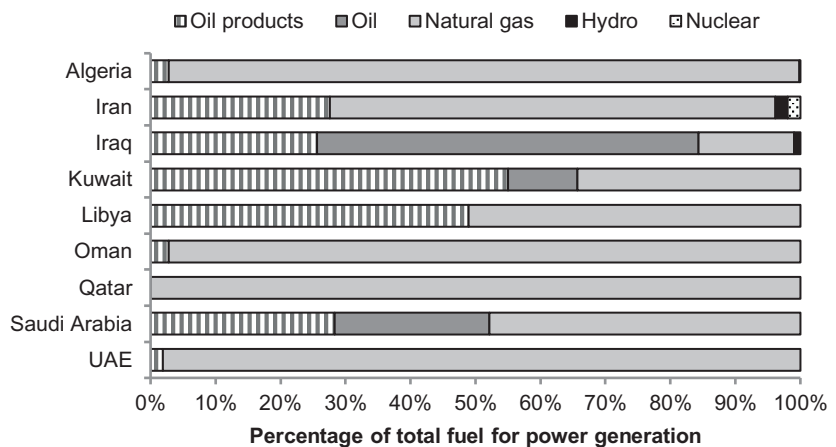
- dealing with increasing energy demand,
- compliance with climate agreements,
- exploiting the positive externalities of the renewable sector (job creation and economic diversification, among others).

While these arguments are valid, there is also a supply-side argument that is at least equally important.

As seen in the figure below, these countries rely on natural gas, oil products, and oil for power generation – these three fuels constitute almost 100 per cent of the generation mix. The share of other resources, such as renewables and nuclear, in total power generation is almost nil. Natural

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'LITTLE ATTENTION HAS BEEN GIVEN TO THE KEY QUESTIONS OF WHY RENEWABLE INVESTMENT IS NEEDED ... AND HOW THE INCENTIVES FOR INVESTMENT NEED TO BE PROVIDED.'

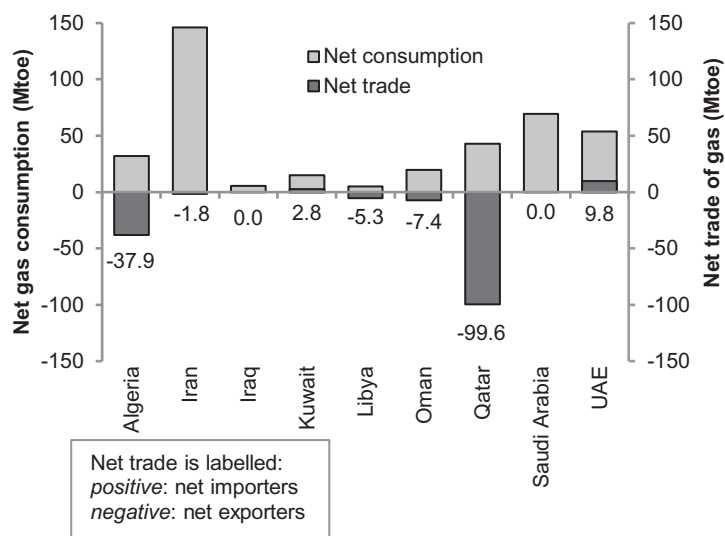
gas is the only fuel that is used by all MENA countries for electricity generation. However, in recent years the demand for gas in many of these countries has surpassed exploration and utilization of new gas reserves. The figure overleaf shows that Kuwait and the UAE are already net importers, whereas Saudi Arabia has zero net trade and Iran is only marginally a net exporter. Only Algeria and Qatar have significant production surpluses. This means that if the increase in electricity demand (which is forecasted to grow significantly over the next 20 years) is not met with additional gas-powered plants, it unavoidably will be met with oil and/or oil products-fired plants which have extremely high opportunity costs for these countries. Moreover, in countries such as Algeria, where government is dependent on gas export revenue, the growth of domestic gas consumption for power generation is becoming a concern. Deployment



Generation mix in the MENA's hydrocarbon economies by fuel type, 2014

Note: In addition, for Iran, 0.3% of power is generated by coal, and for the UAE, 0.2% is generated from solar/tidal/wind power.

Source: IEA Energy Balance



Gas consumption and net trade in the MENA resource-rich countries, 2014

Source: IEA Energy Balance

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‘RENEWABLES CAN HELP ALLEVIATE THE PRESSURE ON DOMESTIC OIL AND/OR GAS CONSUMPTION IN THE MENA RESOURCE-RICH COUNTRIES ...’

of renewables can help alleviate the pressure on domestic oil and/or gas consumption in the MENA resource-rich countries and thus boost their export revenues.

A challenge facing the governments of the MENA region is how best to incentivize renewable energy, given their economic context. Overall, investors can be incentivized in one of two ways – which are polar opposites.

- One approach would be to **remove fossil fuel subsidies** and internalize the cost of externalities. This creates strong incentives for investors in renewables to enter the power market as their cost is falling (recent solar auctions in the UAE showed that solar PV is among the cheapest options in the region).
- The second method is to **subsidize renewables** to the level that they can compete with under-priced fossil fuels.

However, these two diametrically opposed solutions cannot be implemented in their pure form in the region. This is because the complete removal of fossil fuel subsidies, in the short run, will face significant public resistance and is likely to have adverse macroeconomic effects – such as recession and inflation. At the same time, a complete subsidy programme for renewables, in addition to the existing fossil fuel subsidies, would be very costly to the public budget, especially in a low oil price environment. Therefore, the most practical way to create incentives for renewables investment, at least in the short to medium term, is through partial energy price reform and a partial government subsidy programme. This balances the fiscal pressure on the government budget against political acceptability. It is also compatible with the energy price reform plans currently underway in the region, in which governments are gradually and partially rationalizing the price of all energy vectors.

An integrated energy sector strategy

Resource-rich MENA countries need to devise a sector-level strategy and

abandon the old mentality of placing electricity, gas, oil, and renewables into separate silos. The traditional silo approach was suited to a time when the end market for these resources could be separated. Currently and for the foreseeable future, gas, electricity, and oil compete for various services such as heating/cooling and transport in the end-users’ market. Therefore, a comprehensive energy sector strategy – in which all energy sources are treated in an integrated (and perhaps equal basis) – is needed more than ever. Such a strategy demonstrates the government’s commitment to supporting all energy sources, including renewables, and sends the signal of policy stability. It also allows the realization of not only a more sustainable growth path, but also of improved productivity and industrial diversification in oil-based economies.

Moreover, the governments of the region need to consider energy and climate policies together, a point which becomes increasingly relevant following the Paris Climate Agreement, with decarbonization becoming the focal point of many countries’ energy policy. Such a view can also be justified from an economic perspective, because climate policies (the introduction of renewables, carbon tax, emission performance standards, and energy efficiency measures) not only affect the relative use and price of alternative energy sources but also the shape of the energy demand curve and inter-fuel competition. This implies that the separation of climate and energy policies can lead to unintended consequences in energy markets which may then require further policies to remedy.

Finally, if public resources are to be used (through subsidy for example) to give one form of energy source an advantage over another, this needs to be done a smart way because from



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'THERE IS LITTLE DOUBT THAT FOSSIL FUEL SUBSIDIES ARE BAD FOR SOCIETY, NOT LEAST BECAUSE THEY INCENTIVIZE WASTEFUL CONSUMPTION ...'
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a societal perspective there are both harmful and harmless subsidies. There

is little doubt that fossil fuel subsidies are bad for society, not least because they incentivize wasteful consumption and have adverse impacts on the environment. The question is can we say the same about subsidizing household-owned solar PV? Probably not. There are more advantages to

society from subsidizing solar PVs than disadvantages. Given this, together with the need for rent distribution in the resource-rich MENA economies, governments need to rethink their energy policy to align it with wider societal benefits and the longer-term objectives of sustainable growth.



How might energy price and subsidy reform affect the use of renewable energy in the MENA?

Jonathan Walters

It is often argued that renewable energy has not been able to compete with subsidized fossil fuels in the MENA, and that the use of renewable energy (RE) will therefore grow only as fossil fuel subsidies are reduced. But under what circumstances, if any, might this actually be true? Consider the following line of Socratic questioning.

Q1. In which markets in the MENA is energy traded competitively?

In fact, remarkably few MENA energy markets are competitive. In some countries, there is some retail competition in petroleum products (particularly vehicle fuel or cooking/heating fuel) and hence, indirectly, competition with electricity that could be used in those applications. In some countries, there is retail competition in electricity, but only in the limited sense that non-grid alternatives (such as: rooftop photovoltaic or private generators that sometimes run as a small business where the grid is unreliable – for example in Lebanon and Yemen) sometimes compete with grid electricity. In a very few cases, direct sales of electricity from generation companies to large industrial or commercial companies are permitted.

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'... REMARKABLY FEW MENA ENERGY MARKETS ARE COMPETITIVE.'
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In short, the kind of situation that would allow direct or indirect competition with renewable energy supply is currently fairly limited.

Q2. How much difference could it make in those markets if energy subsidies were removed?

Well, there are some examples of specific renewable energy markets in which removal/reduction of fossil fuel or grid electricity subsidies could make a major difference. For example, if heating fuel subsidies were reduced, the economics of solar water heating would improve. It is notable that Israel has almost universal solar water heating – partly because of direct regulation and partly because of a long history of cost-reflective electricity and fuel prices – while no other MENA country has achieved anything approaching that coverage of solar water heating.

A more recent example, perhaps, is that subsidized grid electricity is undoubtedly impeding the growth of rooftop solar in the MENA, even as rooftop solar grows rapidly in less sunny countries. (However, more research would be needed to show how the positive impact of rooftop solar subsidies in those less sunny countries compares to the negative impact of subsidized grid electricity in the MENA.)

But that doesn't imply that the subsidizing of grid electricity necessarily affects the growth of *utility-scale* solar photovoltaic or other *utility-scale* renewables.

A further example – one that may rapidly become more relevant than it is today – is that electrification of vehicle transport may progress more slowly in the MENA, in so far as subsidies reduce the price of vehicle fuel more than they reduce the price of electricity. As the cost of electric vehicles falls, such subsidy imbalances in the MENA might begin to have major implications for competitiveness, pollution, household consumption, and affordability.

Q3. Is the bulk supply of electricity traded competitively in the MENA?

Let's think in terms of the classic power sector reform model that originated in the 1990s and see how that applies in the MENA. In the classic model, electricity sectors are unbundled (separating vertically integrated utilities into generation, transmission, and distribution segments – and sometimes separating distribution from retail supply functions). Sometimes autonomous electricity regulators are created. Quite often, parts of the sector are privatized. Once the elements of unbundling, privatization, and regulation – in particular, ensuring

that tariffs cover costs – are in place, then competition at the bulk (wholesale) and eventually retail levels may be permitted or encouraged. As the scope of competition widens, the role for price regulation reduces; correspondingly, competition flourishes only where prices can be set to levels that at least cover costs (Who wants to compete for loss-making sales? Or who wants to make the effort to cut costs in order to be competitive when excess costs can be accommodated by subsidies instead?). This is the essence of ‘liberalization’ of the electricity sector.

But reform often passes through a stage (or even stops there) in which all (or almost all) wholesale electricity is purchased by a state-owned ‘single buyer’ monopsonist, and is sold by that single buyer to large customers (distribution companies and industrial/commercial customers). In such cases, there is by definition little or no competition in the market. Occasionally, a (predominantly) single buyer combines with some limited direct bilateral trading between large producers and large consumers, but most of the market remains monopsonistic.

No country in the MENA (with the exception of Iran) has progressed in its electricity reform beyond the single buyer phase (some have not even got that far and remain with a fully vertically integrated sector). In short, there is very little, if any, competition in bulk supply of electricity – it’s all (or almost all) bought by the state. That is of course the very same state that decides by how much to subsidize each type of electricity, and pays those subsidies. Without actual competition, how can subsidies render

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‘THERE IS VERY LITTLE, IF ANY, COMPETITION IN BULK SUPPLY OF ELECTRICITY – IT’S ALL (OR ALMOST ALL) BOUGHT BY THE STATE.’

some types of energy more ‘competitive’ than others, and cause them to be purchased more by the very entity that pays the subsidy to make that energy ‘cheaper’? The state can (and should) simply decide which energy to purchase on the basis of relative economic costs and benefits, without consideration of its own differential subsidies.

Q4. If bulk electricity markets become competitive, what will that do to RE?

This is an important question, at least if bulk electricity competition is likely to be implemented in MENA countries in the foreseeable future (although it does not currently seem to be high on the policy agenda of anyone in the MENA). If bulk electricity competition comes to a country in which fossil fuels are more heavily subsidized than renewable energy, and that subsidy differential persists, then obviously that will constitute an important bias against renewable energy in favour of electricity produced from fossil fuels. On the other hand, if subsidies are reduced/eliminated, and competition is introduced on a level playing field between renewable and conventional electricity, then the outcome will obviously depend on how competitive the electricity produced from renewables actually is.

Q5. How uncompetitive is RE anyway?

Which leads to the question of just how competitive or uncompetitive renewable energy is, and how might that evolve? Or, to put the question another way, could unsubsidized renewable energy compete against unsubsidized fossil fuels? – and if not now, then what about in the near- to medium-term?

Renewable energy technologies are very diverse, the resource base for renewables technologies obviously varies from country to country, several of the technologies are progressing very rapidly, and the costs of those are falling fast. It’s therefore hard to

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‘LARGE-SCALE SOLAR PHOTOVOLTAIC IS BECOMING COMPETITIVE WITH CONVENTIONAL ELECTRICITY DURING DAYTIME HOURS ...’

generalize or to summarize the situation in ways that won’t be immediately out-of-date, as technologies become even more disruptive.

But broadly speaking, in the MENA,

- large-scale solar photovoltaic is becoming competitive with conventional electricity during daytime hours, and will become so 24 hours a day, seven days a week, 365 days a year (24/7/365) in many locations once the costs of large-scale batteries fall far enough (which could take some time);
- concentrated solar power has cheaper storage (thermal) than batteries, but more expensive energy (although the cost of CSP energy is falling);
- wind power is competitive with conventional power in a few particularly windy locations (such as the Red Sea coast of Egypt, the Atlantic coast, and the mountains of Morocco), but storage remains an issue for dispatchable (in other words reliable, 24/7/365) energy.

Q6. How competitive will RE be when it becomes 24/7/365?

A lot will depend on what happens to the cost of the energy storage that would enable electricity supply from renewables to be continuous. In other parts of the world, countries might have large reserve margins of conventional electricity generation capacity which can kick in when the sun is not shining or the wind not blowing. In the MENA, electricity demand growth is typically faster than supply growth, partly because demand tends to be driven by high subsidies, so reserve margins are often thin. Similarly, in some regions, cross-border electricity trade is substantial, and can act like a national reserve margin.

Energy subsidy reforms and the impacts on firms: transmission channels and response measures

Jun Rentschler and Martin Kornejew

In early 2016 Saudi Arabia announced a significant reduction in fossil fuel subsidies (FFS), as a way to compensate shrinking government revenues – and the associated fiscal pressures – due to low oil prices. As subsidies were removed across a range of fuel types, the subsequent price hikes hit consumers and certain industrial sectors to varying degrees. Gasoline prices increased by about 50 per cent, mainly affecting motorists. A 67 per cent increase in natural gas prices affected electricity generators and industrial sectors. One of the highest price increases was observed for ethane, which rose from USD0.75/MMBtu to USD1.75/MMBtu or by 133 per cent (numbers sourced from ‘Riyadh cuts fuel subsidies, petchem producers count the cost’, *MEES Archives* 59(1), 2016).

Soon after the price increases, some of the largest petrochemical firms published estimates for the likely impacts on their production costs and profits. For instance, several large petrochemical firms estimated the adverse impact on profits to range from 6.5 per cent to 44.1 per cent relative to 2014. The Saudi Cement Company expected production costs to increase by USD18.1 million as a direct consequence of FFS removal. While these self-reported figures may not be consistently comparable, they highlight a common political economy challenge of FFS removal: Firms – and in particular large energy-intensive industries – tend to oppose FFS removal and exert their political clout to do so. Thus, concerns about competitiveness and profitability have been an important argument of political opponents of FFS reform.

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‘... CONCERNS ABOUT COMPETITIVENESS AND PROFITABILITY HAVE BEEN AN IMPORTANT ARGUMENT OF POLITICAL OPPONENTS OF FFS REFORM.’

While the adverse effects of FFS removal are increasingly well understood for households, the existing literature has largely ignored the effect of subsidy reform on firms. We argue that this is a gap in the evidence base that must be addressed, in order to design and deliver FFS reforms more effectively.

To understand how direct and indirect energy price shocks (induced by FFS removal) affect firms’ performance, and ultimately their competitiveness, it is crucial to understand the ability of firms to cope. In this article, we outline the two transmission channels for energy price shocks, and discuss four main response measures used by firms. For further details and extensive references please refer to ‘[Energy subsidy reforms and the impacts on firms: transmission channels and response measures](#)’ Jun Rentschler and Martin Kornejew, *OIES Energy Comment*, October 2016.

Energy price shocks and competitiveness: transmission channels & response measures

FFS removals typically induce energy price shocks (one-off or gradual), which affect firms and households throughout the economy. Analogous to the case of households, firms will be exposed to *direct* (where energy is used in the production process) and *indirect* (where energy price changes affect the cost of other inputs that embody energy) price effects. In addition to

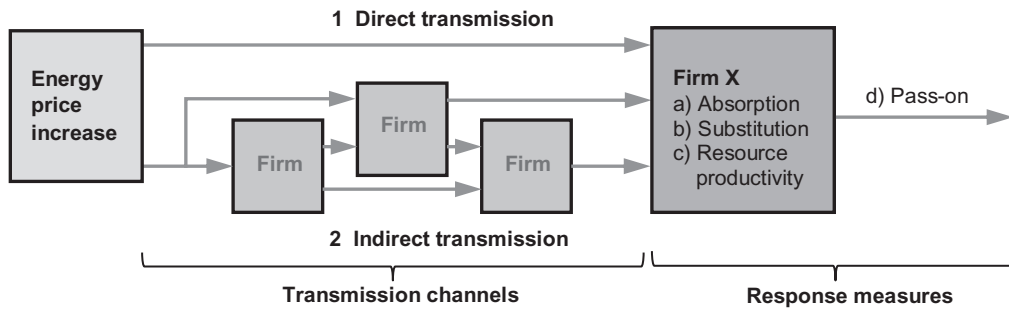
these transmission channels, several response measures play a crucial role in determining the extent to which firms are affected by subsidy removal.

This section conceptualizes and discusses these two transmission channels for energy price shocks and four common response measures, all of which are illustrated in the figure below. Large-scale firm surveys can help to shed light on most of these aspects, and aid the identification of potential differences between sectors or regions. In the case of larger, publically listed firms, similar analyses can be conducted using firms’ balance sheets and accounts; this is of particular relevance when an economy or sector is dominated by a single firm which is in a strong political position to oppose reforms.

Two transmission channels: How energy price shocks affect firms

1 Direct channel: Removing subsidies on specific energy types will directly increase the energy input cost of firms. This means that a subsidy removal affects firms’ energy costs almost instantaneously, unless the price of energy inputs has been hedged or the subsidy removal is implemented gradually. Such immediate cost shocks cannot be coped with using longer-term measures (such as technological updates to increase energy efficiency), but require quickly deployable response measures. In practice, energy-intensive industries, such as petrochemicals, cement, steel, manufacturing, or transport, tend to be particularly exposed to subsidy reform-induced price shocks.

The level of a firm’s exposure to *direct* energy price shocks depends on the



Energy price shocks due to subsidy removal: channels for shock transmission (1 and 2) and response measures (a–d)

extent to which it relies on specific energy inputs for generating revenue. This exposure can be approximated quantitatively by the share of energy input costs relative to total input costs or revenues. It should be noted, however, that firms’ energy expenditure does not necessarily increase at the same rate as energy prices. The reason for this discrepancy is that firms’ reported energy expenditures may include various payments (such as: suppliers’ labour costs, electricity transmission costs, or service fees) to energy suppliers that do not directly depend on energy prices. For accuracy it would thus be preferable to use physical rather than monetary measures of energy inputs, though such data may be more difficult to obtain.

2 Indirect channel: Energy price changes also affect firms *indirectly*, as the production costs of intermediate inputs increase. More specifically, firms producing intermediate goods will incur direct energy price shocks, which they – at least partially – pass on to other firms by increasing the price of intermediate inputs (see the section on ‘Price pass-on’ below). In this way energy price shocks can progress

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 SHOCKS.’

through supply chains in the form of price increases of non-energy goods. In practice, firms relying heavily on energy-intensive inputs (such as steel) tend to be affected most by indirect price shocks.

Indirect price effects are likely to take longer to fully materialize, as price shocks are successively passed down supply chains. Thus, the speed with which any given firm will incur the full indirect price shock depends not least on the number of preceding intermediate production stages.

The level of a firm’s exposure to *indirect* energy price shocks depends above all on the energy intensity of its intermediate production inputs. This can be approximated by determining the ‘embodied’ energy content of a firm’s production inputs. Various databases exist which offer detailed estimates of the embodied energy of hundreds of the most common industrial materials. However, it should be kept in mind that a domestic FFS removal does not affect *imported* materials – no matter their energy intensity. The use of input–output tables, or of CGE (computable general equilibrium) models with detailed sectoral disaggregation, can help with disentangling these aspects.

Four response measures: how firms deal with energy price shocks
 The transmission channels discussed

above determine the timing and overall size of cost shocks hitting firms. This section discusses the four main measures available to firms for responding to price shocks.

a) Absorption: If profit margins are large enough, firms can absorb energy price shocks by accepting smaller margins. If energy price shocks are fully absorbed into profit margins, firms may be able to continue operations in the short term without further adjustments to technology and production quantities, or to sales prices. In this case, consumption of both the (formerly) subsidized energy type and of all other energy inputs can remain unchanged, thus making this measure particularly crucial in the short run.

The ability of firms to absorb energy price shocks can be approximated by comparing absolute profits with the combined direct and indirect energy price shock. Alternatively, computing the ratio of profits and energy expenditures can also provide an indication of the ability to absorb energy price shocks. In the above referenced example of Saudi Arabia, the 14 largest petrochemical firms had jointly made total net profits of over USD9 billion in 2014. It is plausible that these high profits reaffirmed the belief of policy makers that energy price increases could be absorbed by these firms.

b) Substitution: As subsidy reforms typically increase the price of selected

energy types (such as electricity or petrol), firms may also respond by substituting these energy types with relatively cheaper ones. Such inter-fuel substitution can be observed in the form of changing energy shares (in other words, the energy mix) in total energy usage. However, the absolute quantity of energy consumption may remain constant, even if significant inter-fuel substitution takes place.

The ability to substitute energy types is constrained by the technological characteristics of production, which can vary significantly across sectors. Using firm surveys, the nature and magnitude of inter-fuel substitutability can be formally characterized and estimated by own and cross price elasticities, as well as Uzawa–Allen partial elasticities of substitution.

In addition, substitution requires access to energy and reliability of supply, which can vary across regions. For instance, a lack of access to the grid (or frequent power outages in rural regions) often disqualifies electricity as a substitute for fuels such as kerosene. Firm surveys frequently collect information on energy access and supply quality, which can shed light on firms’ ability to substitute in different regions and sectors.

c) Resource efficiency: Firms may also respond to direct energy cost increases by reducing their overall energy consumption per unit of output (in other words, by increasing their energy efficiency). Similarly, increasing material efficiency can help to mitigate indirectly transmitted price shocks, which are due to embodied energy in intermediate materials. In fact, material costs often significantly exceed energy costs even in energy-intensive manufacturing sectors; thus the role of material efficiency is of particular importance. This article summarizes both measures as *resource* efficiency.

Similar to the case of substitution, the ability to increase resource

efficiency depends on a variety of factors, including the availability and affordability of efficient technology, access to credit, and technical support. This also implies that firms require time to replace machinery and restructure production processes; thus making resource efficiency a medium- to long-term response measure.

Various indicators exist to enable the measurement of energy or material efficiency, and hence allow a direct comparison with related sectors in other countries (‘Material use indicators for measuring resource productivity and environmental impacts’, Stefan Bringezu and Helmut Schütz, Wuppertal Institute, Resource Efficiency Paper 6.1, 2010). More complex indicators can require data which is typically not available from standard firm surveys, but a basic measure for energy (or material) productivity can be provided by computing the quantity of output or revenue per unit of energy (or material) input.

d) Price pass-on: While the first three response measures describe how firms respond *internally* to energy price shocks, the net impact on firms also depends on their ability to pass price shocks to *external* consumers. In its essence, this channel refers to the extent to which firms can adjust the sales price of their output in response to changing input costs. Even if energy price increases are large, if firms can pass them on by charging proportionally higher sales prices, the overall adverse effect on the firm may be limited. In other words, the loss from reduced sales quantities is offset by an increased profit margin per unit.

The ability to pass on price increases ultimately depends on the price elasticity of demand – in other words, the ability of end-users (such as households) or other firms (consumers of intermediate goods) to substitute away from a given firm’s

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‘PRICE PASS-ON IS PARTICULARLY RELEVANT IN THE SHORT TO MEDIUM TERM, AS PRICES CAN BE ADJUSTED FASTER THAN PRODUCTION TECHNOLOGIES.’

product. This in turn depends on the market environment: the degree of competition, and the availability and affordability of alternatives. Empirical evidence suggests that the pass-on of carbon taxes varies across industries between 0 per cent and over 100 per cent of the price shock – thus highlighting the important role of sector-specific conditions.

Generally, price pass-on is particularly relevant in the short to medium term, as prices can be adjusted faster than production technologies. It should be noted however, that demand elasticities increase over time as consumers acquire new information and their substitution ability develops.

Implications for the design of FFS reforms

As case studies of past reforms are studied and lessons learnt, the political economy challenges of subsidy reform are increasingly well documented. In fact, concerns about competitiveness and profitability have been an important argument used by political opponents of subsidy reform, while adverse impacts can indeed have knock-on effects on jobs and thus on households. However, while the potential adverse impacts of subsidy reform are increasingly well understood for households, research has given far less attention to the potential impacts on firms.

This article has outlined the most important transmission channels for energy price shocks, and response measures used by firms. These transmission channels and response measures directly offer policy makers



a reference framework for designing complementary measures for mitigating adverse socio-economic consequences of subsidy reforms.

Policy makers should consider actions for strengthening firms' ability to substitute towards alternative fuel types or to increase the efficiency of energy and material usage. Such measures include technical assistance, information programmes, and financial support for implementing efficiency investments (into modern

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'... RELIABLE AND AFFORDABLE ACCESS TO ALTERNATIVE ENERGIES...CAN BE CRITICAL FOR FACILITATING AND DIRECTING INTER-FUEL SUBSTITUTION.'
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machinery, for example). In addition, the provision of reliable and affordable access to alternative energies (for example through public investments in electrification) can be critical for facilitating and directing inter-fuel substitution.

However, it should be also be recalled that energy costs are only one (minor) factor among many that determine a firm's or sector's competitiveness. This implies that policy makers have a wide range of measures at their disposal to mitigate potential competitiveness losses due to energy price increases; for instance, by strengthening institutions and administrative capacity, or by investing in infrastructure and labour productivity and ensuring a stable business environment through prudent long-term policy strategies.



GCC energy pricing reforms in a low oil price environment

Anupama Sen

It has been roughly two years since the dramatic decline in oil prices triggered a spate of energy pricing reforms across most of the Gulf Cooperation Council (GCC) countries. The outcomes have been mixed and the process is far from over – indeed, many countries may be construed as being at the beginning of a long road. One interpretation of the historic prevalence of low energy prices in the GCC economies is that they are a central element of the 'implicit social contract' between rulers and citizens, and the main method of rent distribution. Beyond this, they have also been a central part of countries' attempts to industrialize through investment in energy-intensive industries, to (purportedly) provide a 'safety net' for low-income households, and to pursue broader macroeconomic stability. At the same time, the distortions and inefficiencies that have been caused by low energy prices – such as excessive energy consumption, disproportionate benefits to rich consumers, high energy intensity of GDP, and an impediment to economic diversification – are well documented.

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'RECENT ENERGY PRICING REFORMS HAVE CHALLENGED THE RIGIDITY OF THE SOCIAL CONTRACT INTERPRETATION.'
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'Popular' analysis of the most recent energy pricing reforms tends to tie their relevance entirely to the 2014 drop in oil prices, whereas it can be argued that the fiscal pressures motivating reforms were building long before this, and that they were not uniform across the region. Further, the incentive to carry through sustainable energy pricing reforms is not just contingent upon fiscal pressures (although the short-term revenue requirement serves as a trigger), but also on their economic and political costs. Recent energy pricing reforms have challenged the rigidity of the social contract interpretation. Despite these indications of malleability, it is becoming clearer that the social contract cannot be stretched much further without implementing measures which will require greater engagement with citizens and stakeholders in the long term. This in turn will arguably shape the nature of the social contract

per se. In this article, we look broadly at the fiscal pressures which led to the acceleration of reforms in the GCC countries, briefly assessing their progress, and at the potential implications for the social contract and the sustainability of energy pricing reforms.

The fiscal pressures motivating pricing reforms

The fiscal pressures leading up to the 2014 changes were actually building during the previous period of rising oil and gas prices. A slow global economic recovery following the 2008–9 global recession, as well as uprisings in the Arab world, had led most GCC governments to announce large increases in wages, employment benefits, social spending, and infrastructure development programmes, as part of an attempt to pre-empt social unrest.

■ **Saudi Arabia**, for instance, first announced a series of support measures in 2011 aimed primarily at job creation, housing, and education; this included a 15 per cent pay rise

for state employees and financial support for unemployed citizens. Another spending package of roughly USD32 billion (bn) (80 per cent of which was current expenditure) was announced in February 2015 – even as oil revenues began falling.

- **Kuwait**, after announcing its long-term Vision 2035 plan for economic diversification in 2009, continued with an expansionary fiscal policy through 2011–14, including a focus on public sector wages.
- Similarly, **Oman** increased spending during 2010–14 in response to social demands.

Consequently, most GCC economies became increasingly reliant on oil revenues to fund such commitments.

From 2010 to 2014, government revenues from oil and gas increased relatively faster than revenues from other (non-hydrocarbon) sources (see figure below), alongside a concomitant increase in government expenditure. This increase in government expenditure, together with a higher reliance on oil revenues to fund increased spending, exposed GCC economies further to oil price volatility.

The fiscal pressures across the GCC were also not uniform, limiting the options for fiscal adjustment available to different countries by 2015.

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‘FROM 2010 TO 2014, GOVERNMENT REVENUES FROM OIL AND GAS INCREASED RELATIVELY FASTER THAN REVENUES FROM OTHER (NON-HYDROCARBON) SOURCES ...’

- **Oman** was seen as one of the most vulnerable, drawing down on its foreign reserves and resorting to local borrowing to finance its 2015 deficit (roughly USD12 bn), whilst also being downgraded by credit rating agencies.
- **Bahrain’s** soaring budget deficit (estimated at roughly USD8 bn) in 2015 had to be financed by the Future Generations Reserve Fund, GCC aid, and borrowing.
- Even countries like **Qatar**, which had enjoyed years of budgetary surpluses, announced a record budget deficit of roughly USD13 bn for 2016.
- **Kuwait** followed suit, revising its 2016 deficit projection upward (from roughly USD27 bn to USD40 bn).

The different options for fiscal adjustment available to GCC countries included:

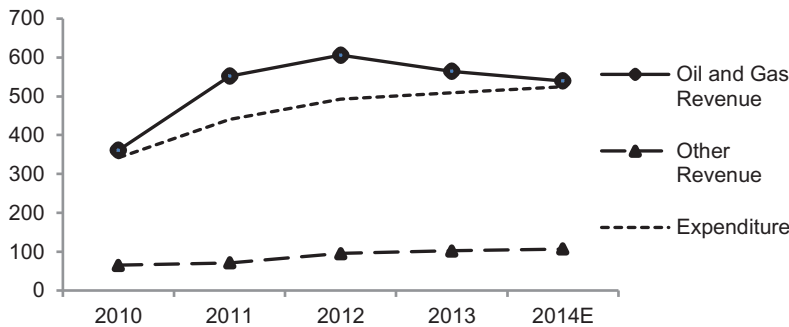
- borrowing from domestic and international markets,
- drawing down foreign reserves and/or liquidating Sovereign Wealth Fund assets,

- currency devaluation,
- imposing taxes (VAT, corporation tax),
- cutting government (current) expenditure,
- scaling back capital projects,
- cutting subsidies.

In the face of temporary shocks, GCC countries can fall back on their fiscal buffers (SWFs, foreign assets and government debt) – with the UAE, Saudi Arabia, Qatar and Kuwait holding relatively large buffers – but in the face of prolonged oil price declines, fiscal buffers are difficult to replenish, forcing governments to consider longer-term options such as cutting subsidies and government expenditure and increasing taxation. Taxation requires the existence of appropriately robust institutions, which are underdeveloped in the GCC, whereas the largest component of government current expenditure (around 50 per cent on average in most countries) comprises current spending on public sector wage bills, which are also the most difficult to cut. This has meant that cutting subsidies (through energy pricing reforms) and government capital expenditure were the most likely options under consideration by governments when faced with a prolonged period of low oil prices.

Beyond the fiscal – other incentives to reform

While the fiscal arguments for energy pricing reforms are clear, their long-term implementation is contingent upon a much more complex balance between fiscal, economic, and political incentives. Energy pricing reforms in oil exporting countries are best carried out in ‘good’ economic times when revenues and fiscal buffers are plentiful; however, this is politically difficult as these are also times when the difference between subsidized prices, and prices which reflect full costs,



GCC government revenues and expenditure, 2011–14 (USD bn)

Source: ‘Striking the right balance? GCC energy pricing reforms in a low oil price environment’, B. Fattouh, A. Sen, and T. Moerenhout, OIES Comment, 2016



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‘... THE POLITICAL COST OF REFORM COULD POTENTIALLY BE HIGH AS CITIZENS ... MAY VIEW PRICE INCREASES AS CLASHING WITH THE IMPLICIT SOCIAL CONTRACT.’

are highest (see ‘[Adjusting to low oil prices: prospects for fossil fuel subsidy reform in oil producing and exporting countries](#)’, S.O. Ladislav and Z. Cuyler, CSIS, Washington DC, 2015). As shown in the table below, during times of high oil prices: the fiscal urgency of reform is low as revenues are plentiful, the economic cost of reform is high as the adjustment to opportunity cost prices is steeper, and the political cost of reform is also high as prices have further to go to reach full-cost levels and governments are under pressure to increase spending when oil revenues are ‘pouring in’. When oil prices are low: the fiscal urgency for reform is conversely high as export revenues are lower, the economic cost of reform is low as the adjustments to full or opportunity cost are potentially smaller, and the political cost of reform is low – relative to full (opportunity cost) prices. Nevertheless, if price increases are carried out without introducing mitigating measures to help offset the negative impacts on households’ welfare, the political cost of reform could potentially be high as citizens of resource-rich governments may view price increases as clashing with the implicit social contract.

In the case of the GCC economies, although current low international

prices imply that domestic prices have relatively less far to go in order to align with international prices, a high reliance on oil revenues for distribution, public spending, economic development, and diversification during a period of geopolitical challenges implies that the political cost of raising prices to market levels is not insignificant. The successful implementation of energy pricing reform in resource-rich economies, therefore, involves striking a balance between their fiscal, economic, and political elements; the ‘social contract’ is relevant not simply as a constraint, but is also a key *enabler* of reform in this regard, in as much as it relates to engagement and communication with citizens.

Assessing progress – energy pricing reforms in Saudi Arabia

Cuts in energy subsidies have been implemented across all GCC countries – with the UAE leading the way in 2015. The magnitude of price increases has been large, albeit starting from a low base. In percentage terms, the price hikes for **low octane gasoline** have ranged from 20 per cent in Oman to 67 per cent in Saudi Arabia, while for **high octane gasoline**, these ranged from 30 per cent in Qatar to 50 per cent in Saudi Arabia. **Diesel** price increases were not as high, apart from Saudi Arabia where prices increased by more than 70 per cent. The biggest increases were in the prices of **natural gas** (mainly used in industry and the power sector); for instance the price of

ethane was increased by 133 per cent in Saudi Arabia and methane by 67 per cent over previous levels. Kuwait is the only country where price reforms are pending, following the dissolution of its parliament in response to protests over a proposed 80 per cent increase in energy prices.

It can be argued that price increases in the GCC over the last year or so constituted an initial and relatively ‘easier’ phase – the impact of declining revenues was clearly represented by the plummeting oil price and since the energy price increases were from a low base they still remained amongst the cheapest in the world for many GCC countries. As the oil market moves into a new equilibrium where prices could remain ‘lower for longer’, further price reforms to reflect full opportunity costs will be more difficult and will also involve additional testing of the social contract.

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‘... FURTHER PRICE REFORMS TO REFLECT FULL OPPORTUNITY COSTS WILL BE MORE DIFFICULT ...’

This particularly applies to Saudi Arabia, where the ‘first phase’ (2016) of price increases in gasoline, diesel, and electricity was largely accepted by the public despite negligible efforts towards communication campaigns and compensatory schemes to offset the negative impact. Instead, households adjusted their consumption, with some switching from higher to lower grades of fuel; this shift may have contributed (alongside lower GDP growth) to a reduction in energy demand growth to 1.7 per cent in the first half of 2016 compared with 3.5 per cent in 2015. The savings estimated from cutting subsidies in the first phase were around SAR29 bn (USD7.8 bn). There was, however, a backlash from consumers when the administration

Fiscal–economic–political matrix of incentives to reform energy prices

	High oil price	Low oil price
Fiscal urgency of reform	<i>Low</i>	<i>High</i>
Economic cost of reform	<i>High</i>	<i>Low</i>
Political cost of reform	<i>High</i>	<i>Low or high</i>

Source: ‘[Striking the right balance? GCC energy pricing reforms in a low price environment?](#)’, B. Fattouh, A. Sen, and T. Moerenhout, OIES Comment, 2016

attempted to adjust water charges for the lowest bands of consumption, resulting in the dismissal of the minister for Electricity and Water.

In its second phase of reform (2017–20), the Saudi administration plans to gradually increase energy prices from 2017 up to a ‘reference price’ while instituting a USD6.7 bn fund for cash transfers to low- and middle-income households based on predefined income brackets (see [‘Historic Saudi budget shows effort to win support for change’](#), Bloomberg, 22 December 2016). Eligible households will be able to register for the scheme from February 2017 and, in a move reminiscent of India’s direct cash transfer programme, the first cash payments will be made *before* the price increases are implemented – reflecting an effort to garner public support. These reforms are closely tied to the administration’s ‘Fiscal Balance Program’, which aims at eliminating the budget deficit by 2020. It has been estimated that these reforms could save SAR209 bn (around USD55 bn) per year by 2020 (see [‘Blow of higher utility bills softened for low-income Saudis’](#), *Arab News*, 24 December 2016).

Whilst this represents the Kingdom’s most radical energy reform move yet, there are several factors which will need to be addressed before it can be seen through successfully. The ‘reference price’ for adjustments, as well as the adjustment mechanism (automatic or periodic), have yet to be determined for different fuels. It is unclear whether these would be international prices or some approximation of import-parity prices (for natural gas, for example). A strategy incorporating energy efficiency will be needed to manage the impact of second-round inflationary pressures on the competitiveness of energy-intensive industries which currently dominate the Saudi economy. And last, but not least, the system of cash transfers will need to be designed credibly to be: straightforward, transparent, efficient, and (most crucially) accompanied by measures to engage public support through public awareness and communications campaigns about the long-term benefits of cost-reflective energy prices. This reflects the continuing relevance – as well as the changing nature – of the social contract, despite arguments to the contrary.

Conclusions

It is possible to draw two main insights from the experience of energy pricing reforms in GCC countries thus far (see [‘Striking the right balance? GCC energy pricing reforms in a low price environment?’](#), B. Fattouh, A. Sen, and T. Moerenhout, OIES Comment, 2016).

- First, it is clear that they were driven primarily by short-term revenue needs, but their longer-term sustainability is contingent upon GCC governments achieving a balance between fiscal, economic, and political incentives to see through reform.
- Second, although the first phase of reforms indicated (contrary to conventional wisdom) that the social contract is not as rigid as had been perceived, this article has argued that its relevance increases, in so much as it relates to the need for greater engagement with the public through appropriate communication campaigns and mitigation measures which emphasize the importance of energy pricing reform for national transformation. Rather than a redundancy, what may be in progress is a reshaping of the social contract.



Reforming electricity, water, and fuel subsidies in the United Arab Emirates

Tim Boersma and Steve Griffiths

For many years, the reduction of energy subsidies in the Gulf Cooperation Council (GCC) countries was considered a near impossibility. This is because energy subsidies have

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 ‘... ENERGY SUBSIDIES HAVE BEEN CONSIDERED AN UNBENDABLE FORM OF SOCIAL CONTRACT BETWEEN GCC GOVERNMENTS AND THEIR CITIZENS ...’

been considered an unbendable form of social contract between GCC governments and their citizens, albeit an expensive and inefficient contract. In contrast, the period from 2014 to 2016 has been a period of remarkable change in GCC subsidies. As oil prices have fallen substantially since June 2014, all GCC countries have implemented subsidy reforms in one form or another.

By initiating electricity and water price reforms more than eight years ago, the United Arab Emirates (UAE) stands out as a leader among its GCC peers.

- Within the UAE, the emirate of Dubai was a trailblazer by carrying out electricity and water reforms in 2008, and implementing further pricing reforms in 2011.
- In January 2015, after years of internal debate, the emirate of Abu Dhabi



followed Dubai, and has initiated a new round of reforms for 2017.

- Electricity and water tariffs for the northern emirates (Ajman, Fujairah, Ras al-Khaimah, and Umm al-Quwain) were revised upwards in 2015, but the primary focus was on prices charged to expatriates.
- In the emirate of Sharjah, a new tariff system for the consumption of electricity and water by commercial and industrial entities was introduced in 2014, but residential prices were not increased.

In addition, throughout the UAE, subsidies on fuel (namely gasoline and diesel) have been removed to ease pressure on the country's budget. Prices, based on a global prices benchmark, are now set each month. In this article, electricity, water, and fuel price reforms in the UAE are assessed, with emphasis being placed on electricity and water pricing reforms in Dubai and Abu Dhabi.

Electricity and water tariff reforms in Dubai

Subsidy reform in Dubai is directly linked to its energy portfolio in the late 2000s. The emirate has long been import-dependent and energy prices have therefore always been relatively high. At the time, soaring demand for energy resources (in particular natural gas) outstripped supplies. Subsequently, the emirate turned to imports of liquefied natural gas (LNG) and while the costs rose, the sales price did not. There is a widely shared view that this, combined with rising demand, incentivized the emirate to initiate further reforms in 2011.

The Dubai Supreme Council of Energy, which was established in 2009 to serve as a gathering place for all key stakeholders to discuss long-term targets and objectives (mostly focusing on increased renewable energy and energy demand reduction) announced

a series of energy reforms as one of its first acts. Dubai then had an extensive public relations campaign, in which the incoming tariff changes were explained, and the population was urged to reduce consumption. Prior to that, a system of four tariff classes based on consumption level had been introduced in 2008 by the Dubai Electricity and Water Authority (DEWA). As costs per tariff class (or slab) rose, the tariff-based system was designed to reward the most efficient resource users, with prices rising for higher tranches of consumption.

In 2011, a 15–20 per cent increase in the slab unit cost of electricity and water was introduced for residential expats, industry, and government. For UAE nationals, a modest electricity tariff increase was introduced, together with a modest water tariff for nationals with a consumption level exceeding 20,000 imperial gallons (IG) per month. Next to the slab tariffs, DEWA adds a fuel surcharge to the water and electricity costs. This surcharge is supposed to vary monthly, and is based on the cost of the fuel source that is supplied to DEWA generation plants. However, UAE nationals are exempted from the surcharge and in practice it rarely changes. Most end consumers stay in slab one for the bulk of the year, except during peak demand in summer. The result is that Dubai expat residents pay between USD0.08/kWh and USD0.12/kWh for electricity and between USD2.10/m³ and USD2.75/m³ for water, depending on consumption level. UAE nationals pay three to four times less than expats for electricity and water. As a point of reference, Moody's stated in 2016 that the cost-reflective electricity tariff for residential consumers in both Abu Dhabi and Dubai is between USD0.086/kWh and USD0.089/kWh. In 2013, the Abu Dhabi Regulation and Supervision Bureau (RSB) stated that the cost-

reflective water tariff in Abu Dhabi was considered to be approximately USD2.84/m³ for all customers.

Electricity and water tariffs in Abu Dhabi

In contrast to Dubai, Abu Dhabi has historically had less financial urgency for tariff reform. In recent years, however, Abu Dhabi has faced an increasingly short supply of low-cost natural gas as well as falling oil export revenues to support subsidies. Against this backdrop, in late 2014, Abu Dhabi announced that it was going to increase tariffs for water and electricity starting in January 2015.

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Similar to the subsidy reform approach taken by Dubai, the government in Abu Dhabi launched a campaign highlighting the need for energy and water conservation prior to the implementation of tariff reforms. This campaign, which started in the summer of 2014, contained key messages about sustainability and conservation, amongst others.

Abu Dhabi's tariff structure was implemented, with differentiation between apartments and villas to account for the intrinsically larger expected consumption of electricity and water for villas. Within each of these categories, price differentiation, based on the level of consumption, was imposed. For residential expats the unit cost of electricity rose by 40 per cent, and by up to 120 per cent for what are considered high or 'red band' levels of consumption. There was, however, no significant change for UAE nationals.

For the smaller commercial and industrial users (below 1 megawatt, MW) there was a 7 per cent increase and, more significantly, there was a 100 per cent increase for larger industrial users that required more than 1 MW between 10 a.m. and 10 p.m. (local time) during the summer peak. The aim of the latter policy was to limit summer peak demand (this was largely responsible for marginal new electricity generation capacity).

For government entities the subsidies on electricity have been removed.

The unit cost of water for residential expats was increased by 170 per cent, and by up to 374 per cent for very high levels of consumption. In addition, a new tariff for UAE nationals was introduced, although this was still about three times lower than the costs for expats. Commercial and industrial users saw their water costs rise by 82 per cent, and again for the government, the subsidy was removed.

Building on these reforms, additional electricity and water tariff increases have been announced to start in Abu Dhabi in January 2017. For residential expats, electricity tariffs will increase by 28 per cent for the lowest consumption bands; for water the increase will be 32 per cent. At the highest levels of electricity and water consumption, tariffs will be essentially unchanged. The result is that expat residents will, in 2017, pay between USD0.073/kWh and USD0.083/kWh for electricity and between USD2.13/m³ and USD2.83/m³ for water. For UAE nationals, electricity tariffs will increase by 34 per cent for the lowest consumption bands; for water the increase will be 23 per cent. At the highest levels of consumption, tariffs will increase by 36 per cent for electricity and 38 per cent for water.

Like the 2015 reforms, a substantial pricing disparity between tariffs for expats and UAE nationals will exist, with nationals continuing to pay four to five times less than expats for energy and

water. In the commercial, agricultural, and industrial sectors, electricity and water tariffs will be adjusted upward by more than 30 per cent in 2017, furthering the advance of pricing reforms in these sectors.

Fuel price reforms

In contrast to electricity and water tariffs, fuel prices are set at the UAE federal level. At the end of July 2015, fuel prices (gasoline and diesel) were structurally, and rather substantially, reformed in the UAE with uniform application to all nationalities. Reforms were incentivized by the significant fiscal burden on the UAE from fuel subsidies, which the International Monetary Fund estimated at USD12.6 billion in 2014 (or approximately 2.9 per cent of GDP). Currently, prices for gasoline and diesel are not entirely deregulated, but are set monthly by a commission, based on international prices.

The most significant thing about the UAE's fuel price reforms is that the timing of the reforms matters. As a result of the dramatic fall in international oil prices that started in June 2014, by April 2015 prices for both gasoline and diesel were actually lower (significantly lower in the case of diesel) than they had been prior to the reforms. In fact, by March of 2016, petrol prices had fallen to a level 21 per cent lower than that seen before the reforms, while diesel prices were 52 per cent lower. An environment of low oil prices therefore facilitated the UAE authorities in making the reforms, and helped both UAE nationals and expats absorb the changes.

With oil prices rising again, time will tell whether the UAE commission that sets

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'AN ENVIRONMENT OF LOW OIL PRICES ...FACILITATED THE UAE AUTHORITIES IN MAKING THE REFORMS...'

the prices will follow international prices for diesel and gasoline accordingly. What is important, however, is that the UAE seized an opportunity to put through important subsidy reforms at a rare time in history when the removal of fuel subsidies actually was able to provide economic benefit to citizens following the implementation of reforms.

Conclusion

As a result of diminished oil export revenues, the need for all GCC countries to undertake energy subsidy reforms has accelerated. Although once considered part of an unbreakable social contract between GCC governments and their citizens, all GCC countries have now initiated subsidy reforms in one way or another. The UAE has been a leader amongst its peers in electricity and water tariff reform efforts; Dubai undertook significant reforms in 2008, Abu Dhabi followed in 2015, with additional measures being taken in 2017. Admittedly, the UAE does have unique circumstances, such as a very large expat population (to which the most substantial price increases have been applied) and a relatively wealthy UAE national population.

Abu Dhabi and Dubai have demonstrated several best practices for electricity and water pricing reforms, which are now being replicated across the GCC. These include:

- communication of the need for subsidy reforms before implementing them,
- gradual introduction of pricing increases,
- tiered pricing based on usage (thereby letting the largest consumers carry the heaviest financial burden).

Similar practices – including the rapid removal of subsidies when opportunity



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‘... ELECTRICITY, WATER, AND TRANSPORTATION FUEL PRICING ... IS STEADILY ADVANCING TOWARD COST-REFLECTIVE AND MORE TRANSPARENT PRICING.’

strikes (such as the 2014 oil price collapse), and price setting according to international benchmark prices – have been applied to transportation fuel subsidies.

Because of these practices, electricity, water, and transportation fuel pricing in the UAE is steadily advancing toward cost-reflective and more transparent pricing. Improvements to the subsidy

approaches being taken in the UAE and elsewhere include:

- lower levels of electricity and water consumption to qualify for the lowest consumption band pricing;
- fully liberalized transport fuel pricing based on a formulaic approach documented in legislation, rather than on committee deliberations.

Because the UAE’s national population is rather small, it may not be strictly necessary to equalize energy and water pricing for expats and nationals in order to achieve resource consumption and fiscal objectives, although this argument does not hold for most of the other GCC and Middle Eastern

countries seeking guidance from the UAE’s approach. Finally, the UAE has yet to implement subsidy reforms for natural gas pricing and is lagging other GCC countries in this regard. While not a focus topic for this article, natural gas pricing is an extremely important topic for GCC countries; it is critically important for the industrial sector as well as for international oil and gas companies considering joint development of the UAE’s natural gas resources. In sum, the UAE has taken important and positive steps regarding energy subsidy reforms, but more work is required in the coming years to realize the full potential of the progress underway.



Challenges of Kuwaiti energy pricing reform in response to petroleum price volatility

Manal Shehabi

Despite Kuwait’s historically strong fiscal surplus and sizeable asset accumulations abroad, the macroeconomic and fiscal impact of the recent oil prices collapse has been severe. In response, the government is reducing energy subsidies as a top priority. Subsidies have been long accepted by economists as a generally inefficient, costly means of rent distribution that leads to wasteful consumption. Energy pricing reform has repeatedly appeared as a key policy objective in Kuwait’s five-year development plans. But mounting fiscal pressures, driven primarily by the recent fall in oil revenues, have created a sense of urgency to

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‘ENERGY PRICING REFORM HAS REPEATEDLY APPEARED AS A KEY POLICY OBJECTIVE IN KUWAIT’S FIVE-YEAR DEVELOPMENT PLANS.’

introduce reforms at an accelerated pace, despite strong resistance, particularly from the parliament that has long opposed energy price increases. While other GCC countries have embarked on ambitious plans to liberalize energy prices, Kuwait lags behind – having been the last to raise gasoline prices.

This article examines Kuwait’s energy pricing reform in response to the recent oil price fall, with reference to an economy-wide model constructed by the author for a forthcoming OIES paper (‘Beyond the promise: subsidies reforms assessment following petroleum price declines in Kuwait through economy-wide analysis’). It departs from recent policy discussions that have focused on the ‘why’ of price reforms, instead addressing ‘how’ to reform. The article highlights the impact of petroleum price volatility on Kuwait and key features of its

economy, and summarizes Kuwait’s pricing reform experience. It then identifies stabilization mechanisms in the economy – the expatriate labour channel being key – and relevant implications of reforms that should be considered when attempting successful implementation.

Petroleum price volatility and features of the Kuwaiti economy

Like all petrostates, reliance on an inherently volatile commodity renders the Kuwaiti economy susceptible to boom and bust cycles. Kuwait is like Norway in that it has enjoyed enviable wealth, a fiscal buffer, and massive foreign accumulations in its sovereign wealth funds (SWF). Yet unlike Norway, Kuwait’s economy has suffered a large fiscal deficit following the sharp fall in oil revenues. When the oil price collapsed from USD103/barrel (b) in January 2014 to USD30/bi in

January 2016, the Kuwaiti government announced an estimated 75 per cent revenue drop. Despite substantial withdrawals from its SWF to smooth out the shortfall in oil (and subsequently budget) revenues, for the first time in over 16 years, Kuwait recorded a budget deficit of USD15.3 billion for the fiscal year ended March 2016.

The magnitude of the oil price volatility impact on Kuwait is due to the circumstances of its economy, including:

- **Reliance on a highly volatile commodity:** in 2014 hydrocarbon exports generated 92 per cent of government revenue and 55 per cent of Kuwait's GDP.
- **Dominance of the public sector:** the public sector generates over 65 per cent of Kuwait's GDP while the private sector share has ranged between 21 per cent (1989) and 41 per cent (2010). The public sector committed two-thirds of total capital formation and employs most working Kuwaitis.
- **Rigidity of government expenditures:** current expenditure constitutes 80 per cent of total government expenditures, and half of current expenditure funds the public sector wage bill.
- **Sizeable welfare transfers to citizens and industry over decades:** these include large energy subsidies, with local prices reduced by an estimated subsidization rate of 87 per cent compared to the international shadow price. Until mid-2016, electricity prices were less than one-twentieth of generation costs and have not changed since 1990. In 2014, Kuwait was the world's sixth highest per capita energy consumer.
- **Very weak taxation base:** Kuwait has no income tax and very low corporate taxes.

Pricing reform has proved difficult

In seeking to address budgetary concerns, the Kuwaiti government repeatedly attempted to reform fuel, electricity, and water price subsidies in 2015 and 2016. Faced with strong public discontent, those attempts failed or achieved limited success. Reforms have been difficult, partly because generous welfare payments are at the core of the Kuwaiti political economy. This arrangement goes deeper than the so-called petroleum era 'social contract' (in other words, the distribution of resource rents in lieu of political obedience). For some of the politically active constituency, reforms contradict the state's historic role in distributing petro-rents to citizens, the ultimate owners of the resource.

In March–April 2016, after various rejected schemes, the National Assembly proposed to raise electricity prices '*only after excluding owner-occupied residences of Kuwaiti citizens*' from price increases, effectively raising prices on expatriates. Prices for residential use by expatriates increased from USD0.007 progressively to USD0.05/kilowatt, and for commercial use from USD0.007 to USD0.082/kilowatt.

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'REFORMS HAVE BEEN DIFFICULT, PARTLY BECAUSE GENEROUS WELFARE PAYMENTS ARE AT THE CORE OF THE KUWAITI POLITICAL ECONOMY.'

On 1 August 2016, the government announced the removal of gasoline subsidies, circumventing the parliament. By then, Kuwait was the only GCC country that had not adjusted its prices, which were the lowest globally. Effective September 2016, the government raised local prices by 41–83 per cent (differentiated by octane levels) to the international spot

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'IN LIGHT OF WIDESPREAD DISAPPROVAL, PRICING REFORM WAS PRESENTED AS SOLVING FISCAL PRESSURES, ECONOMIC INEFFICIENCIES, AND ENERGY OVER-CONSUMPTION.'

market price, intending to adjust them every three months.

In light of widespread disapproval, pricing reform was presented as solving fiscal pressures, economic inefficiencies, and energy over-consumption. The government also promised that subsequent inflation would be muted. Some politicians floated the possible future taxation of expatriates' income and/or remittances. If anything, these promises increased the unpopularity of reform. There was much parliamentary debate and questioning of the legality of raising prices, culminating in an executive decree to dissolve the National Assembly in October 2016. While the future of pricing reform remains in limbo, reducing subsidies is unequivocally needed for the long-term sustainability of Kuwait's economy. Yet the dynamics and implications of reform have been less discussed.

Modelling the Kuwaiti economy

An economy-wide model, using a computable general equilibrium (CGE) framework, was constructed to quantify the impact of petroleum price volatility and policies that aid adjustment (such as pricing reform). This framework, generally considered most suited for policy evaluation, captures the major structural features of an economy and interaction between its industries. The model represents specifically external financial flows, domestic fiscal policy, oligopoly industrial structures, government regulation, labour market composition by skill level and nationality source (Kuwaiti vs. expatriate), and oil prices.



A key component of the CGE framework is the construction of the model database in the form of an augmented social accounting matrix (SAM) depicting all the sectors in the economy and interactions between them within a given time period. The SAM for Kuwait was constructed using official data obtained from the Kuwaiti government, aggregated in 14 industries. Input–output coefficients were combined with detailed bilateral trade, transport and trade protection data (such as tariffs) characterizing economic linkages, labour market structure, national accounts, industry and balance of payments data.

Examining the SAM reveals useful insights. The table below shows that the value added (see column 1, GDP^{FC}) of the highly subsidized Electricity and Water industries is low, as are those of non-exporting sectors (Agriculture,

Construction, and Manufacturing). After hydrocarbons, non-traded Other Services (such as education, health care, and restaurants) are the second-largest contributor to GDP and employ mostly expatriates. Net exports over output shares for many non-energy industries (both tradables and nontradables) imply that imported final goods and intermediates are also very large.

The data reveal important dynamics pertinent to assessing the impact of oil price drops and pricing reforms. These include:

- 1 Expenditures on hydrocarbons and electricity are only 3 per cent and 17 per cent of total household and non-oil industry expenditures on goods and services.
- 2 The official value of subsidies in 2013 was USD8,670 million (see the table overleaf), or 8 per cent of the

economy's value added. Importantly, consumers and industries access electricity, water, and hydrocarbons at highly subsidized prices, for which the shadow price is not included in the reported subsidies above.

- 3 Expatriates comprise 83 per cent of Kuwait's labour force, but highly subsidized government-owned industries such as electricity employ mostly Kuwaitis. Overall, around 77 per cent of Kuwaitis are employed by the public sector, which has high disguised unemployment. Approximately 95 per cent of private sector jobs are held by expatriates, a substantial portion of whom are low-skilled with low wages. Private sector wages and, more generally, expatriate wages, are lower than public sector Kuwaiti labour wages. Expatriate wages constituted around 70 per cent of total wages across all sectors. To increase Kuwaitis' participation in the private sector, the government offers private firm allowances to equalize Kuwaiti workers' wages with the higher public sector wages.
- 4 Industries (including the nationally-owned energy sectors) exhibit oligopolistic (or monopolistic) behaviour. This hampers economic efficiency, competitiveness, and growth.

Stabilization mechanisms following petroleum price volatility

My analysis reveals that Kuwait has two primary stabilization valves that partially absorb the negative impacts of oil price shocks. The first, obvious, channel is *inflows from the SWF*. When a negative oil price shock shrinks government revenues, the government finances its fiscal commitments (including welfare payments and subsidies) through withdrawals from one of its SWFs (created specifically as a macro-stabilization fund), mitigating the volatility impact and stabilizing the economy.

Economic structure, 2013

Sector	Share of GDP ^{FC} * %	Share of total exports %	Export share of output %	Net exports over output %
1 Agriculture	0.3	0.0	1.3	-63.3
2 Mining	1.4	0.0	0.0	0.0
3 Crude oil	48.9	42.1	50.5	50.3
4 Gas and petro-services	0.9	1.3	50.5	50.3
5 Oil refining	5.4	38.6	72.6	72.2
6 Chemical	1.1	3.4	37.4	-1.7
7 Light manufacturing	0.8	0.4	4.1	-56.0
8 Heavy manufacturing	0.8	1.9	8.1	-72.0
9 Electricity	0.6	0.0	0.0	0.0
10 Other network services (water, gas)	4.6	4.6	32.3	31.4
11 Construction	2.2	0.0	0.0	0.0
12 Transport	3.4	5.7	38.9	14.1
13 Financial services	7.8	0.7	4.1	-1.3
14 Other services	21.8	1.3	1.8	-15.6

* GDP^{FC} is GDP at factor cost, which is the sum of value added in each industry.

Source: Author's CGE model database (SAM) constructed for 2013

Reported industry and consumption subsidies, 2013

Demand sector or source	Subsidies (million USD)
1 Agriculture	255.6
2 Mining	8.14
3 Crude oil	138.3
4 Gas and petro-services	1.5
5 Oil refining	731.9
6 Chemical	890.4
7 Light manufacturing	194.4
8 Heavy manufacturing	125.2
9 Electricity	439.3
10 Other network services	789
11 Construction	184.7
12 Transport	198
13 Financial services	142.4
14 Other services	1,232.4
Household consumption subsidies	3,277.4
Investment and inventory consumption subsidies	61.5
TOTAL reported consumption subsidies	8,670

Source: Author's CGE model database (SAM) constructed for 2013

The second stabilization mechanism is *expatriate labour exit*. The labour market in Kuwait can be viewed as having two primary segments: the Kuwaiti labour market in the public sector, and the expatriate labour market. The Kuwaiti labour market employs relatively more workers, pays relatively higher wages, and is less competitive with inflexible contracts.

A decline in the oil price is contractionary on economic activity as a whole, but the impact on the two labour segments is different. Industries whose performance and profits are impacted accordingly will be forced to cut costs. Typically, as wages tend to be sticky in the short-run, employment levels will adjust instead. Most Kuwaitis are employed by the public sector where contracts are rigid, so their employment will be largely unaffected. In contrast, the flexibility of expatriate labour contracts allows affected industries

to adjust their employment level. So following a contractionary shock, the expatriate labour market will thus adjust and its employment levels fall.

The reallocation of resources following this drop in oil prices could in theory provide additional employment opportunities in the expanding non-oil industries for the additionally-available expatriate unemployed. In practice, such opportunities will be limited, especially for expatriates. As local prices in Kuwait are set artificially lower than the international oil price, the drop in the latter would not translate to a reduction in local industries' intermediate energy costs. Also, capital in the short run is fixed, and the drop

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'... FOLLOWING A CONTRACTIONARY SHOCK, THE EXPATRIATE LABOUR MARKET WILL THUS ADJUST AND ITS EMPLOYMENT LEVELS FALL.'

in the real exchange rate renders imported inputs more expensive. These factors limit the non-oil industries' ability to expand and hire more. The key point here is that the resulting unemployment is unlike traditional unemployment, in that unemployed expatriates cannot remain in Kuwait until economic recovery because their temporary residency is sponsored by the employer, without which they must exit. (Interestingly, this exit provides mobility opportunity for some of the exiting expatriates across the GCC states.)

As expatriates' wages are generally lower than Kuwaitis', their exit contributes to the above-described adjustments on the production side, but with potentially smaller impacts on the consumption side. The expatriates' exit acts like a cushion which absorbs the shock. This mechanism is unique to Kuwait and other GCC petrostates with similar labour market compositions.

Adjustment by industries can also be potentially stabilizing. Following a negative oil price shock, oligopolistic industries reduce the real cost of intermediate services, depreciating the real exchange rate and contributing to increases in the economy's overall competitiveness. Further, the diversion of resources away from the contracting sectors, coupled with the depreciation of the real exchange rate following the oil price drop, enables the non-oil import-competing industries to expand and export more. These benefits, however, depend on the ability of non-petroleum tradable industries to attract labour and capital to higher-valued uses, increase their contribution to GDP, and improve their competitiveness. Based on the existing economic structure and rigidities, this ability remains very weak in the short run and is doubtful in the long term. As such, without long-term changes, industries too are unlikely to act as a meaningful stabilizing valve.



While stabilizing, the existing valves (mainly SWF inflows and foreign labour exit) coupled with petroleum riches have reduced incentives for structural economic changes. The government remains the preferred employer and welfare provider, and investments in non-petroleum tradable sectors remain weak. Moreover, these adjustment mechanisms are unsustainable especially if the low oil price persists. Officials at the Central Bank of Kuwait recently surprised a parliamentary committee by announcing that existing SWF savings could support anticipated fiscal deficits for only five years before being depleted. The unsustainability of these adjustment mechanisms necessitates a relook at energy pricing reform.

Implications for pricing reforms

My analysis confirms a widely accepted view that phasing out distortionary energy subsidies will yield long-run fiscal and net welfare benefits. Reforms following low oil prices are also fiscally advantageous. They reduce rigid government expenditures, thus generating improvements in Kuwait’s budgetary and SWF positions (one of the stabilizing factors).

But in addition to these anticipated benefits, the CGE model can also shed light on the implications of reforming prices following petroleum price declines. A particularly important yet under-recognized area is the impact on Kuwait’s labour market, which consequently changes the economic opportunities available for both firms and workers.

As described above, an oil price decline is contractionary for the entire

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 ‘... PHASING OUT DISTORTIONARY ENERGY SUBSIDIES WILL YIELD LONG-RUN FISCAL AND NET WELFARE BENEFITS.’

economy. Removing subsidies will negatively affect highly subsidized industries, most of which are in the public sector (due to large cost increases and revenue reduction, necessitating further cost cuts).

While the economy contracts due to the oil price drop, slashing subsidies will increase the costs of goods and services. The increase in costs (including the cost of hiring) will be particularly high for industries that use energy as an intermediate input. Collectively, the affected industries will thus be forced to cut costs and hire fewer people, so employment levels will adjust in the short run to achieve the necessary cost reduction. If public sector employment adjusts, it will impact expatriates only, due to the flexibility of their employment contracts. Kuwaiti workers with inflexible employment contracts will not be affected. As for the private sector, employment cuts will be across all employees, but given that 95 per cent of the sector’s employees are non-Kuwaiti, most of the reductions will also be among expatriates. As a result, the overall output of these impacted industries will drop.

These impacts are *in addition* to those caused by the previously described oil price collapse. Further, while the less-established non-petroleum industries could normally benefit from a drop in the petroleum price, the government austerity measures might freeze support that these industries had previously used to fund investments in technology, new capital, or Kuwaiti labour wage equalization. Therefore, despite the economic need for their expansion, these industries could contract, thus requiring even fewer workers, rather than being able to re-employ some of the available expatriate labour resources. Without appropriate compensation mechanisms, this contraction in output could have a further contractionary impact on

the country’s GDP. The two shocks combined will effectuate the exit of expatriate labour from the economy (the second stabilization measure), which could be sizeable depending on the magnitude of the shocks.

Further, net welfare gains from pricing reform are higher during episodes of low petroleum price, and household (Kuwaiti and expatriate) consumption on all goods and services is impacted with real inflation.

While expatriate labour exit acts as an adjustment mechanism, it will inevitably decrease available skills and resources for certain occupations. The magnitude of its impact on the Kuwaiti economy will depend on the ability of various industries to divert labour (both Kuwaiti and expatriate) to these occupations and to the private sector for higher-valued activities. Notwithstanding the bloating of the public sector and governmental efforts to increase national labour in the private sector, Kuwaitis are unlikely to leave guaranteed public sector jobs in a contracting economy. As such, navigating the labour market dynamics in Kuwait will be a very critical aspect of price reforms.

Pricing reform is a continuous balancing act

Recent discussions of public policy on energy subsidies in Kuwait have been largely dominated by two camps. One has championed the general benefits of price reform, at the macroeconomic level (aggregate GDP and welfare) and the micro level (energy demand or sector-specific performance). The other camp has opposed reform due to fears of inflation, welfare losses, and a neglected state responsibility.

The CGE model discussed above highlights seldom-discussed aspects of pricing reform. These aspects include impacts on the labour markets

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‘THE ANALYSIS HIGHLIGHTS THE TRADE-OFFS BETWEEN MAINTAINING FISCAL BALANCE AND COST OF LIVING STABILITY DURING PERIODS OF HIGH AND LOW OIL PRICES ...’

in Kuwait and shifts in the expatriate labour market equilibrium. Further, the analysis highlights the trade-offs between maintaining fiscal balance and cost of living stability during periods of high and low oil prices, an important consideration in any attempt at pricing reform. The analysis implies that reform can be part of a larger solution towards the trade-off between local consumption and exports, and between withdrawals from and investments into the SWF, as resources

needed for fiscal stabilization, future generations, infrastructure, and human capital development. Yet, as this article has discussed, the Kuwaiti economic structure has additional complexities, implying that pricing reform alone is not a universal solution. The distributional and labour market impacts of pricing reform are critically important in an economy where expatriates form 83 per cent of its labour market. These impacts also have further challenging social and economic dimensions.

Therefore, pricing reform should be accompanied by carefully designed mitigation measures and microeconomic reforms addressing the ensuing sectoral losses and labour and distributional effects. Possible mitigation measures include income

transfers based on income levels, rather than consumption, to aid those most negatively impacted by reforms. In addition, as pertains to expatriate labour, it will be necessary to manage the political considerations of these mitigation measures. Microeconomic reforms can target: competitiveness in oligopolistic industries, meaningful private non-petroleum sector involvement, the upskilling and mobility of labour across sectors, and the expansion of non-oil value-adding activities in the private sector.

With the complex dynamics underlying the Kuwaiti economy, a continuous balancing act of short- and long-term objectives, and of economic and social considerations, will be unequivocally important for successful pricing reform.



Algeria in fiscal crisis: energy policy priorities and implementation challenges

Ali Aissaoui

As with most other oil-producing countries which have made little or no progress on economic diversification, Algeria has been particularly vulnerable to the volatility and cyclicity of global energy markets. The sharp fall in oil prices of recent years has shrunk the government’s already limited fiscal space and overwhelmed its ability to cope with the resulting negative economic and social consequences. Past savings, placed with a stabilization fund, have proved to be inadequate to cover a widening fiscal deficit, ultimately forcing a drastic reduction of the state budget. In addition to

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‘ALGERIA HAS BEEN PARTICULARLY VULNERABLE TO THE VOLATILITY AND CYCLICALITY OF GLOBAL ENERGY MARKETS.’

increasing various end-user taxes to improve revenues, the government has curtailed public spending and embarked on a rationalization of social transfers and subsidies. Furthermore, in a sign that future budgets will continue to be adjusted to a lasting drop in revenues, the government has adopted a medium-term fiscal policy aimed at consistency and perseverance.

The collapse of global oil prices and, in turn, of regional natural gas prices have attracted the greatest concern – as being the main causes of the near-halving of state revenues. However, deeper worries have set in as it became clear that, as a result of long-stagnating production and unrelenting domestic consumption, hydrocarbon export volumes have also been falling. These concerns have been particularly acute in relation to natural gas, which plays

a major role in the energy balance of the national economy – all the more so given that it represents (when natural gas liquids are included) more than half the total hydrocarbon export volumes. This is what must have triggered the extraordinary cabinet meeting (held on 22 February 2016, at the country’s core centre of power and politics) to address the ‘national policy in the field of natural gas’ (*‘Algerian gas: troubling trends, troubled policies’*, Ali Aissaoui, OIES, May 2016). This meeting outlined a three-pronged strategy to deal with the fall in export volumes:

- a) a supply-side response to revive exploration and development;
- b) a demand-side response to rationalize consumption;
- c) a more resolute push towards a renewables programme – raised to a national priority, with the aim of



displacing natural gas in the quasi-entirely gas-fired power generation sector.

In this article, we will examine the two latter prongs of the strategy (for the first prong, see ‘[Algerian gas](#)’). More precisely, we will discuss first the challenge of implementing long-overdue energy price adjustments which, together with the energy efficiency programme, constitutes the cornerstone of demand-side management. We will then turn to the lagging renewables programme and the current policy initiatives intended to scale it up boldly.

Energy price adjustments: barely begun, already paused

To some extent, the fiscal crisis is seen as legitimizing and allowing some adjustments to energy prices and subsidies. Before examining their nature and extent, it is worth noting that there is hardly any evidence of an articulated energy pricing policy (this would normally be at the ministry of energy level) that aims to shape the national pattern of consumption. There may be two reasons for this.

The *first reason* is the apparent lack of coordination between the objectives and interests of the various institutions

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‘... THERE IS HARDLY ANY EVIDENCE OF AN ARTICULATED ENERGY PRICING POLICY ...’

involved. These include the ministry of finance, which administers, within the state budget process, taxes and direct (explicit) subsidies affecting end-user energy prices with the aim of generating additional government revenues. Outside the budget process, both the Hydrocarbon Regulating Authority (ARH) and the Regulatory Commission for Electricity and Gas (CREG) are in charge of adjusting energy prices with the aim of covering, as much as possible, the cost of supply. While ARH is in charge of setting primary and wholesale prices of hydrocarbon products, CREG is in charge of setting end-user tariffs of natural gas and electricity.

The *second* reason is that, although independent in law, the latter two institutions (ARH and CREG) are in fact subject to political expediency and inertia, leading to a lack of continuity and consistency in pricing adjustments. This is particularly true of CREG which, after having kept gas and electricity tariffs frozen for a decade or so, finally got government’s approval to adjust them, starting in 2016.

In order not to divert our focus from natural gas issues, we will not elaborate on the price adjustments of **transportation fuels**. Suffice it to say that, in Algeria’s Finance Law 2017, the government decided on further tax rises which resulted in gasoline and diesel prices (LPG/autogas has been spared) increasing by an average of 13 per cent. Although the cumulative effect of recent increases is now significant, actual prices for 2017, as shown in the table below, are likely to have only a moderate impact on average transportation costs, and hardly any lasting effect on vehicle owners’ fuel consumption.

Of more relevance to our present discussion are the **electricity and gas tariffs**. Given their complex design and the diversity of the resulting prices, they need some explaining. Tariffs have been increased across the various consumption brackets – except for the two lowest, the so-called ‘social brackets’, in order to protect low-income users. Furthermore, the tariff structure for households and commercial activities has been made progressive; in other words, the unit price of electricity or gas increases progressively from one bracket to the next. The percentage increases vary from 15 to 41 per cent depending on the energy form, end-use sector, and

Transportation fuel prices at the pump in Algeria

	2015	2016	2017	2017 prices equivalent
	<i>DZD/litre</i>	<i>DZD/litre</i>	<i>DZD/litre</i>	<i>USD/litre</i>
Gasoline (premium)	23.00	31.42	35.72	0.32
Gasoline (unleaded)	22.60	31.02	35.33	0.32
Gasoline (regular)	21.20	28.45	32.69	0.30
Diesel	13.70	18.76	20.42	0.19
LPG (autogas)	9.00	9.00	9.00	0.08

Note: DZD denotes Algerian dinar.

Source: Author’s compilation

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‘... TARIFFS HAVE REMAINED TOO LOW TO ALLOW UTILITIES TO OPERATE IN A SUSTAINABLE MANNER.’

usage level. However, having been raised from a very low base, tariffs have remained too low to allow utilities to operate in a sustainable manner. Inferring from estimates provided by the utilities, the expected additional revenues resulting from these increases would only cover 14 per cent of the USD1.8 billion operating deficit they registered in 2015. This means that tariffs would have to rise more substantially to even generate enough revenue to recoup costs, let alone self-finance new investment. However, as put by the originators of the tariff adjustments, *‘the path to charging the true cost is still a long one’*.

This path is also hampered by concerns about looming discontent and social unrest. On the surface, the reaction to the rise in electricity and gas tariffs has been placid overall, except in the Saharan provinces where people have been rather vocal. This was enough for the government to defer, at least for the time being, any further adjustment, although the value-added tax (VAT) on both products has increased in Finance Law 2017. Furthermore, the government has made the low brackets of electricity consumption in the Saharan region – for domestic users, agricultural producers, and small businesses – eligible for direct subsidies to cover the relevant tariff reductions. In a context where electricity-intensive air conditioning is the only means to mitigate the extreme desert temperatures, this pricing policy reversal is seen as fair and prudent.

In any case, adjusting end-users’ tariffs is one thing, setting a more coherent pricing structure along the gas and electricity value chains is another. In

contrast to CREG, which managed to increase retail electricity and gas tariffs in 2016 (explained above), ARH has kept the primary price of natural gas (representing its wholesale price to the power generators) unchanged for the last five years. Adjusting the primary price using ARH’s cost concepts would result in prices increasing by 35 per cent to USD0.50/MMBtu (see *‘Algerian gas’*). However, this level would still be below the weighted average wellhead cost of production, which we have estimated at USD0.70/MMBtu. It would also be, by way of comparison, far below similar prices in most MENA countries, where a cross-cutting trend of price and subsidy reforms is ongoing. Barring significant price adjustments, domestic natural gas demand is unlikely to relent any time soon – and not before the renewables programme has gained sufficient traction to penetrate the dominant power generation sector.

Renewables: jump-starting a slow starting point

To date, Algeria’s 22 GW renewables programme has performed well below expectations. Ever since it was formulated in 2011, then amended and approved by the government in 2015, the programme has functioned in a sort of quasi-pilot, embryonic mode. In addition, the projects deployed so far could not benefit from supporting policy measures, which were only completed in 2015 and, at the time of writing, still not operational. As a result, only a tiny total of 318 MW, mostly small photovoltaic (PV) capacity, has entered service so far, together with a hybrid plant coupling a 25 MW concentrated solar power (CSP) system with a 130 MW gas-fired combined cycle turbine (CCGT).

With the programme now raised to a national priority, an emerging vision and momentum are setting in motion a

new dynamic. The programme, which originally aimed to implement the 22 GW capacity by 2030, is composed of:

- 18.6 GW of intermittent PV and wind,
- 2 GW of solar thermodynamic systems with storage,
- 1.4 GW from biomass, renewables-based cogeneration, and geothermal.

This programme is being reaffirmed with two potential modifications. The first is the extension of the time horizon from 2030 to 2035 (at the earliest). The second is the option to put more emphasis, in the future, on thermodynamic solar systems with storage. For the time being, the medium-term focus is on implementing a whole tranche of 4.5 GW of photovoltaic and wind power, of which 4 GW would involve international investors partnering with Algeria’s energy champions, while the remaining 0.5 GW would be assigned to smaller domestic investors. The 4 GW scheme will soon be put to tender, possibly as a single contractual package. In scant pre-announcements, ahead of the release of the tender documentation, Algerian policy makers have raised the programme’s ambitions further, indicating that this large-scale project, which will involve public-private partnership (PPP), will have a dual purpose:

- energy (generating electric power),
- industrial (manufacturing locally key input components and materials).

The renewables programme will now likely benefit from more effective policy support. In addition to the already enacted feed-in tariffs (FITs) scheme, a newly decreed competitive bidding

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‘THE RENEWABLES PROGRAMME WILL NOW LIKELY BENEFIT FROM MORE EFFECTIVE POLICY SUPPORT.’

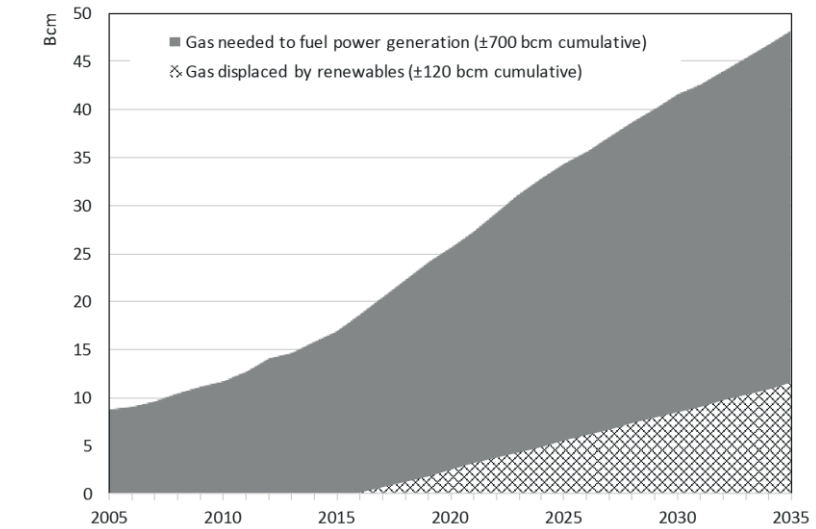


process (the details of which were not available at the time of writing) aims at minimizing the cost of generating electricity from renewables. A key source of funding the FIT subsidies will be the recently merged National Fund for Energy Saving, Renewables and Co-generation. The Fund will receive:

- 1 per cent of hydrocarbon royalties (Complementary Finance Law 2011),
- 55 per cent of the revenues accrued from taxing natural gas flaring (Finance Law 2016), and
- 10 per cent of revenues collected from taxes on energy inefficiency, as part of the VAT on energy-using goods and appliances (Finance Law 2017).

However, should the fiscal crisis linger and worsen, the Fund’s resources may not be sufficient or sustainable. In this respect, the government’s policymakers do not appear to be preparing for a transition from subsidy-based incentives to market-based ones.

With respect to the 4 GW tranche, foreign investors are expected to be the major source of external financing, capital, and technology transfer. While waiting to see the details of what might be sought from them and what might be offered to them, we can already foresee what could deter them. The barriers to investment are not so much sector-specific. Investors could possibly benefit from an already unbundled power grid, liberalized wholesale market, preferential access to the grid, as well as a decent regulatory framework for independent power producers (IPPs); not to mention the relative quality of the institutions in charge of implementing the renewables programme, chief of which is CREG. The major barriers are rather the country’s poor overall investment climate and the prevailing weakness of the business-enabling environment. Failure to improve these issues quickly



Gas consumption in Algerian power sector, 2005–35

Source: Author

and significantly will make it difficult for potential investors to commit to the long-term partnerships sought for the renewables programme.

In any case, whatever the design and outlook of the programme over time, it will surely affect the volume of gas used by the power sector, and therefore the size of the domestic gas market in the long term; but to what extent? In a central scenario of moderate growth, we have estimated that the Algerian power generation sector will likely develop from 17 GW capacity in 2015 to some 46 GW in 2035, generating about 190 TWh per year and consuming, in the absence of renewables, some 48 bcm of natural gas per year at that horizon. Assuming that the renewables programme is implemented successfully, it will displace, on the basis of an average capacity factor of 20 per cent, nearly 12 bcm in 2035. As shown in the figure below, the resulting cumulative gas so saved would amount to 120 bcm over the 20-year planning period (the much higher figures – up to 300 bcm – reported by local media must have been computed not over the planned period as mistakenly stated, but over the expected economic life of

the plants, in other words well beyond 2035). While such a substitution is one of the most important objectives set for the programme, its significance could only be appreciated when factored in, together with the ultimate timeframe and anticipated costs, to a comprehensive cost–benefit analysis that remains to be undertaken.

Conclusions

In a context of a severe fiscal crisis and inevitable austerity, Algeria is faced with multiple challenges, chief of which is a serious decline of natural gas export volumes. As these are the largest source of state revenues, Algeria’s highest authorities have committed themselves to three strategic priorities in order to reverse this trend. Leaving apart the supply side, which is beyond the scope of this issue of the *Forum* (for this policy dimension, see ‘Algerian gas’), we

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 ‘... ALGERIA IS FACED WITH MULTIPLE CHALLENGES, CHIEF OF WHICH IS A SERIOUS DECLINE OF NATURAL GAS EXPORT VOLUMES.’

have examined critically the current price adjustments (which are thought to be the cornerstone of the demand-side response), as well as the move to accelerate the deployment of renewables in the power generation sector. Both these factors have the potential to curb domestic demand for natural gas.

We were unable to find sufficient evidence of a coherent and consistent pricing policy which could alter the current pattern of natural gas consumption. The government's

focus on retail gas and electricity tariffs has left unaddressed primary and wholesale gas prices, which remain well below upstream costs. Furthermore, the fact that a policy pause has already been decided underscores the paralysing prudence of navigating this socially and politically sensitive area of policy. Therefore, we should expect a dual regime of subsidies (implicit for electricity tariffs and explicit for FITs) to govern the renewables programme, with no apparent government strategy to exit

in favour of the market, should the fiscal outlook deteriorate further. As far as the deployment of renewables is concerned, for the time being, the focus seems to be on aligning all available policy instruments to prioritize and scale up the necessary investments through PPPs. While the almost completely reformed power sector should generate interest from foreign partners, it remains to be seen to what extent the country's broader business environment can be perceived as conducive and enabling.



Energy pricing reforms in Egypt

Tom Moerenhout

Egypt's recent decisive moves away from the era of underpriced energy demonstrate exactly how stressful, if not traumatic, such a process can be. Whereas the July 2014 reforms passed relatively easily, the August 2016 reform round was less straightforward. The transformation of a decades-old social contract represents a balancing exercise; in the case of Egypt, it is an exercise with a very thin economic, fiscal, or sociopolitical safety net. The summer of 2014 also marked the drop in oil prices, which has been both a burden and a blessing: on one side, they made the negative impacts from subsidy reforms relatively less severe; on the other, they have directly caused some Gulf countries (Saudi Arabia, the UAE, and Kuwait) to tighten their financial support to the Sisi regime.

Since Morsi's removal in July 2013, Gulf support amounting to tens of billions of US dollars (USD) has been Egypt's primary lifeline. This aid was in the form of grants, central bank deposits, and oil products. However, with the falling oil price, Egypt's Gulf partners closed the tap, leaving Saudi Arabia, which considered Egypt as too big to fail, heavily invested into the Egyptian economy. In addition to the August reforms, this bilateral support from Gulf countries, Egypt finally concluded an IMF loan of USD12 billion (bn) in November 2016. The IMF package, together with the opportunity offered by low oil prices, keeps Sisi focused on the country's strenuous macroeconomic rebalancing act. The real challenge on the rope, however, is that the whole of Egypt is walking it – all 94 million Egyptians, including the country's suffering middle class. And when the centre suffers, balance is at risk.

GDP and 20 per cent of its public expenditure. Also, after Morsi's removal:

- Egypt's debt rate had surpassed 100 per cent of its GDP;
- the growth rate had fallen from 5 per cent (pre-Arab Spring) to 0.5 per cent,
- there was a record-level budgetary deficit of nearly 14 per cent of GDP,
- rural–urban income disparities and (youth) unemployment were on the rise.

An immediate USD12 bn support package from Gulf countries helped Egypt's balance of payments and reduced the fuel shortages that had been so disruptive during Morsi's presidency. Nonetheless, it remained evident that painful and wide-ranging reforms could no longer be postponed. Energy subsidies were a clear and logical first choice.

In July 2014, Egypt under President Sisi reduced energy subsidies to an extent that the process was considered a risky, big bang type of reform. Transport fuel prices hiked. Diesel prices increased by about 64 per cent and Gasoline 80 and

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'EGYPT'S RECENT DECISIVE MOVES AWAY FROM THE ERA OF UNDERPRICED ENERGY DEMONSTRATE EXACTLY HOW STRESSFUL, IF NOT TRAUMATIC, SUCH A PROCESS CAN BE.'

July 2014 'big bang' reforms

In 2013, expenditure on energy subsidies reached USD21 bn, which amounted to 8.5 per cent of Egypt's



92 prices were raised by 78 per cent and 41 per cent respectively. Kerosene prices were increased by 64 per cent for all users. Natural gas and fuel oil prices also increased for all users (except for the electricity sector, for which fuel oil prices remained constant). In the residential sector, natural gas prices increased according to consumption level but even the lowest users still saw prices double. Similarly, electricity prices were also increased and blocked according to consumption level, thereby allowing for cross-subsidization.

By all standards, this was a big bang type of reform. It substantially affected electricity rates, together with the price of all fuels except LPG. That said, the process of increasing prices may have been less difficult than one might have expected, mainly because Egypt did not have any other choice. It is without question a fact that the reforms went counter to one of the cornerstones of the country's social contract, but the political economy conditions were rather favourable: a crisis the size of that facing the state of Egypt post-Morsi indeed also posed an unprecedented opportunity for reform.

Favourable political economy conditions

Sisi's ability to pass such reforms without much opposition depended on favourable political economy conditions. With the suppression of the Muslim Brotherhood, there was no domestic political opposition. Sisi won 90 per cent of the vote and did not need any other political parties to govern. (While those political parties also did not oppose reform, they did question how exactly to go about it.) Having been the army's leader before being elected president, Sisi was also able to negotiate energy subsidy reform with the army, which has historically been involved in the energy sector. By once more covering their interests (something which had been under

threat during the Mubarak and Morsi eras) and by initially excluding LPG from the reform process, he was able to garner the Army's support for reform.

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'SISI'S SUBSIDY REFORMS MAINLY PRESENTED A CHALLENGE ON A SOCIAL LEVEL.'

Sisi's subsidy reforms mainly presented a challenge on a social level. They essentially transformed the social contract right at the point when Egypt's middle class had clearly demonstrated (twice) that it wanted more economic opportunity and a better distribution of welfare. Sisi played up to this angst by not only acknowledging the crisis faced by Egypt, but also by admitting that subsidy reform was an unpopular intervention. With a few tough measures aimed at Egypt's rich and his Nasser-esque promise of renewed economic opportunity, his personal request for shared sacrifice broadened a social acceptance of the reforms.

Sisi skilfully used behavioural economic insights when passing the first round of reforms. Well before his election, the transition Government was preparing an extensive communication campaign in cooperation with international and domestic experts (such as ESMAP, the Global Subsidies Initiative, and Environics). This preparation assured that the narrative was consistent and emphasized the regressive nature of energy subsidies. When Sisi was then elected, with over 90 per cent of the vote, his immediate announcement that energy subsidies would be reformed left no choice for the public except to accept it at that time. He balanced the stick (a repressive security apparatus) with a few carrots (tough measures on the rich and a broadening of food subsidies) and achieved full implementation of the reforms.

This was the 'easy' part.

Post-2014 crumbling of credibility

When Sisi reformed subsidies in 2014, he realized that the medium-term sustainability of his reform process would depend on Egypt's ability to develop well-targeted, non subsidy-dependent social safety nets. As in many other MENA countries, Egypt's social safety systems were fragmented, had low coverage, and lacked financial resources. With the assistance of the World Bank, Egypt attempted to reboot its social safety organization by developing two new cash transfer programmes to protect the poor (Takaful and Karama). However, the proper development of such schemes requires a significant amount of institutional and political innovation and the delivery has been slow. This, among other factors, has eroded Sisi's support amongst the poor.

At the same time, economic opportunity did not accelerate as quickly as had been previously hoped for either. The tourism sector remained in crisis and the Government had considerable problems in attracting foreign direct investment (FDI). Sisi's grand bargain – relying on the construction sector for economic recovery – has also not (yet) paid off as had been expected. For example, the expansion of the Suez Canal did not generate as much additional revenue as the government had estimated. Together with other factors, the slow economic recovery eroded Sisi's support amongst the middle class.

Egypt was still in serious need of macroeconomic rebalancing two years after the July 2014 subsidy reforms. Measures to this end generally frustrate the average Egyptian, who

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'EGYPT WAS STILL IN SERIOUS NEED OF MACROECONOMIC REBALANCING TWO YEARS AFTER THE JULY 2014 SUBSIDY REFORMS.'

is increasingly sceptical about Sisi's competence to lead Egypt away from crisis. Trust is at a noticeable low. Not only was Sisi forced to change his entire cabinet in 2015, due to corruption scandals, but he is also increasingly criticized for his government's socially repressive security policies.

The August 2016 reforms and the great balancing act

Due to low oil prices, Egypt was cash strapped, as its Gulf partners had closed the tap because of their own fiscal struggles. The second round of energy subsidy reforms, in August 2016, should be seen as a part of the great balancing exercise aimed at achieving macroeconomic stabilization and structural economic reform. This balancing exercise has restrained Sisi from all sides, while structural pressures such as an increasing public wage bill have only kept adding more pressure. However, inflation had actually been decreasing prior to August 2016 and advantage of this positive spell had to be taken right away; a set of reforms (needed to secure a USD12 bn, three-year IMF loan) was passed.

Sisi implemented three structural reforms in August 2016:

- 1 Energy subsidy reforms.
- 2 Introduction of VAT.
- 3 Free-floating of the Egyptian pound (EGP).

The combined effect of all three measures produced a record inflation rate of almost 20 per cent in November 2016. However painful for the citizens' welfare, the measures appeared to have been necessary. Fixed exchange rates had depleted foreign reserves, and this in turn had reduced FDI into Egypt. This structural rectification should help tourism and FDI, but it also causes economy-wide inflation. The depreciation of the EGP against the USD (the value of the EGP was sliced in half) made

Key price increases resulting from energy subsidy reforms in Egypt

Source: Author

	Key 2014 reforms	Key 2016 reforms
Gasoline	78% (gasoline 80) 41% (gasoline 92) 7% (gasoline 95)	47% (gasoline 80) 35% (gasoline 92) price allowed to float (gasoline 95)
Diesel	64%	–
Kerosene	64%	31%
Natural gas	33–204% (energy-intensive industries) > 200% (low users) 500% (medium users) 700% (high users)	+/- 50% (low to medium users) 33% (heavy users)
HFO	50% (cement) 30% (bricks, other users) 40% (bakeries and food)	7% (most users)
Electricity	< 50% (low users) +/- 17% (commercial and other residential)	up to 40% residential up to 20% commercial (mainly medium and heavy users)
LPG	–	87%

imports more costly. A falling EGP thus increased production costs for industry and commerce, and additional costs were passed onto the consumer. Similarly, energy subsidy reform was also needed to repair structural distortions and reduce the fiscal deficit. Low oil prices made this adjustment relatively easier, even if this is more of a theoretical argument than a practical relief.

To help secure the IMF loan, Saudi Arabia – which will not admit it, but considers Egypt as too big to fail – invested heavily into the Egyptian economy. This immediately boosted foreign reserves. When Egypt then finally concluded the IMF loan, a first slice of USD2.75 bn was immediately released to contain inflation. Aware that the key challenge is to keep domestic support for reforms, the deal also envisioned a redirection of 1 per cent of GDP from fiscal savings to additional food subsidies and cash transfers.

Too big to fail

In the short to medium term, Egypt's recovery will not be any less of a painful balancing exercise than it has been

since the first subsidy reforms in July 2014. A large part of Egypt's population is suffering as a result of economic adjustment. Sisi has little policy space and has to count on reactionary measures, such as the expansion of food subsidies, to bridge this austere period to a distant future – one in which targeted social safety nets operate in a context of stronger economic growth.

Both Egypt's government and the IMF should be cognizant of the fact that there is no room for error, and that includes issues such as corruption and unmerited social repression. If Sisi fails to throw his weight behind trust-building measures, impatient Egyptians might very well call his bluff of shared sacrifice and jump from the balancing cord. This would not just be bad news for Sisi, but for the wider region. Egypt may very well be too big to fail.

The Author wishes to thank his colleagues for their comments on earlier drafts. This article represents the research and view of the author. It does not necessarily represent the views of the Global Subsidies Initiative or OIES.



Iran’s subsidy reform plan: success or failure?

Sara Bazoobandi

Subsidies: a pillar of the Islamic Revolution

Since the establishment of the Islamic Republic in Iran in 1979, the government has been implementing heavy-handed price subsidies. Over the past decade, subsidies absorbed a large share of the government budget – roughly between USD70 billion (bn) and USD100 bn a year. (See ‘[The subsidies conundrum](#)’, Semira N. Nikou and Cameron Glenn, 2016, Iran Premier website.)

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‘SINCE THE ESTABLISHMENT OF THE ISLAMIC REPUBLIC IN IRAN IN 1979, THE GOVERNMENT HAS BEEN IMPLEMENTING HEAVY-HANDED PRICE SUBSIDIES.’

The founder of the Islamic Republic, Ayatollah Khomeini, vowed to form a government that would deliver economic equality and social justice in Iran. In his historic speech in Tehran Cemetery immediately upon his arrival from exile in France, he promised to ‘bring the oil wealth to people’s tables’. Thus, the economic mechanism that allowed the distribution of wealth across Iranian society, to support the poor and under-privileged, became a fundamental element of the Islamic Revolution’s ethos. However, shortly after the Islamic Republic was established, the Iran–Iraq War broke out and the heavy costs of financing nearly a decade of war put mounting pressure on the Iranian economy. Rationing programmes and the subsidization of ‘necessary items’ (such as food, medical goods, and energy) became vital components of the government’s economic management strategy during the war.

A long journey through subsidy reform

By the late 1980s, the founder of the Islamic Republic had died and the devastating years of the Iran–Iraq war came to an end. Ali Akbar Hashemi Rafsanjani became head of the government during the post-war reconstruction and development years and his government became the first post-revolution administration in Iran to introduce pro-market economic policies. President Rafsanjani’s government proposed some market reform policies in the 1990s. The key consideration for the government at that time was to reduce the heavy budgetary pressure of subsidies by introducing some price liberalization policies. At a time when rebuilding the country’s shattered infrastructure required substantial investments, the government could no longer afford the cost of subsidies, as the alternative was to continue accumulating deficit. As a result, policies such as government coupons, together with some price subsidies (particularly in the food market), were gradually phased out during President Rafsanjani’s eight years in office.

Due to social and political considerations, Rafsanjani’s government did not initiate any cuts in energy subsidies, and these continued to absorb a large share of the budget. Some government subsidies for some food items were, however, abolished, and this tarnished President Rafsanjani’s reputation, particularly amongst lower-income Iranians. Although his market reforms remained incomplete during his eight years as president, Rafsanjani became recognized as the first revolutionary Iranian political leader whose economic policies diverged from the

biggest promise of the founder of the revolution: ‘bringing the oil money to people’s tables’. The same challenges (budgetary pressure and heavy cost of subsidies) then faced President Khatami’s government when he came to office in the mid-1990s. His economic advisory team also proposed a subsidy reform. The parliament opposed the proposal and the reform plan failed.

President Ahmadinejad presented a subsidy reform bill to the parliament in December 2008. After about a year, the Iranian legislature approved the government’s proposal and in December 2010, Ahmadinejad’s government launched the subsidy reform programme. The programme aimed to phase out energy subsidies over the course of five years (see ‘[The economic legacy of Mahmoud Ahmadinejad](#)’, Nader Habibi, June 2013, Middle East Brief Crown Center for Middle East Studies).

Subsidy reform’s motives

As noted above, budgetary pressure on the government was the key motive for ending the subsidies programme in Iran. In addition to that, decades of subsidized energy prices have had other consequences such as:

- high and wasteful domestic energy consumption,
- creating a market for smuggled refined products (mainly petrol) from Iran to neighbouring countries,
- air pollution in big cities.

Hydrocarbon resources dominate Iran’s total primary energy consumption: natural gas and oil account for up to 98 per cent of Iran’s energy consumption. Also, official reports

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‘CHEAP ENERGY PRICES ENCOURAGED HOUSEHOLD CONSUMPTION TO FORM A SIGNIFICANT SHARE OF THE COUNTRY’S ENERGY CONSUMPTION.’

showed that Iran’s energy intensity index was eight times that of China in 2004. Cheap energy prices encouraged household consumption to form a significant share of the country’s energy consumption (see Iran’s [Petro Energy Information Network \(SHANA\) website](#)). At the current rate of consumption (similar to that of the Gulf Cooperation Council Countries) the country faces the risk (confirmed by a recent OPEC Annual Statistical Bulletin) that increased domestic consumption of hydrocarbon resources is likely to reduce its exports in the long run. According to OPEC, in 2016, Iran’s crude oil production was about 3.15 million barrels per day (mbd), total oil demand was 1.79 mbd, and crude export was 1.08 mbd (see OPEC’s [Annual Statistical Bulletin](#), 2016).

According to the Iranian Fuel Conservation Company (IFCC) – a government body affiliated with the oil ministry – by 2015 the country was consuming about 2 bn barrel of oil equivalent every year, of which 20 per cent had been wasted before reaching consumers (see [‘Iran leaping to economize \\$870bln by halving energy intensity’](#), Dalga Khatinoglu, 16 September 2015, Trend News Agency). IFCC reports show that over the past decade, household consumption has grown by about 4 per cent every year and by 2015, it accounted for 41 per cent of the country’s total natural gas consumption.

The Iranian government is planning to halve the country’s energy intensity by 2021. Official estimates show that in order to achieve this goal, the country will need USD200 bn to invest in areas such as electricity production and

distribution networks, transportation, and household heating systems (see [IFCC’s website](#), in Persian).

About two decades after the passing of the founder of the revolution, the Islamic Republic found it practically impossible to continue with the price subsidy policies. By this point, cutting the subsidies became the obvious solution for the government. However, the implementation of subsidy cuts has been both a politically and a socially sensitive issue and President Ahmadinejad managed to win the 2005 presidential election in the second round (against former President Rafsanjani) by promising the nation that he would protect the poor and underprivileged. To fulfil his presidential campaign promises, Ahmadinejad replaced energy subsidies with cash handouts, in order to help lower-income Iranians cope with rising prices. The cash handouts, however, presented the government with a new list of challenges that will be discussed in the next sections.

What has subsidy reform achieved?

The government planned to achieve a number of goals through the subsidy reform programme, most importantly, tackling the budget deficit problem. In practice, however, the programme did not achieve what the government had hoped for. During the **first phase of the plan**, the government’s financial saving was not sufficient to cover the costs of implementing the plan. As a result, the administrative costs of the plan and the paying out of cash handouts put additional pressure on the budget. The government borrowed from the Treasury and the Central Bank of Iran in order to make the payments (see [Khabar Online website](#), in Persian). The costs were so high that the government had to start cutting people out of the payment system – indeed the number of cash

payment recipients was reportedly higher than the total population of the country. (This was mainly due to poor identification procedures during the initial registration of recipients in 2010.) Mohammad Reza Tabesh, a member of the parliament, was quoted by a local online media platform saying that *‘the Afghans and dead people also registered and have been receiving cash handouts’* (see [Khabar Online website](#), in Persian).

Reducing household consumption by changing the wasteful consumption culture and cutting down air pollution were also amongst the objectives of the subsidy reform plan. There has been no sign of success in achieving those objectives. While cutting the energy subsidies has had a significant impact on prices, the consumption culture has remained relatively unchanged. Prices of gasoline, natural gas, and diesel increased by 400 per cent, 800 per cent, and 900 per cent respectively (see [‘Iran: subsidy reform amid regional turmoil’](#), Djavad Salehi-Isfahani, Brookings, 3 March 2011). But the traffic jams and air pollution problems in bigger cities have remained unresolved, or perhaps have even worsened. Most middle class, and upper–middle class Iranians rely on driving private, and often inefficient, vehicles for work and leisure. Household central heating systems and home insulation are also inefficient, causing excessive energy waste.

A combination of sudden energy price increases, increased liquidity due to government cash handout payments, and devaluation of the riyal (IRR) due to tightened international sanctions led to very high inflation figures during the

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‘... THE CUT IN ENERGY SUBSIDIES WAS A SIGNIFICANT CONTRIBUTORY FACTOR IN THE CONSTANT INCREASE OF INFLATION...’

plan did not cause any social unrest. The government decided to increase the price of energy shortly after the election crisis of 2009, launching the plan in an environment in which the country was still going through the shock caused by the authorities' heavy handed response to the post-election uprising. Hundreds of political and civil activists were in gaol, the heads of the Green movement under house arrest, and people were still mourning those who were shot dead in the streets of

the country's capital. A year after the election crisis, when people were still terrified of the news of arrests and torture by the security apparatus, there was absolutely no social momentum for protesting against the energy price increase. In addition, the cash handouts became immensely popular amongst lower-income and rural Iranians. Therefore, the risk of any social unrest in response to the price increase was eliminated.

Maintaining the cash handout system has been extremely difficult for the government, but Rouhani's administration has avoided taking any drastic measures to end the payment system. Although the government has signalled plans for a further reduction in the number of monthly payment recipients, as the next presidential election is due in June 2017, Rouhani is unlikely to end his first term in office attempting to implement such an unpopular policy.

The political economy of energy subsidies in Egypt and Tunisia: the untold story

Ferdinand Eibl

For decades, the subsidization of energy has been a pervasive feature of economies across the Middle East and North Africa (MENA). By supplying electricity, gas, and petrol to households and companies at prices well below the world market average, MENA energy importers and exporters alike have made energy subsidies a hallmark of their industrial policy and a key pillar of their social contract. Though the goals of this policy – facilitating industrialization and attenuating social inequalities – may be commendable, energy subsidies have come at a huge price for the MENA economies. The estimated cost of energy subsidies amounts to about 8.5 per cent of regional GDP or 22 per cent of government revenues (IMF estimates for 2011). As a whole, the region accounts for half of global energy subsidies. The fiscal burden of this policy has been particularly heavy for the relatively resource-scarce and labour-abundant countries in the region such as Tunisia and Egypt which, by the early 2010s, had both become net energy importers and have thus seen their budgets put under strain,

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'EVIDENCE HIGHLIGHTING THE MANIFOLD DISTORTIONS OF ENERGY SUBSIDIES IN THE MENA HAS NOT BEEN IN SHORT SUPPLY.'

in particular during periods of high oil prices.

Evidence highlighting the manifold distortions of energy subsidies in the MENA has not been in short supply. Alongside financial concerns, the existing studies have particularly highlighted deleterious effects on the environment, undue reliance on energy-intensive industries, and the generally regressive distributional consequences of energy subsidies. The latter point is particularly damning as in most countries energy subsidies are an important, if not the sole, pillar of otherwise underdeveloped social safety nets and they often dwarf other welfare expenditures, such as health and education.

Given the manifest shortcomings of subsidized energy and persistent advice from international financial institutions (IFIs) in favour of reform, the

absence of a meaningful overhaul of the status quo is indeed striking. While some of the obstacles to reform might lie with limited institutional capacity and problems of implementation, most explanations have underlined the importance of the political economy of energy subsidies in explaining the persistence of the status quo. By far the most widespread argument in this context is the fear of a popular backlash and attendant unrest in response to subsidy reductions that is allegedly felt by governments.

While this argument seems pertinent – especially in the light of the Arab Spring – it is incomplete and overlooks obstacles to reform that stem from the unintended, yet powerful and politically connected, beneficiaries of energy subsidies. After a brief outline of recent reforms of energy subsidies and a summary of the 'standard' political economy explanation, this article will highlight the importance of these actors – politically connected businessmen (PCBs) and the army – in the case of Tunisia and Egypt. By demonstrating the extent to which these actors are present in subsidized sectors – which they often



specifically enter because of energy subsidies – I argue that these actors have become key stakeholders in the status quo and have used their leverage to water down reform attempts. Thus, any meaningful reform will have to come to terms with this group of actors.

Energy subsidies in Tunisia and Egypt

Tunisia has established a system of extensive energy subsidies in the form of cheap electricity, gas, and petrol. Since the state has acted as a quasi-monopolist in the production and provision of energy, energy subsidies take the form of a monopolist price setting by the state, with prices generously below the level of the world market. Tunisia was a net energy exporter from the early 1970s until the late 1990s and was able to provide cheap energy from its own domestic resources in this period. With falling production levels and increasing consumption, the country turned into a net importer of energy in the late 1990s, having to import nearly 30 per cent of its energy needs by 2015. As energy is supplied at prices below those in the world market, the resulting deficit of Tunisia’s two main energy providers (STIR for oil; STEG for gas and electricity) is covered by transfers from the state budget. With the rapid rise of oil prices during the most recent oil boom, the costs of subsidized energy have hovered between 4 and 6 per cent of GDP, or about 13 per cent of the total expenditures over the past 10 years, and have only abated recently as a result of falling world market prices.

To alleviate this fiscal burden, in 2009 the authorities introduced an automatic indexation mechanism for local petrol prices (indexed on the world market price); this was repealed shortly after the uprisings in 2011. In the wake of the ousting of President Ben Ali and under the aegis of an IMF-led stabilization programme, the Tunisian government

increased the price of fuel by 7 per cent in 2012 and 2013, and also hiked up electricity and gas prices for medium-voltage consumers by 20 per cent in 2014. The authorities also reintroduced the automatic indexation mechanism for petrol and began the gradual phasing out of energy subsidies for a few energy-intensive industries, such as cement, textiles, ceramics, and food processing. On the whole, however, there has been no serious attempt at a systemic overhaul of energy subsidies post-2011.

Like Tunisia, Egypt has also maintained an extensive system of energy subsidies which offers energy products – such as petrol, gas, and electricity – at favourable rates below the world market price. While energy subsidies have never been ‘cheap’ in Egypt, the costs soared after the 2011 uprising as Egypt transitioned from a net exporter to a net importer of energy, and oil prices peaked as a result of political turmoil in the MENA. In 2013 and 2015, energy subsidies thus amounted to nearly 16 and 10 per cent of Egypt’s GDP respectively.

In view of Egypt’s strained post-2011 budget, successive governments have carried out a number of price increases; for example, in July 2014 prices rose by as much as 78 per cent for most consumers, including low-income households. In the same vein, the Sisi administration reduced subsidies for a number of energy-intensive industries, such as cement, fertilizer, and glass and ceramics. Another wave of electricity and fuel price increases occurred in late 2016 in the run up to the conclusion of Egypt’s recent IMF programme, when the government implemented price increases of between 30 and 50 per cent for household supplies of fuel and electricity; increases for commercial consumption were considerably lower. While the stated goal of the government is to phase out all energy subsidies within a five-year period, the main

policy measures to date have consisted of ad hoc price increases which have, overall, maintained comparatively low domestic prices. For example, the most expensive price for fuel and for electricity still only represents 32 and 0.6 per cent of average US prices respectively.

The told political economy story: mobilized beneficiaries

In both countries, the reluctance to reform energy subsidies is attributed to popular revolts against price hikes of subsidized goods in the past. Food riots in response to food subsidy cuts are believed to have left a particularly enduring legacy. In Tunisia, these events hark back to a series of riots that lasted from December 1983 until January 1984. Representing the worst violence since independence, protests left about 100 people dead and caused considerable devastation as a result of rioting and plundering. In view of this public discontent, President Bourguiba first announced a 50 per cent reduction in the price increase, before scrapping the measure entirely a few days later.

In Egypt, the major event dates back to 18 January 1977 when President Sadat announced price increases for a number of subsidized food items, such as rice, tea, and gas cylinders for households. Demonstrations against the measures first broke out in Egypt’s centre of steel production, Helwan, and quickly spread to the urban centres of Cairo, Alexandria, and other big cities, mobilizing industrial workers, students, state employees, and, to a lesser extent, the urban poor along the way. As demonstrations rapidly turned violent, with administration buildings and consumer centres being

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‘... THE RELUCTANCE TO REFORM ENERGY SUBSIDIES IS ATTRIBUTED TO POPULAR REVOLTS AGAINST PRICE HIKES OF SUBSIDIZED GOODS IN THE PAST.’
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attacked and burnt, a state of emergency was declared in several provinces and the regime deployed the army (for the first time since 1952) to quell the unrest. Rioting only stopped after Sadat repealed the measures on 20 January. The army had to be called upon a second time when minor increases in the price of bread prompted rioting in the textile centre of Kafr al-Dawwar in 1984.

Evidence for the long lasting effect of these events can be found in statements of policy makers and archival sources alike. For example, Monceur Rouissi, former minister and personal advisor to President Ben Ali, described the subsidy issue as a *'nightmare for all successive governments, too sensitive to be reformed'* (personal interview, Tunis 2013). And according to the former and current Minister of Supply Ali Moselhi, the government has *'a real fear'* of touching the subsidy issue as a result of past unrest (personal interview, Cairo 2012). Archival sources point in the same direction. References to the food riots are paramount in correspondence between the Egyptian government and the IMF, which was declassified in the early 2000s. Therein, the Egyptian government repeatedly insisted throughout the 1990s that *'the pace of reform had to be geared to the likely public reaction'*.

The untold story: politically connected actors

Fear of consumer unrest is the predominant narrative that explains the persistence of subsidization. However, though important, this narrative is incomplete without giving due attention to another group of beneficiaries from energy subsidies which has become an important lobbying group against major reform. In both countries, the untold story of the political economy of subsidy reform revolves around two key groups of actors: politically connected

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'... THE POLITICAL ECONOMY OF SUBSIDY REFORM REVOLVES AROUND TWO KEY GROUPS: POLITICALLY CONNECTED BUSINESSMEN AND, IN THE CASE OF EGYPT, THE ARMY.'

businessmen (PCBs) and, in the case of Egypt, the army.

To understand this point, it is important to briefly explain how private sector actors benefit from the system in place. Regarding energy subsidies, it is first and foremost the energy-intensive sectors that reap an important part of the energy subsidies. These include, on the one hand, energy-intensive manufacturing sectors, such as cement, textiles, and chemical products. On the other hand, energy subsidies disproportionately benefit companies in the transport and logistics sector, which rely heavily on subsidized fuel.

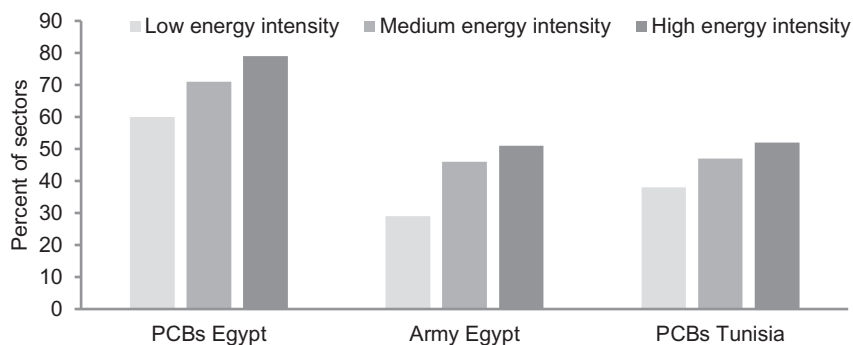
To demonstrate how these actors have affected the system of energy subsidies, I rely on a novel dataset on PCBs and the Egyptian army that I compiled together with Adeel Malik at Oxford. Regarding PCBs, the dataset records the entry and presence of PCBs in Egypt and Tunisia at the four-digit level of the International Standard Industrial Classification (ISIC, Rev. 3.1) since 1997. As for the Egyptian army, the dataset only records the presence and not the entry of the

army in ISIC four-digit sectors and is thus time-invariant (for a detailed note on the methodology, see 'The politics of partial liberalization: cronyism and non-tariff protection in Mubarak's Egypt', Ferdinand Eibl and Adeel Malik, CSAE Working Paper 2016–27). The dataset seeks to capture Ben Ali- and Mubarak-era 'cronies', yet most of the identified actors can still be considered politically influential post 2011. (The only exception are companies belonging to the Ben Ali-Trabelsi clan, as these were subject to confiscations.)

Based on this dataset, my argument relies on three important pillars:

1 *Presence in heavily subsidized sectors*

The figure below summarizes the presence of politically connected actors in Egyptian and Tunisian manufacturing sectors in 2010. Failing a direct measure of energy subsidies to each sector, energy intensity is arguably the best proxy to capture the extent to which businesses benefit from energy subsidies. Clearly, as the figure shows, politically connected actors in Egypt and Tunisia display a significantly higher presence in sectors that benefit from energy subsidies. While Egyptian PCBs are 'only' present in 60 per cent of low energy intensity sectors, their presence in sectors with high energy intensity amounts to nearly 80 per cent. The picture for the Egyptian army and Tunisian PCBs is similar, albeit at lower



Sectoral presence of PCBs and army by energy intensity

Note: Manufacturing sectors only. Classification of energy intensity taken from UNCTAD.



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**‘... POLITICALLY CONNECTED ACTORS
 HAVE BEEN AMONGST THE MAJOR
 BENEFICIARIES OF ENERGY SUBSIDIES.’**

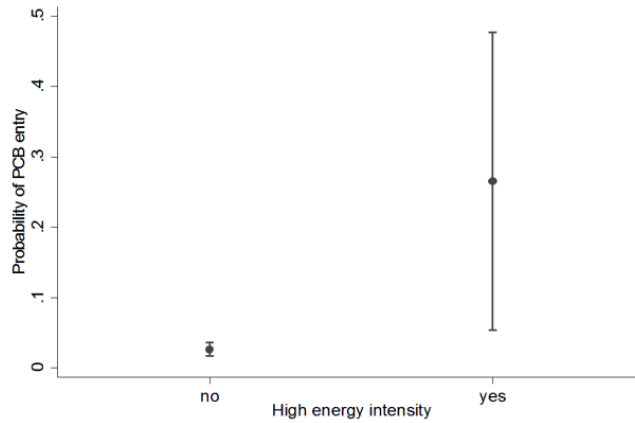
levels: their presence is, respectively, 22 and 14 per cent higher when comparing low to high energy intensity sectors.

While these descriptive figures are not evidence that these actors enter sectors *because of energy subsidies*, they nonetheless highlight the fact that politically connected actors have been amongst *the major beneficiaries of energy subsidies*.

2 Entry into sectors because of energy subsidies

There is also evidence to suggest that politically connected actors enter sectors *because of energy subsidies*. Establishing this point is important; the entry into a sector because of energy subsidies gives us a much stronger indication of the importance of energy subsidies for these actors and, by extension, their (un)willingness to give them up in the future. For example, if it turned out that PCBs in Egypt enter sectors for reasons other than energy subsidies – such as skill intensity, level of imports and exports – this would suggest that they would not put forward major obstacles to subsidy reform. If, on the other hand, energy subsidies are a primary factor driving entry into a sector, we would expect considerable resistance to systemic change given that their business model is, at least partly, predicated on the presence of cheap energy supplies. We would thus expect noticeable lobbying activity against subsidy removal.

To test this claim, I ran a number of pooled and conditional fixed effects logit models which both suggest that the energy intensity – as a proxy for subsidies – is a key determinant of entry into a sector. This finding is particularly pronounced for PCBs in Egypt. The model takes the entry of



PCB entry and energy subsidies in Egypt

Note: Predictions based on observed values from pooled logit model. Whiskers show 95-per cent confidence interval.

‘cronies’ as the dependent variable and a binary indicator of high or low energy intensity as the main explanatory variable. It further controls for other confounders, such as level of tariffs, exports, imports, broad sectoral fixed effects, and skill intensity.

The most striking result can be found in the case of PCBs in Egypt, displayed in the figure above. It shows that the average probability of an Egyptian PCB entering a sector is about 3 per cent for low and medium energy intensity sectors, increasing to about 27 per cent for high energy intensity sectors. With the average probability of PCB entry being 4 per cent in the sample, this represents a significant increase and demonstrates the importance of energy subsidies in the entry decisions of politically connected entrepreneurs in Egypt. As for the Egyptian army, the results (not displayed) suggest that the army is about three times less likely to be present in low energy intensity sectors than in medium or high energy intensity sectors (21 versus 65 per cent).

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**‘... RESISTANCE FROM POLITICALLY
 CONNECTED ACTORS AGAINST SUBSIDY
 REFORM SHOULD BE EXPECTED TO BE
 HIGHER IN EGYPT THAN IN TUNISIA.’**

It was only in Tunisia that I was unable to find a systematic association between energy intensity and PCB entry. Taken together, this suggests that resistance from politically connected actors against subsidy reform should be expected to be higher in Egypt than in Tunisia.

3 Observed lobbying of politically connected actors against subsidy reform

There is anecdotal evidence that politically connected actors have used their leverage to lobby against subsidy reductions. For example, in July 2016 the head of the Federation of Egyptian Industries, Mohamed El Sewedy, declared that cutting natural gas prices for manufacturers is *‘better for the state’s budget’* and would *‘help reduce the budget deficit’* as the benefits would outweigh the direct financial costs for the state. His lobbying efforts met with partial success as the government reduced gas prices from USD7/MMBtu to USD4.5/MMBtu for steel producers, despite the looming IMF agreement at the time and the stated goal of reducing energy subsidies. While this anecdote cannot be more than an illustration, it is nonetheless indicative of the important veto powers that politically connected actors wield in the context of subsidy reform.

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Annual Subscription (four issues) £90.00

Oxford Energy Forum. ISSN 0959-7727. Published by Oxford Institute for Energy Studies, Registered Charity 286084.

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