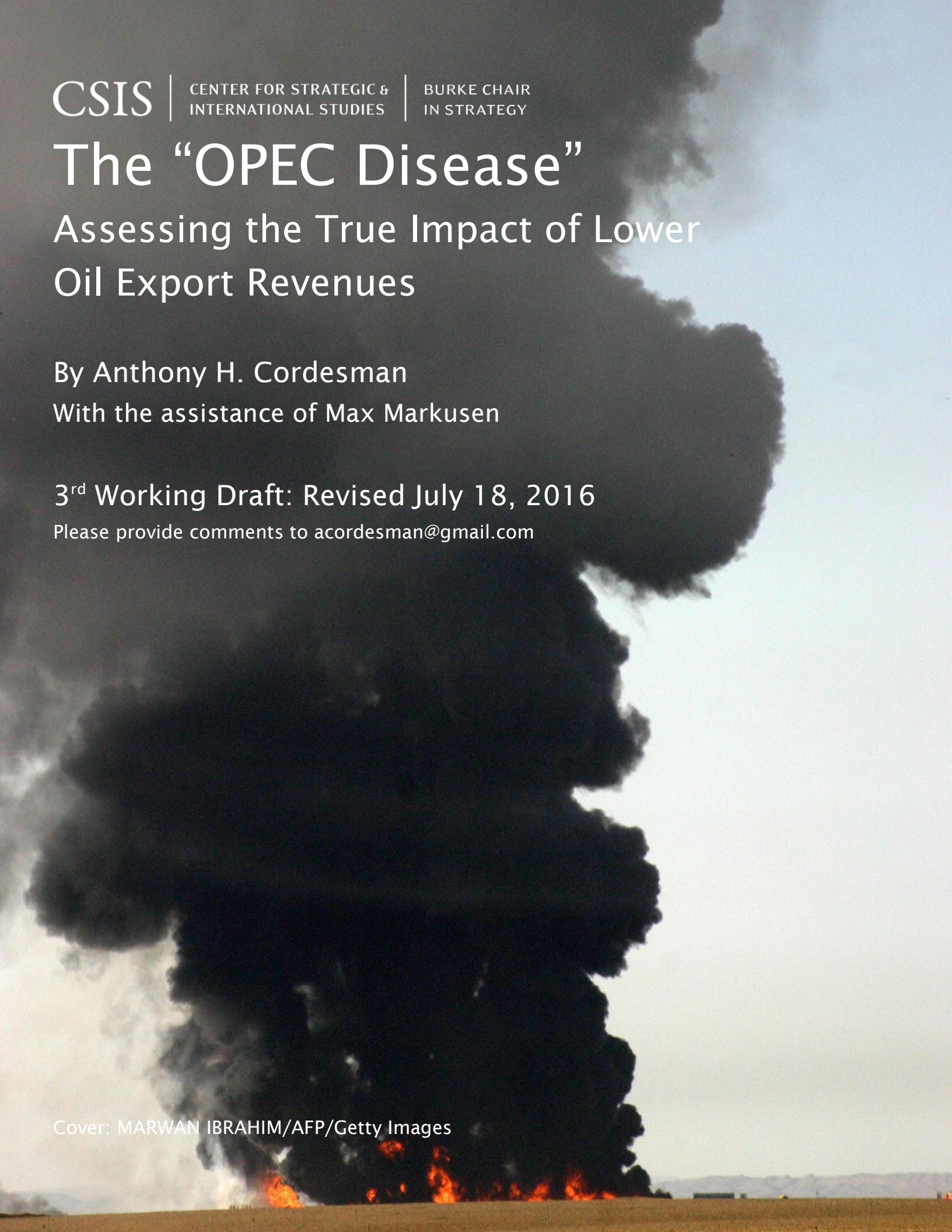

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The "OPEC Disease"

Assessing the True Impact of Lower Oil Export Revenues

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Cover: MARWAN IBRAHIM/AFP/Getty Images

Introduction

The rapid drop—or "crash" in petroleum export revenues has become a key factor affecting the economy and stability of each of the oil exporting states. It is having a major impact on the stability of the Middle East and North Africa—particularly in the Gulf region. It also is having a major impact on the oil exporting states of Africa and Latin America, where Venezuela has plunged into a massive national crisis.

There is no easy way to estimate how serious the drop has been for most countries, what its impact has been to date, or how it will evolve over time. There are sharp variations in national and outside reporting on petroleum exports, total exports, national economies and budgets, per capita income. This makes it extremely difficult to reliably estimate the size and impact of petroleum revenues relative to each of these metrics, and particularly to do so on anything approaching a comparable basis.

Drawing on Work by the IMF, World Bank, and CIA, EIA

The IMF has, however, set the stage for an analysis of many of the impact of the cuts in oil export revenues in one of several studies of study of their impact on the Arab world. This one is entitled *Economic Diversification in Oil-Exporting Countries*, which was presented to the annual meeting of Arab Ministers of Finance in Manama Bahrain in April 2016. Many of the insights in this study form a key introduction to any examination on developments in all of OPEC.

The U.S. Energy Information Administration has also long attempted attempt to provide a comparable survey of crude oil export revenues and revenues per capita for the major petroleum exporters in OPEC. It recently updated its assessment of these impacts to cover data based on actual exports in 2014, 2015, and the first five months of 2016. It also has developed a database that provides comparable estimates by OPEC country for the period from 2008 to the present and made estimates for all of 2016 and 2017.

Similarly, the World Bank, IMF, and CIA issue regular estimates of the trends in governance, economics, security, and other key aspects of individual OPEC countries. Many have been updated to reflect at least the initial aspects of the "crash." They are no directly comparable in terms of their input data, assumptions, and methods, but collectively provide broad comparisons of the impacts and dynamics within individual countries.

Key Limits to Such Data

These estimates provide a rough basis for estimating the impact of the crash in oil export revenues that began in 2013 and accelerated sharply in 2015. They do, however, exclude the value of natural gas and product exports that are a steadily increasing part of the export income of given states.

In the case of Qatar, for example, the EIA reports that Qatar was, "the third-smallest crude oil exporter among OPEC members in 2014, ahead of only Ecuador and Libya." It also reported, however, that, "Qatar's refining capacity exceeds domestic demand for petroleum products, thus enabling the country to export most of its refinery output…increasing production of noncrude liquids—most of which are a byproduct of

natural gas production—is contributing to gradual growth in total liquids production (and) Qatar is the largest exporter of liquefied natural gas (LNG) in the world, and the country's exports of LNG, crude oil, and petroleum products provide a significant portion of government revenues."[1]

At the same time, many countries also provide energy subsides that grossly under price their gas and oil, and reduce their export capability. The IMF reported on tis is a separate study called *Counting the Cost of Energy Subsidies*, which it published in July 2015. They effectively waste resources and revenues in ways that have nothing to do with price cuts.[2]

Saudi Arabia has only begun to fully develop its gas sectors and plans to use its natural gas largely for its own energy needs and as a feedstock. It has, however, already become a major producer of refined petroleum products, petrochemicals, and other down stream exports that have considerably greater value than crude oil. Its development plans—including its goals for 2030, and its 2020 development plan—will steadily increase its exports of product overtime.[3]

A number of key exporting states also face internal political crises, civil or external conflicts, and threats from terrorists and extremists. Cuts in petroleum revenues will generally make their situation worse, but far more is involved than economic considerations. Venezuela, for example, has one of the least competent governments in the world, and has become grossly over-dependent on high oil revenues for the basic functioning of its economy.

Iraq is caught up in a war with ISIS, and with political struggles between its Arabs and Kurds that restrict the size and growth of its exports. Iran has suffered from UN and other sanctions, as well as a mix of corruption, misgovernment, and/or economic planning. Libya's exports and economy have been crippled by civil war, and Nigeria faces an export crisis because of conflicts and violence in its southern delta region.

Nevertheless, gross crude oil export revenues do provide a rough measure of a key aspect of OPEC economies and the impacts of the oil crash in exporting states. Comparing them with current trends in key economic indicators does put the impact of the crash in a broader perspective, and helps identify both the seriousness of the crash, as well as the key exporters that are most involved in and impacted by the crash.

Setting the Stage: Examining the Diversity of OPEC and Other Oil Exporters and Their Lack of Command Goals and Needs

As later chapters show, it is dangerous to generalize about individual OPEC nations as if they had similar problems in dependence on petroleum export revenues, and in politics, governance, unity, social development, and security. OPEC states are shaped and driven by very different dynamics, and have radically different political and security challenges, and histories of economic development.

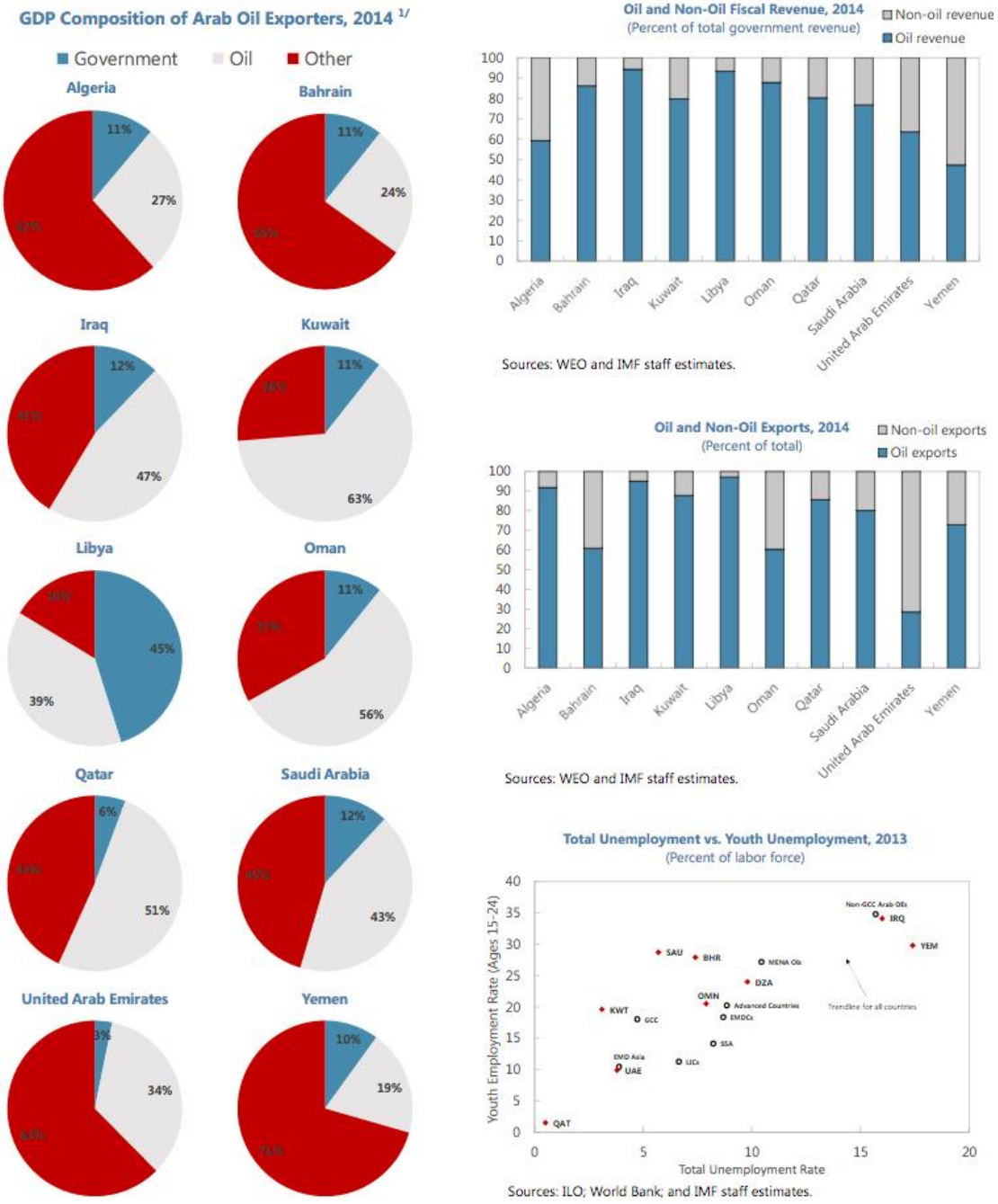
OPEC is also an institution whose individual members have very different patterns of economic diversification petroleum production costs, and crude oil, gas, and mixes of product exports. They have different goals and needs for using their revenues, compete in

many ways for revenue income, do so on the basis of different profit margins relative to production costs, and do not even have greed in common.

A Club Whose Members really Have Little in Common

It is almost impossible to make truly comparable comparisons of a wide range of OPEC states without drawing on uncertain data that were never designed to be compared for this purpose. **Figure One** does, however, draw on recent work by the IMF to illustrate some of the differences within OPEC by providing an overview of the economic structure of Arab oil exporters that fore the core of OPEC and compares them to other regional exporters. The differences are clearly as striking as the similarities even in 2014 -- a period of high demand and near peak oil export revenues where the states involved had the least reason to compete which each other for market share and revenues.

Figure One: The Economies of Arab Oil Exporters in 2014: A Year of Near-Peak Oil Revenues – Part One



Sources: WEO; and IMF staff estimates.

1/ In absence of consistent data public administration value added, government GDP is proxied in this graph by the government wage bill. See Appendix 1.

Source; IMF, Economic Diversification in Oil-Exporting Countries, April 2016, http://www.imf.org/external/np/pp/eng/2016/042916.pdf, p.8

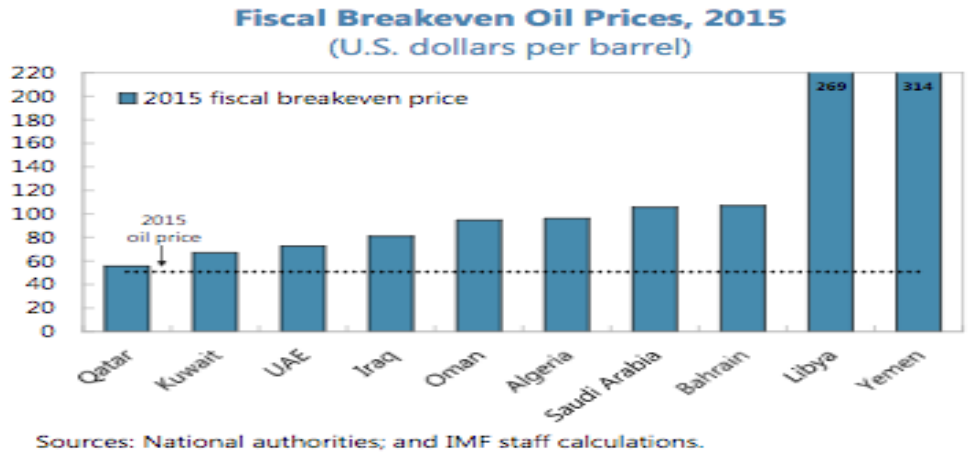
Figure One: The Economies of Arab Oil Exporters in 2014: A Year of Near-Peak Oil Revenues – Part Two

Key Sectoral Indicators

	Share of GDP (Percent)			Share of employment (Percent)				Main industries
	Agriculture	Industries	Services	Agriculture	Industries	Services		
						Total	Government	
Algeria	8.6	48.3	43.1	14.0	13.4	72.6	32.0	Petroleum, petrochemical, natural gas, light industries, mining, electrical, and food processing
Bahrain	0.3	47.1	52.2	1.0	32.0	67.0	11.6	Petroleum processing and refining, aluminum smelting, iron pelletization, fertilizers, Islamic and offshore banking, insurance, ship repairing, tourism
Iraq	3.3	64.5	32.2	21.6	18.7	59.7	40.0	Petroleum, chemicals, textiles, leather, construction materials, food processing, fertilizer, metal fabrication/processing
Kuwait	0.3	49.4	50.2	...	...	...	27.1	Petroleum, petrochemicals, construction materials and cement, shipbuilding and repair, water desalination, and food processing.
Libya	2.0	45.8	52.2	17.0	23.0	59.0	...	Petroleum, petrochemicals, aluminum, iron and steel, food processing, textiles, handicrafts, cement
Oman	1.3	55.2	43.5	...	...	...	11.0	Crude oil production and refining, natural and liquefied natural gas, construction, cement, copper, steel, chemicals, optic fiber
Qatar	0.1	68.0	31.9	1.3	54.9	43.8	12.1	Liquefied natural gas, crude oil production and refining, ammonia, fertilizers, petrochemicals, steel reinforcing bars, cement, commercial ship repair
Saudi Arabia	2.0	59.7	38.3	6.7	21.4	71.9	30.7	Crude oil production, petroleum refining, basic petrochemicals, ammonia, industrial gases, sodium hydroxide (caustic soda), cement, fertilizer, plastics, metals, commercial ship repair, commercial aircraft repair, construction
United Arab Emirates	0.6	58.9	40.5	7.0	15.0	78.0	28.4	Petroleum and petrochemicals; fishing, aluminum, cement, fertilizers, commercial ship repair, construction materials, handicrafts, textiles
Yemen	9.2	26.8	64.0	...	...	...	12.2	Crude oil production and petroleum refining; small-scale production of cotton textiles, leather goods; food processing; handicrafts; aluminum products; cement; commercial ship repair; natural gas production

Sources: Authorities' data and IMF staff estimates.

Comparative Fiscal Breakeven Oil Prices in 2015



Source; IMF, Economic Diversification in Oil-Exporting Countries, April 2016, http://www.imf.org/external/np/pp/eng/2016/042916.pdf, p .9

Creating Critical Youth and Other Employment Problems

It is important to note that the youth unemployment data in part one of **Figure One** do, however, illustrate a critical problem in analyzing the challenges OPEC states face. Efforts at statistical standardization warn that many states sharply underestimate even direct unemployment and poverty. The employment data in Figure One, however, do not take a account of gross overemployment in the government sector of most OPEC states which creates large numbers of jobs with no productive output – jobs which not only have no real purpose but often take the place of efforts to create an efficient and diversified private sector, and lead to massive over dependence on cheap foreign labor at the cost of real jobs for native citizens.

Nations like Saudi Arabia have recognized the problems that this can create, which include alienating youth and creating disaffected extremists. Far too many other OPEC and petroleum exporting states have not, and this present critical challenges because of a major backlog of direct and disguised unemployment, a culture of youth over-dependence on hollow government jobs, tolerance of major barriers to private sector development and "doing business," and the inevitable "politicization" of jobs and corruption involved. **Figure Two** illustrates some of the key metrics involved as they apply to Arab states. As the IMF study also points out,[4]

> …a significant share of employment in many countries is provided by the government, financed through volatile and exhaustible oil revenue. In many oil-exporting Arab economies, the public sector is a major source of employment. In Algeria and Iraq for instance, the public sector absorbs more than 40 percent of total employment. On average elsewhere in the world, about 90 percent of the jobs are provided by the private sector…The fiscal cost of government employment is mostly financed by volatile oil revenue. Maintaining the level of public employment steady, as governments typically seek to do, transfers oil revenue volatility to the budget balance. At the same time, the exhaustibility of oil resource jeopardizes the sustainability of public employment in the long run while the domestic workforce in many oil-exporting Arab countries is typically young and set to continue growing rapidly.
>
> …The size of the economies and GDP per capita vary significantly across countries. Saudi Arabia has the largest economy, with a nominal GDP of US$746 billion while Bahrain is the smallest of all, with a GDP of US$34 billion. The disparity in 2014 per-capita-GDP is very large: Qatar had one of the highest per-capita-GDP in the world at close to US$94,000 (and the highest in the world when measured in purchasing power parity terms). Conversely, Yemen had a GDP per capita of US$1,574 in 2014. There were also significant variations in real GDP-per-capita growth across countries in the group, but in all countries except Iraq it was lower than the world average of 3.1 percent over 2010-14. Over that period, GDP per capita declined in Yemen and Oman in real terms. When oil and government sectors are excluded (as a measure of the wealth generating value added produced outside the oil sector), the remaining GDP per capita is fairly low in most countries. Only a few Arab oil exporter economies would have per capita GDPs above the world average.
>
> …A competitive private sector would provide a more sustainable source of growth and employment. In most economies in the world, services in the private sector lead job creation, followed by manufacturing, with the share of the agriculture typically declining. Within the private sector, small and medium enterprises (SMEs) are the primary source of job creation.[10] This suggests that greater economic diversification, reflected in a private-sector driven economy operating in a wide range of profitable sectors, would provide a more sustainable source of productive jobs, reducing total employment's exposure to volatile and

> exhaustible source of financing.
>
> …Greater economic diversification would shield the economy from the volatility of the global oil market. Wide fluctuations in hydrocarbon prices is a key source of macroeconomic volatility, notably in the fiscal and external sectors given the high dependence of fiscal and export revenues on oil prices. When oil prices drop, as they did in 2014, oil-exporting countries experience significant decline in government revenue, public spending (consequently), current account balance and (potentially) international reserves. Shrinking oil revenues affect domestic consumption as many jobs in oil exporting countries are directly or indirectly linked to the performance of the oil sector. In downturns, many job seekers may have fewer job opportunities, which means less income and little prospect for increasing households' wealth. For example, the GCC countries experienced a long decline in consumption per capita in the early 1980s and returned to the early 1980s level only in the late 2000s, well after the oil price boom began…Furthermore, lower fiscal spending (e.g., cut in public investment programs) also weighs on economic activity in the short run and may reduce medium-term potential growth. Reducing the reliance on oil revenue through greater economic diversification is an important way of fostering a more stable economy.

This also is only part of the story. **Figure Two** also illustrates the fact that petroleum production has a limited life with anything approaching today's technology, and that the total and youth demand for jobs will continue to rise sharply over time. As the IMF again points out,[5]

> Although their sizes vary considerably, populations in most oil-exporting Arab countries are young and fast growing. In 2014, national population sizes varied from 630,000 in Bahrain to nearly 40 million in Algeria. With the exception of war-torn Libya, overall populations tended to grow fast, with average annual growth rates over 2010-14 ranging from 1.5 percent in Bahrain to 6.6 percent in Qatar. While the source of population growth is domestic in some countries, like Algeria, a number of Gulf countries rely heavily on migration for labor. Around10 million migrants are in Saudi Arabia, a third of the total population, while other GCC countries also host large expatriate populations, often more than half of total population. Overall, the share of children ages 15 and younger in the national population is high, although in GCC countries, the large expatriate presence skews the overall population more towards working ages. Populations are predominately urbanized, except in Yemen. The relatively high fertility rates in a number of Arab oil exporter countries indicate that their populations will continue to grow in the near future.
>
> … The oil sector cannot be a sustainable source of jobs to absorb the growing work force. The dominance of oil in oil-exporting Arab economies contributes to shape the economic structure toward energy intensive activities and/or energy dependent services. However, the energy industry, is typically highly capital intensive and generates fewer jobs than other sectors.
>
> ...Furthermore, a significant share of employment in many countries is provided by the government, financed through volatile and exhaustible oil revenue. In many oil-exporting Arab economies, the public sector is a major source of employment. In Algeria and Iraq for instance, the public sector absorbs more than 40 percent of total employment. On average elsewhere in the world, about 90 percent of the jobs are provided by the private sector.[9] The fiscal cost of government employment is mostly financed by volatile oil revenue. Maintaining the level of public employment steady, as governments typically seek to do, transfers oil revenue volatility to the budget balance. At the same time, the exhaustibility of oil resource jeopardizes the sustainability of public employment in the long run while the domestic workforce in many oil-exporting Arab countries is typically young and set to continue growing rapidly.

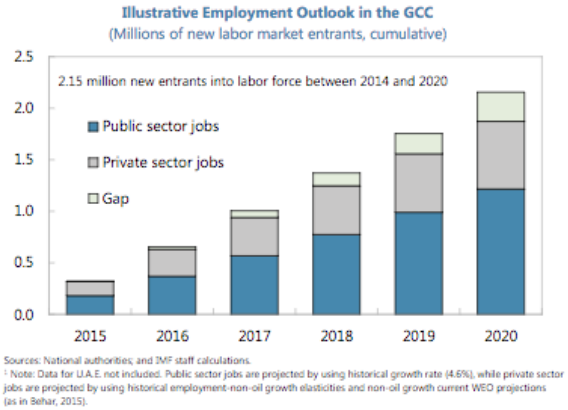
Overdependence on the Wrong Kind of Exports

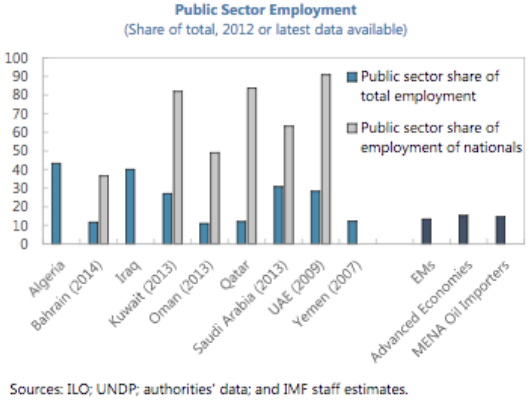
Many OPEC members have also becoming dependent on the wrong kind of global exports: A single sector of their economies, where any major cut in world prices can have the devastating effects analyzed on a country-by counter basis later in this study. **Figure Three** illustrates these impacts using the same IMF study, and includes other OPEC and non- OPEC exporters.[6]

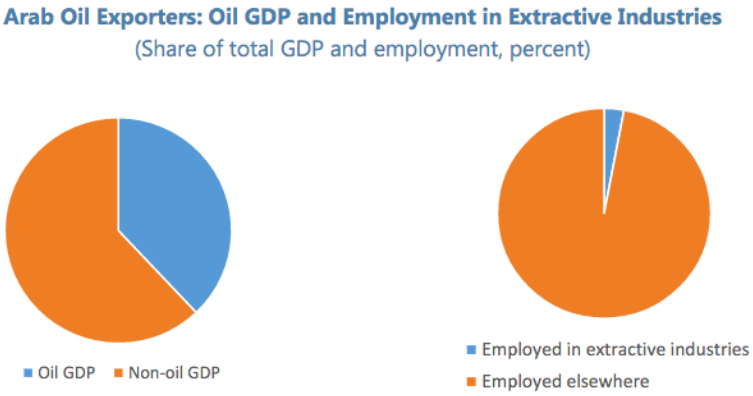
The IMF study provides the following definitions of the ways in which it uses concepts and indicators to measure export diversification:[7]

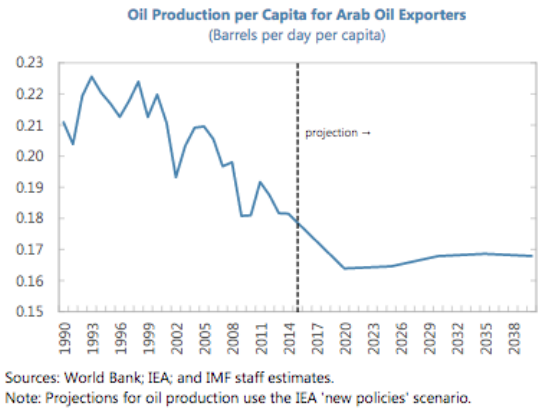
> Economic diversification can be defined and measured in various ways. Beyond simpler measures of sectoral diversification, this paper measures diversification through four specific indicators from the literature:
>
> *Economic Complexity Index:* This index measures the number of products made by an economy and controls for the likelihood that the same product is also made by others. Countries that produce goods or services that are not made elsewhere receive higher complexity scores than countries whose products are widely manufactured. For example, Germany and Japan have high scores, because they manufacture a wide array of products that very few countries can make. Like the IMF indices (described below), the Economic Complexity Index relies on international trade data. It is based on the assumption that countries will export most high quality products, and thus, trade data will reflect overall production within the economy.
>
> *IMF Export Diversification Index*: The IMF Export Diversification Index is calculated using trade data and is a combined measure of the 'extensive' and 'intensive' dimensions of diversification (also available as separate indices):
>
> - Extensive export diversification reflects an increase in the number of export products or trading partners.
> - Intensive export diversification considers the shares of export volumes across active products or trading partners.
>
> A country is less diversified when export revenues are driven by only a few sectors, trading partners, and/or total market share is low. Countries with a large number of exports and trading partners improve their extensive diversification, which in turn provides resilience to market or trading-partner shocks. Claiming greater market share (by product or country) increases intensive diversification, which confers greater pricing power and integration into supply-chains. The Theil index, a measure of inequality, is calculated for the intensive and extensive components of each country/year pair and summed to create a synthetic indicator.
>
> IMF Export Quality Index: This index describes the average quality within any product category. The baseline methodology (see Henn et al., (2013) for more details) estimates quality based on trade price, which is calculated in turn based on three factors: product unit value relative to market prices; exporter income per capita (as a proxy for differences in production technologies); and the distance between importer and exporter. Manufacturing Value-Added Gini: This is a Gini index constructed on the relative value-added of different manufacturing industries within an economy. The data come from the 2015 UNIDO INDSTAT4 Industrial Statistics Database, which provides manufacturing data disaggregated at the ISIC 3-digit level, including the total value added of each industry classified. A score of 0 indicates complete equality between industries' value-added within an economy, while a score of 1 indicates the complete dominance of only one industry.

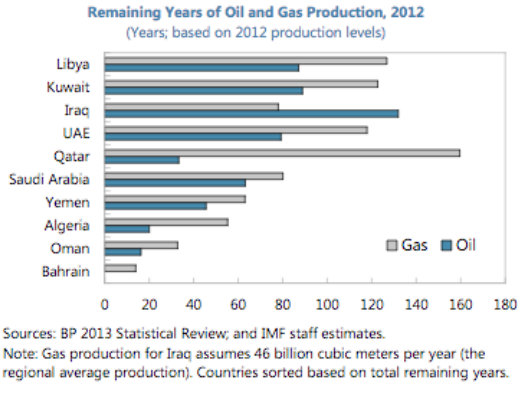
Figure Two: Over-Dependence on Government Employment and Current and Future Petroleum Revenues





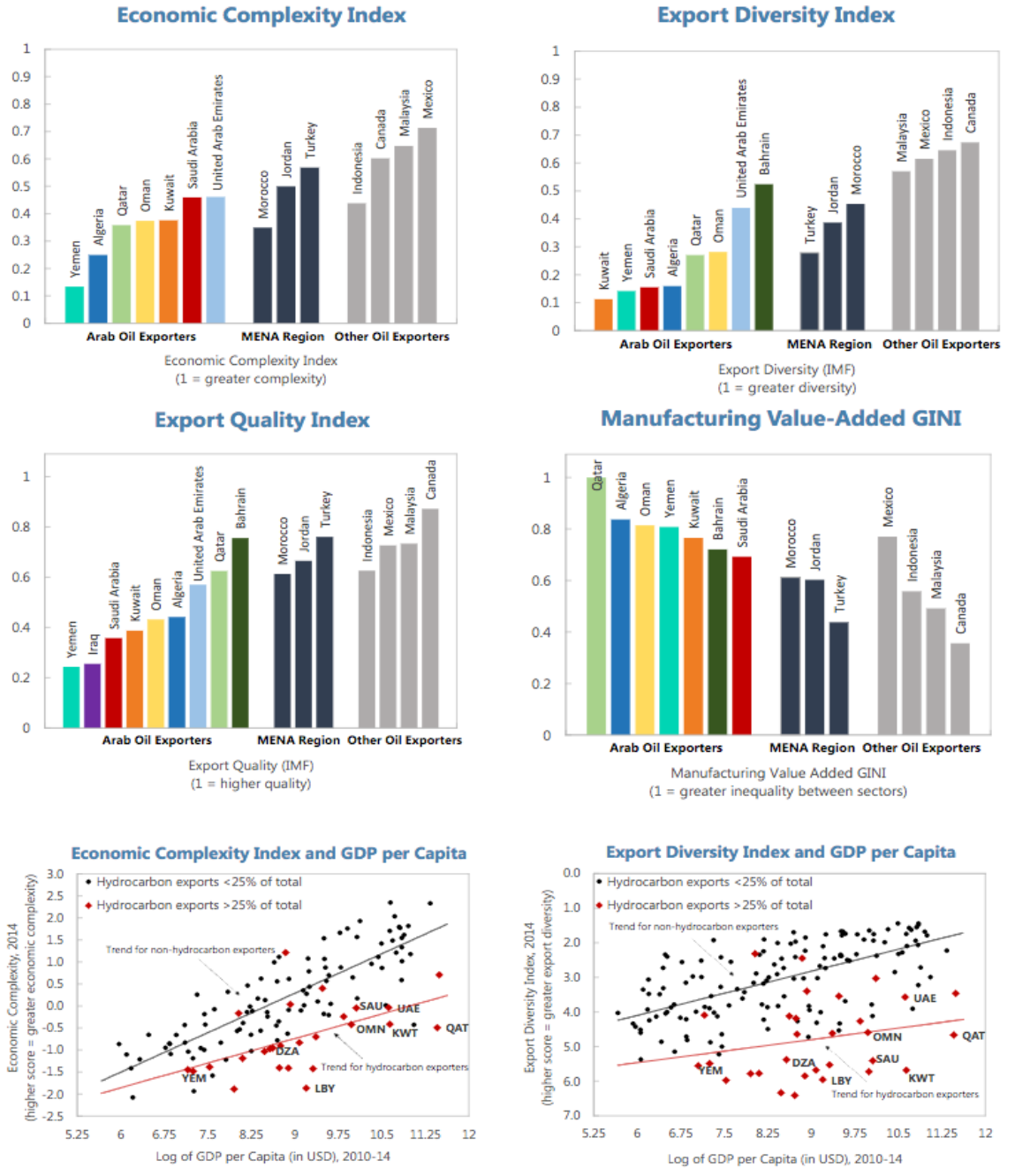






Source; IMF, Economic Diversification in Oil-Exporting Countries, April 2016, http://www.imf.org/external/np/pp/eng/2016/042916.pdf, pp. 12-14.

Figure Three: Over-Dependence on Petroleum Exports



Sources: The Observatory of Economic Complexity; The Diversification Toolkit (IMF); UNIDO INDSTAT4 Industrial Statistics Database; and IMF staff estimates.

Note: Scales for Economic Complexity, Export Diversity, and Export Quality indices are normalized between 0 (minimum observed valued) and 1 (maximum observed value) to facilitate comparison.

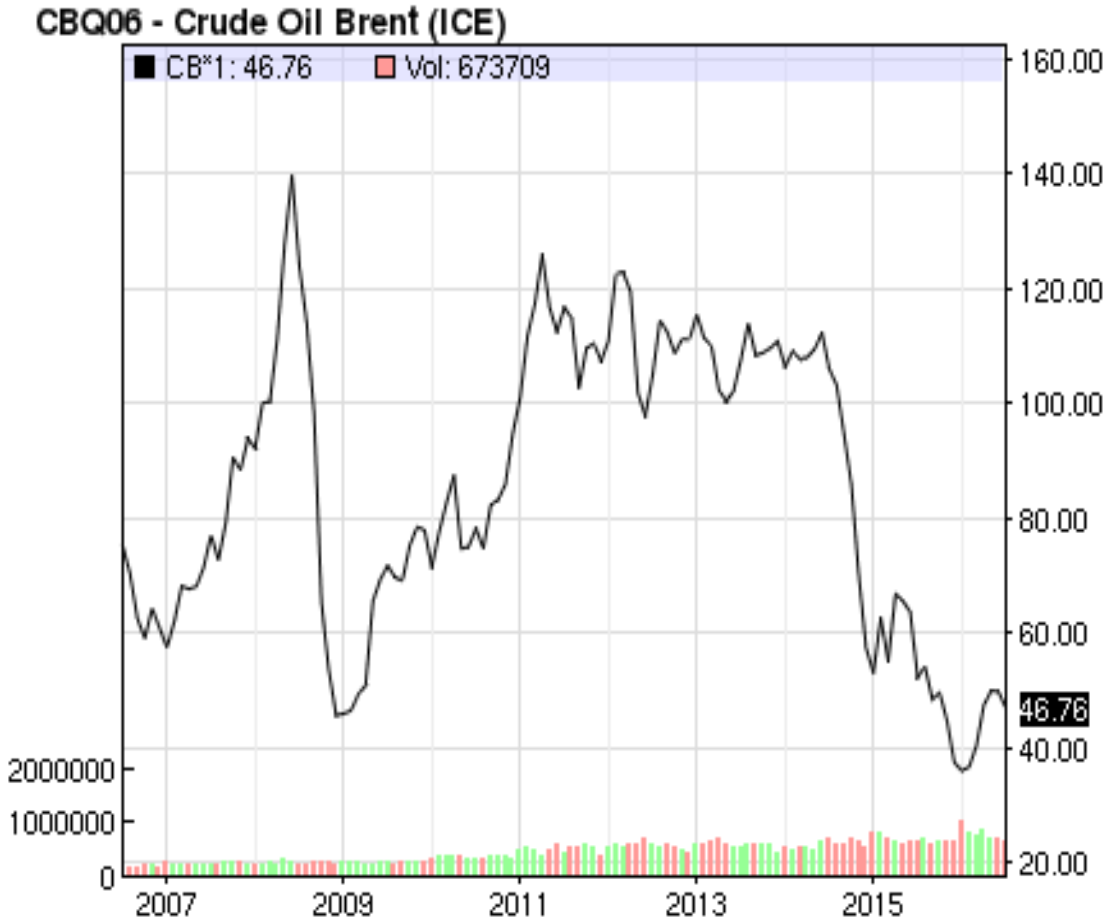
Source; IMF, Economic Diversification in Oil-Exporting Countries, April 2016, http://www.imf.org/external/np/pp/eng/2016/042916.pdf, pp. 12-14.

The Current "Crash" in Oil Prices and Petroleum Revenues

The world and the revenues of OPEC countries have changed radically since 2012 and 2014, the years shown in the IMF data for **Figure One** to **Figure Three**. The sudden "crash" in all forms of petroleum export revenues is illustrated in **Figure Four**, which shows the drop in the price of Brent Crude oil. It also covers a ten-year period ending in July 2016. It not only shows just how sharp the drop has been since the peak years of 2011 to 2014. It also shows that OPEC has been through a similar cycle within the last decade -- a further warning about over-dependence on oil export revenues.[8]

Figure Four: The Current Crash in Oil Prices and Its Longer Term Volatility

Ten Years Ending on July 10, 2016



Source: NASDAQ, http://www.nasdaq.com/markets/crude-oil-brent.aspx?timeframe=10y

The Crisis for Exporting Country Budgets

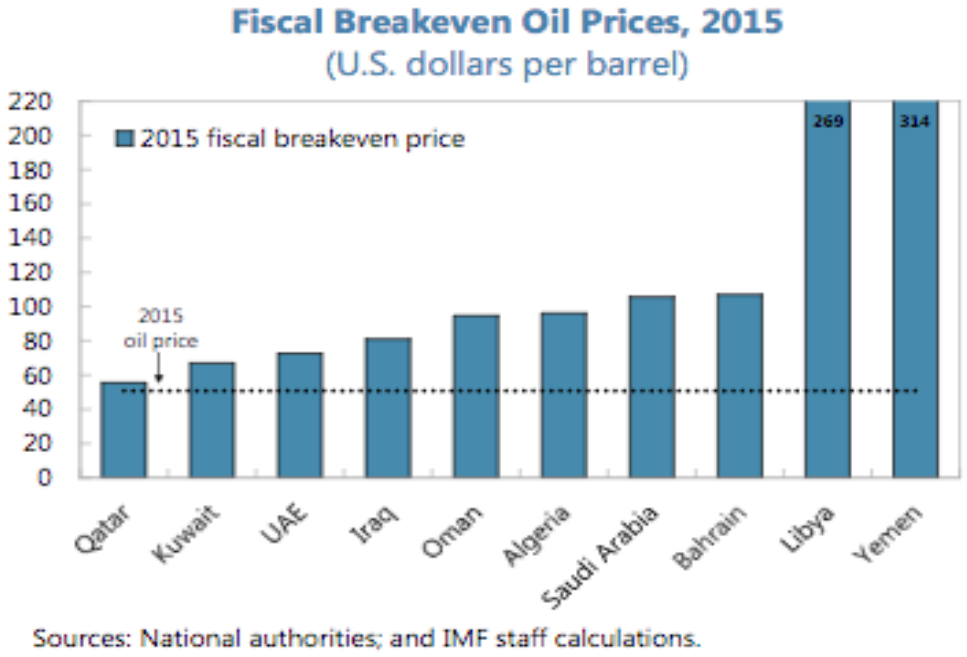
The crash had an impact on every aspect of petroleum exporter budgets, but particularly on national budgets and the ability to provide goods and services to their citizens. **Figure Five** shows that the IMF and WEO have calculated that these price cuts drove export

income well below the fiscal breakeven point for key Arab states and other exporters by 2015, and force them to incur major deficits, cut back expenditures or both.

The IMF notes that,[9]

> ...the fiscal break-even price for oil-exporting countries (is) the level of oil prices below which budget deficits occur absent a reduction in expenditure. In 2015, none of the oil-exporting Arab countries is estimated to have had a fiscal break-even price below the actual oil price.

Figure Five: Illustrative Fiscal Breakeven Oil Prices in 2015



Source; IMF, Economic Diversification in Oil-Exporting Countries, April 2016, http://www.imf.org/external/np/pp/eng/2016/042916.pdf, p. 19

The EIA Estimate of Past Trends in OPEC Oil Revenues and the size of the Current Oil "Crash"

At this point, however, it is possible to make analyze such trends in all of OPEC. As noted in the introduction, the U.S. Energy Information Agency does attempt to provide regularly updated estimates of OPEC crude oil export revenues and revenues per capita both in terms of total OPEC revenues and revenues by country and by per capita in each OPEC country. The EIA estimates as of June 14, 2016 for the recent trends in total OPEC crude oil export revenues and per capita oil export income are shown in **Figure Six**.

The EIA's more detailed estimates of OPEC crude oil export revenues and per capita oil export income by country in current (nominal) and constant (real) dollars are shown in **Figure Seven.** These figures are supplemented by EIA estimates by country in both current dollars and constant 2015 dollars that are available from web sites provided in the EIA, OPEC Revenues Fact Sheet.[10]

The data in current dollars in **Figure Six** and **Figure Six** seem more useful for analyzing short term future trends by country, however, because they reflect the actual earlier trends in the countries involved, and, and because most current budget and economic data on given countries are in current dollars, or are calculated.

The Drop in OPEC Revenues After 2014

Figure Six covers the entire period between 1975 and 2017. It again shows that the current oil crash is actually the second such rise and fall in a decade. It also shows that the rise and fall in per capita oil revenues has been less dramatic, in part because the OPEC average per capita income has never been that high.

At the same time, the OPEC totals in **Figure Six** dramatize the level of change in recent years. Other EIA data show that OPEC's total crude oil export earnings rose from $447.7 billion in current dollars in 2005 to $817.3 billion in 2008, and then crashed down to a low of $490.4 billion in 2009.[11] It then recovered to $638.8 billion in 2010, rose back to $874.8 billion in 2011, and reached a new peak of $921.1 billion in 2012. As might be expected, few came close to predicting the earlier crash in 2009, or the level of recovery between 2010 and 2012.

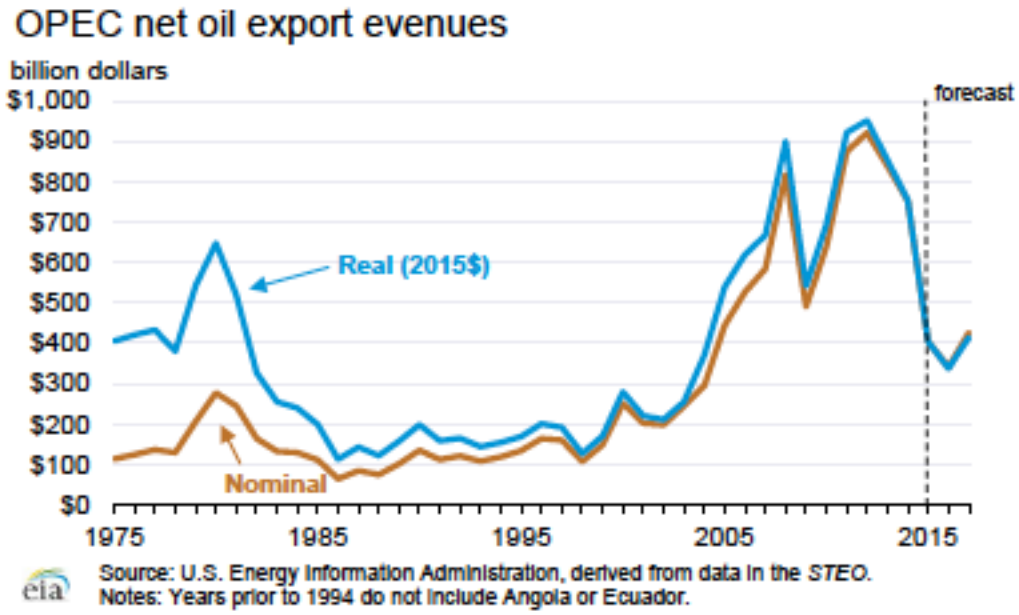
Both **Figure Six** and **Figure Seven** show that oil export revenues began to drop again in 2013, although initially relatively slowly. They were $838.7 billion in 2013 or 9% lower than the peak in 2012. They then dropped to $752.8 in 2014, 18% lower than the 2012 peak. The "crash" came between 2014 and 2015, when they dropped to $404 billion in 2015, a cut of 46%.[12]

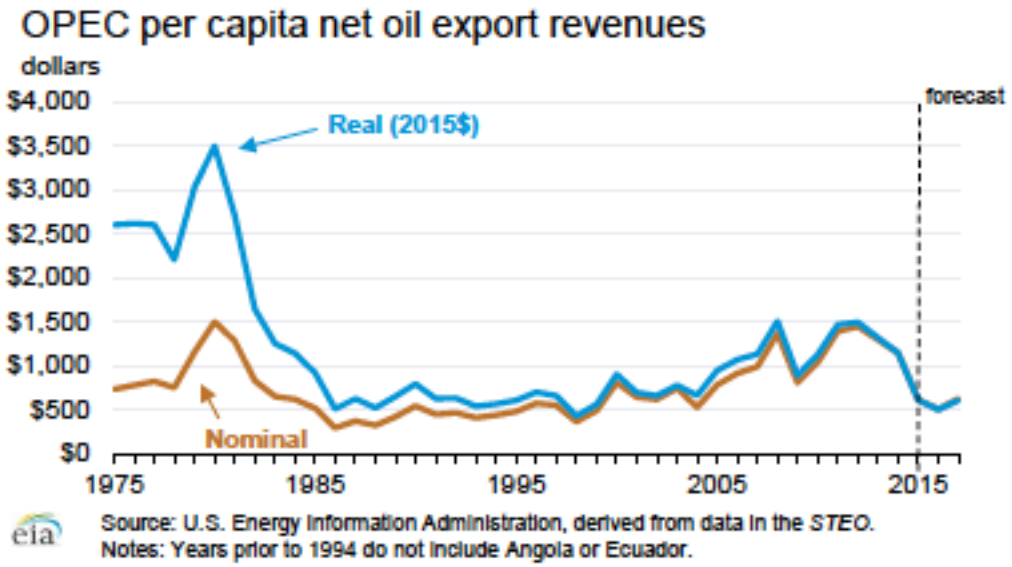
As the EIA notes, [13]

> …members of the Organization of the Petroleum Exporting Countries (OPEC) earned about $404 billion in net oil export revenues (unadjusted for inflation). This represents a 46% decline from the $753 billion earned in 2014, mainly as a result of a precipitous fall in average annual crude oil prices during the year, and to a lesser extent to decreases in the level of OPEC net oil exports. This revenue total was the lowest earnings for OPEC since 2004.

This was also a total drop of 64% from the peak of $921.1 billion in 2012. Seen from this perspective, the OPEC states and other exporter did have "strategic warning," but few of the OPEC governments seem to have remembered the lessons of the previous crash, or prepared for anything like the overall cuts that actually took place between 2012 and 2015.

Figure Six: Trend in Total OPEC Crude Oil Export Revenues and Per Capita Income: 1975-2015





Source: EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8.

Figure Seven: Trend in OPEC Crude Oil Export Revenues and Per Capita Income by Country: 2014-2017

OPEC net oil export revenues

	Nominal (billion $)					Real (billion 2015$)				
Country	2014	2015	2016	2017	Jan-May 2016	2014	2015	2016	2017	Jan-May 2016
Algeria	$48	$24	--	--	$7	$48	$24	--	--	$7
Angola	$23	$13	--	--	$4	$23	$13	--	--	$4
Ecuador	$10	$5	--	--	$2	$10	$5	--	--	$2
Indonesia	-$29	-$15	--	--	-$4	-$29	-$15	--	--	-$4
Iran	$47	$27	--	--	$11	$47	$27	--	--	$11
Iraq	$89	$57	--	--	$19	$89	$57	--	--	$18
Kuwait	$80	$40	--	--	$11	$80	$40	--	--	$11
Libya	$9	$4	--	--	$1	$9	$4	--	--	$1
Nigeria	$78	$39	--	--	$10	$78	$39	--	--	$10
Qatar	$38	$20	--	--	$6	$38	$20	--	--	$6
Saudi Arabia	$247	$130	--	--	$39	$247	$130	--	--	$39
UAE	$53	$29	--	--	$8	$53	$29	--	--	$8
Venezuela	$58	$32	--	--	$9	$58	$32	--	--	$9
OPEC	$753	$404	$341	$427	$121	$754	$404	$338	$415	$120

OPEC per capita net oil export revenues

	Nominal (billion $)					Real (billion 2015$)				
Country	2014	2015	2016	2017	Jan-May 2016	2014	2015	2016	2017	Jan-May 2016
Algeria	$1,331	$652	--	--	$184	$1,332	$652	--	--	$183
Angola	$1,646	$898	--	--	$263	$1,648	$898	--	--	$261
Ecuador	$693	$338	--	--	$103	$694	$338	--	--	$103
Indonesia	-$116	-$59	--	--	-$17	-$116	-$59	--	--	-$17
Iran	$679	$384	--	--	$153	$680	$384	--	--	$152
Iraq	$2,740	$1,718	--	--	$547	$2,743	$1,718	--	--	$542
Kuwait	$25,297	$12,133	--	--	$3,327	$25,327	$12,133	--	--	$3,299
Libya	$1,253	$517	--	--	$84	$1,254	$517	--	--	$83
Nigeria	$492	$240	--	--	$62	$492	$240	--	--	$62
Qatar	$36,812	$18,658	--	--	$5,430	$36,855	$18,658	--	--	$5,384
Saudi Arabia	$7,925	$4,125	--	--	$1,223	$7,934	$4,125	--	--	$1,212
UAE	$9,434	$4,940	--	--	$1,377	$9,445	$4,940	--	--	$1,366
Venezuela	$2,016	$1,088	--	--	$307	$2,019	$1,088	--	--	$304
OPEC	$1,146	$606	$503	$621	$180	$1,147	$606	$499	$603	$178

Note: Iranian per capita net oil export revenues do not account for any discounts Iran may have offered its oil customers between end-2011 and January 2016.
U.S. Energy Information Administration, derived from EIA's June 2016 Short-Term Energy Outlook.

Source: EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8.

Estimating the Future Trends in OPEC Oil Export Revenues

There is no reliable way to estimate the impact of the present and future cuts in petroleum revenues. History has made it clear that any models can prove wrong, and almost invariably do. Much depends on assumptions, and even the best economic model is inherently limited by the fact it cannot deal with political and security issues.

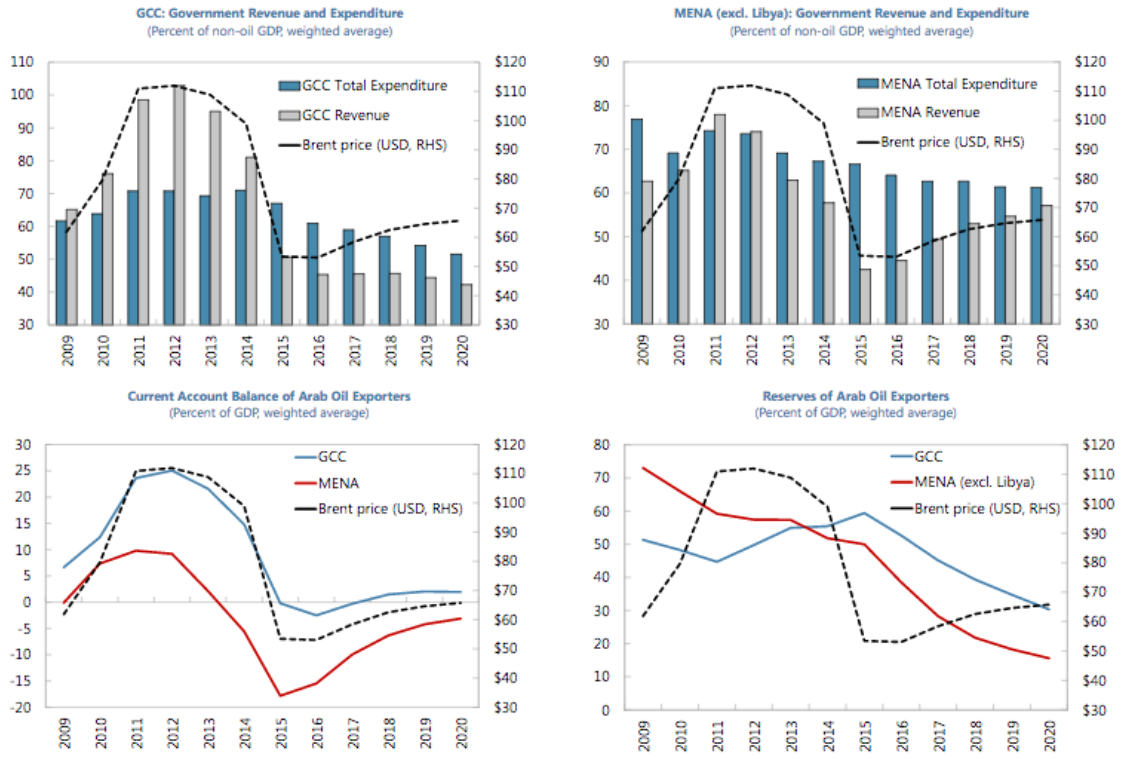
Longer Term Estimates

Figure Eight, for example, shows an IMF and WEO estimate of the impact of the recent drop in prices through 2020 on the Arab world and the states that form the core of OPEC. Such a future is *possible*, and such modeling has great value in illustrating key "what ifs," but it depends heavily on the ability predict revenues and national budgets half a decade in the future, the impact of any new national efforts at diversification, and the ability to predict the overall balance trade.

In addition, it cannot anticipate uncertainties in global demand, the impact of the slow down in the Chinese economy, the impact of Breixt, and other key aspects of demand. It also cannot predict the impact of ongoing struggles like the war in Iraq, or the impact of any future conflict between Iran and its Arab neighbors.

Focusing on a shorter period does not eliminate any of these problems, but it does reduce them. It also allows the analysis to focus on the broader range of problems in individual OPEC countries without making sweeping judgments about their future, and to draw more directly on actual recent revenue data.

Figure Eight: Guesstimating the Impact of Cuts in Oil Prices on the GCC and MENA Region through 2020



Sources: WEO; and IMF staff estimates.

Source; IMF, Economic Diversification in Oil-Exporting Countries, April 2016, http://www.imf.org/external/np/pp/eng/2016/042916.pdf, p. 16

Estimating Country-by-Country Trends for OPEC in 2016

As a result, the projections made for OPEC in the Figures that follow are based on the actual EIA country data for the first five months of 2016, and not on EIA's projections of total OPEC revenues for 2016 and 2017.

As **Figure Seven** has shown, the EIA projects a significant recovery in crude oil export income in 2017. It would rise from $340.9 billion based on the EIA total for 2016, and $290.4 billion based on average actual earnings for the year to date, to $426.9 billion in 2017. Such OPEC-wide totals are certainly *possible*, given the long history of unpredictable swings in the global economy and oil prices, but it is unclear that a global economy still coping with challenges like Brexit, the slow down in China's economy, and a growing level of regional conflicts make such estimates *probable*.

The totals both for all of OPEC and each county for 2016 are significantly lower if the estimate is based on the EIA data in **Figure Eight** for the actual level of crude oil export income for the first five months of 2016. Total OPEC earnings were only $121 billion for the five-month period, or an average of $24.2 billion a month. *If this monthly average is multiplied to equal a 12-month year, the total for 2016 would be only $290.4 billion. This*

is 28% lower than in 2015, only 39% of the total in 2014, and only 32% of the OPEC peak in 2012.

Figure Eight also shows that OPEC per capita earnings from oil exports dropped from $1,491 in 2012 to $1,146 in 2014, and then crashed to $606 in 2015—a drop of 59% from 2012, and a drop of 47% from 2014. The EIA projects a total of $503 per capita for 2016, and recovery to $621 in 2017. This would be a further drop of 66% of the 2014 figure in 2016, and with a recovery to a drop of 46% in 2017.

Once again, however, such numbers for per capita income ion 2016 and 2017 seem more *possible* than *probable*. Total actual OPEC per capita earnings were only $180 dollars per capita in the first five months of 2016. *This is an average of only $36 month, and would only equal $432 for the entire year of 2016. A total of $432 for 2016 would be 29% lower than in 2015, 62% lower than in 2014, and 71% lower than in 2012.*

OPEC Revenue Data by Country

It is country-by-country projections of total crude oil export revenues and revenues that seem to provide the best way of estimate of the impact of the oil "crash" in 2016. Accordingly, it is results of using such data on the first five months of 2016 to project annual crude oil export revenues by country that are shown in **Figure Nine.**

Such figures still have limit to their comparability and involve significant uncertainty.. At the same time, they do indicate just how serious the impact of the oil "crash" may well be in given countries, and that the that the broad trends in total OPEC revenues often conceal more than they reveal. Oil exporting countries have radically different sizes, radically different export capacity, radically different competitiveness, and radically different production costs.

Figure One has already shown that oil exporting countries include a range of countries from relatively stable and well-governed structures to countries that are at war, in political crisis, or that approach the status of "failed states" through corruption, poor governance, demographic pressure, and/or limited economic development.

As has been shown earlier, exporting countries also cope differently in competing at low oil prices and have different incentives in terms of production costs and fiscal break-even points. Saudi Arabia has low production costs, an efficient national oil industry, and has maximized revenues by continuing to produce high volumes of exports and maintain market share. Venezuela has an almost epic level of misgovernment and incompetence, and is unable to effectively maintain its exports—almost certainly resulting in lower total revenues.

Iran has less attractive types of crude than Saudi Arabia and higher production costs, and cannot maximize revenues by maximizing exports regardless of cost or impact on oil prices. Iraq is deeply involved in a war with ISIS and faces major internal demands for revenue, forcing it to export what it can almost regardless of marginal cost.

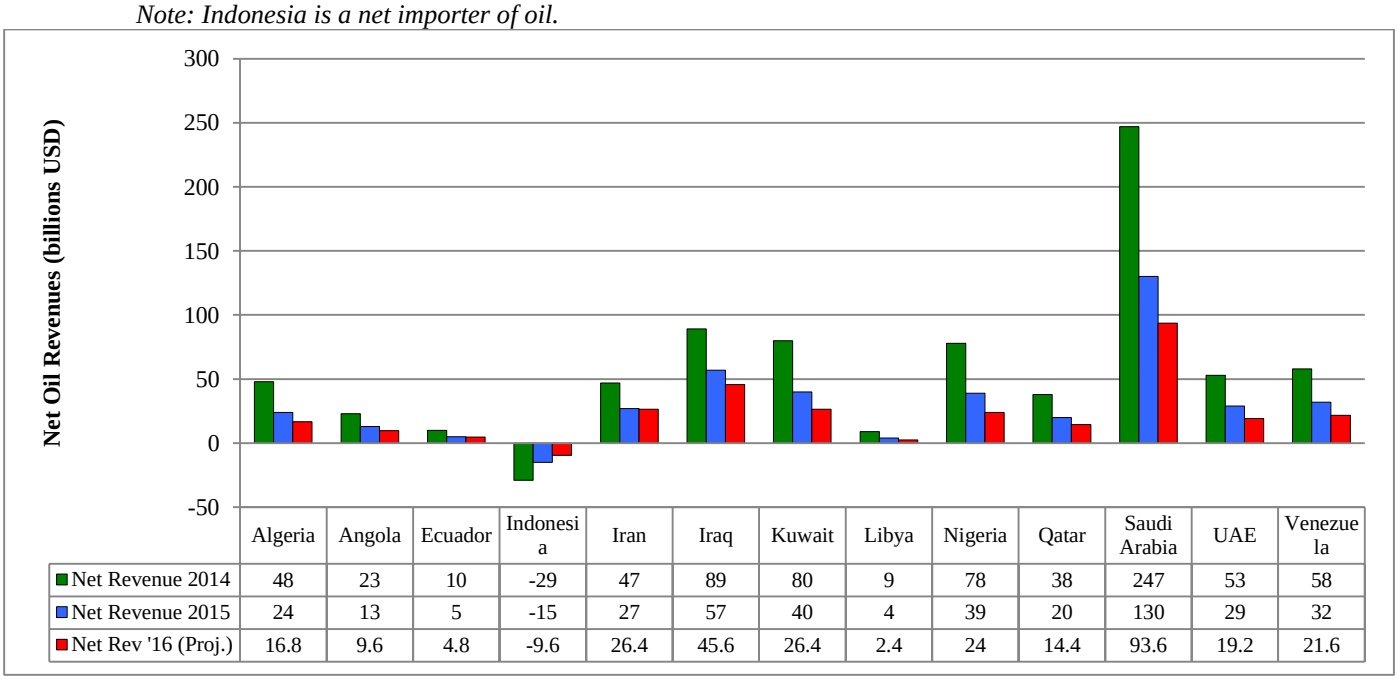
Such differences help explain why OPEC now has almost no capability to act in unity, much less as a cartel. Member countries have basically different economic motives, and these are compounded by key areas of hostility between key members like Iran and Saudi Arabia, the role of major outside producers like Russia, and the need to compete with the

emergence of new forms of production in countries like the United States and Canada. In many ways, OPEC has become more of a hostile dialogue between members than a functioning organization.

Figure Nine: OPEC Decline in Net Oil Revenue (2014-2016)

Country	Net Revenue in 2014 (billions USD)	Net Revenue 2015 (billions USD)	% Decline '14-'15	Net Revenue 2016 (billions USD projected)	% Decline '15-'16	% Overall Decline '14-'16
Algeria	48	24	50.0%	16.8	30.0%	65.0%
Angola	23	13	43.5%	9.6	26.2%	58.3%
Ecuador	10	5	50.0%	4.8	4.0%	52.0%
Indonesia	-29	-15	48.3%	-9.6	36.0%	66.9%
Iran	47	27	42.6%	26.4	2.2%	43.8%
Iraq	89	57	36.0%	45.6	20.0%	48.8%
Kuwait	80	40	50.0%	26.4	34.0%	67.0%
Libya	9	4	55.6%	2.4	40.0%	73.3%
Nigeria	78	39	50.0%	24	38.5%	69.2%
Qatar	38	20	47.4%	14.4	28.0%	62.1%
Saudi Arabia	247	130	47.4%	93.6	28.0%	62.1%
UAE	53	29	45.3%	19.2	33.8%	63.8%
Venezuela	58	32	44.8%	21.6	32.5%	62.8%
OPEC	753	404	46.3%	290.4	28.1%	61.4%

Note: Indonesia is a net importer of oil.



Source: Adapted by Max Markusen from EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-

OPEC Per Capita Revenue Data by Country

Figure Ten provides an estimate of country-by-country per capita oil export revenues for 2014-2016. These data show just how serious the oil crash would be even if oil export revenues were used efficiently and for the overall welfare of their people—goals most OPEC states do not begin to attempt or achieve in the real world. As is discussed shortly, several OPEC members have some of the most corrupt and ineffective governments in the world.

They also show how relative oil "wealth" really is when the export revenues of the highest earning state can be over 30 times the lowest, and per capita oil revenues of the highest earning state can be more than 77 times the lowest.[14]

The data in **Figure Ten** show that only two countries—Qatar and Kuwait—have enough crude oil exports per capita to sustain anything approaching wealth in per capita terms. Saudi Arabia and the UAE have enough per capita revenue to support development and the diversification of their economies, but need other major sources of income both to serve their present populations and to sustain their future.

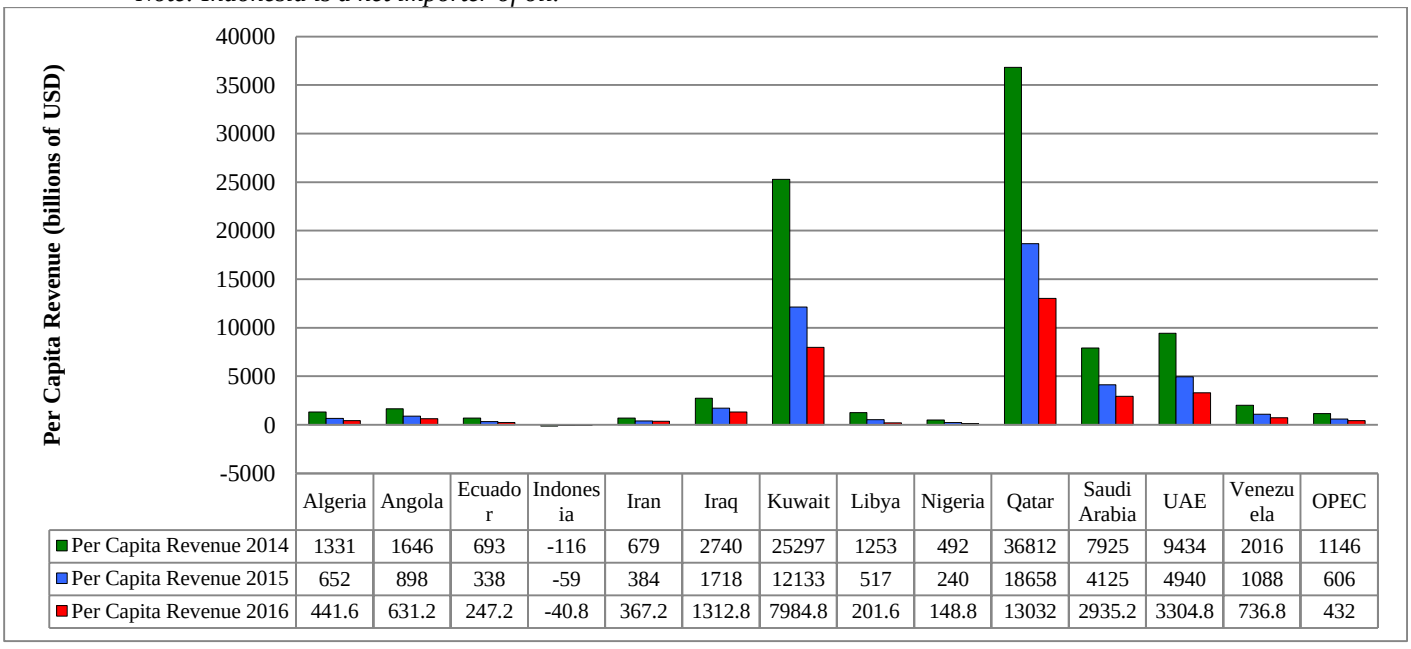
Several other countries in **Figure Ten** could match Saudi Arabia and the UAE if they had better governance and development plans, and/or did not face internal violence and war. These include Iran, Iraq, and possibly Libya, Angola, and Venezuela. In broad terms, however, most of OPEC has wasted the opportunities to move toward broad development that emerge out of the rise in their petroleum income after 1973.

In fact, for many OPEC countries, oil revenues provided a source of income that allowed their ruling elites to maintain power and wealth without making the kind of decisions and reforms necessary for broad development. In that sense, there is as much or more of an "OPEC disease" as there ever was a "Dutch disease."

Figure Ten: OPEC Decline in Per Capita Oil Revenue (2014-2016)

Country	Per Capita Revenue in 2014 (billions USD)	Per Capita Revenue 2015 (billions USD)	% Decline '14-'15	Per Capita Revenue 2016 (billions USD projection)	% Decline '15-'16	% Overall Decline '14-'16
Algeria	**1331**	**652**	**51.0%**	**441.6**	**32.3%**	**66.8%**
Angola	**1646**	**898**	**45.4%**	**631.2**	**29.7%**	**61.7%**
Ecuador	**693**	**338**	**51.2%**	**247.2**	**26.9%**	**64.3%**
Indonesia	**-116**	**-59**	**49.1%**	**-40.8**	**30.8%**	**64.8%**
Iran	**679**	**384**	**43.4%**	**367.2**	**4.4%**	**45.9%**
Iraq	**2740**	**1718**	**37.3%**	**1312.8**	**23.6%**	**52.1%**
Kuwait	**25297**	**12133**	**52.0%**	**7984.8**	**34.2%**	**68.4%**
Libya	**1253**	**517**	**58.7%**	**201.6**	**61.0%**	**83.9%**
Nigeria	**492**	**240**	**51.2%**	**148.8**	**38.0%**	**69.8%**
Qatar	**36812**	**18658**	**49.3%**	**13032**	**30.2%**	**64.6%**
Saudi Arabia	**7925**	**4125**	**47.9%**	**2935.2**	**28.8%**	**63.0%**
UAE	**9434**	**4940**	**47.6%**	**3304.8**	**33.1%**	**65.0%**
Venezuela	**2016**	**1088**	**46.0%**	**736.8**	**32.3%**	**63.5%**
OPEC	**1146**	**606**	**47.1%**	**432**	**28.7%**	**62.3%**

Note: Indonesia is a net importer of oil.



Source: Adapted by Max Markusen from EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8.

Examining the Impact of Oil Export Revenue Cuts by Country

The full impact of the cuts in petroleum export revenues becomes clearer when the revenue data are compared to other aspects of national development and other key economic and demographic metrics. One of the problems in analyzing energy supply and exports is that the analysis of the energy dimension is often separated from the overall stability of the exporting state, its overall economy and economic development, its internal stability, and its external security.

Providing Some Comparisons of Export Revenues with Other Metrics

Metrics can help in illustrating these factors, and **Figures Five** to **Ten** provide some key comparisons of the size of petroleum export revenues relative to other key measures of the economy and national capability and stability.

- **Figure Eleven provides an overview of the importance of oil export revenues relative to national GDP, exports, and budgets.** The graphic trends are often hard to follow in detail, but the patterns within a given country clearly differ sharply from country to country, and the table in **Figure Five** illustrates the specific level of estimated difference. It is immediately clear that most exporting states have some area of high dependence on oil export revenues, but there is no clear definition of a petrostate, particularly for states that have high levels of savings and international investment and low native populations relative to their export income.

- **Figure Twelve highlights oil revenues as a percent of GDP.** Iraq, Kuwait, Saudi Arabia, and Venezuela all emerge as exceptionally dependent on crude oil exports, and would be far more dependent in the case of Qatar and Saudi Arabia if the value of gas and product exports were included. This snapshot, however, is sharply affected by violence in Nigeria, war and ethnic tensions in Iraq, sanctions and economic mismanagement in Iran, and civil war in Libya**.** All of these states have both the potential to greatly increase their level of petroleum export revenues and urgently need to do so to provide a broad base of development.

- **Figure Thirteen shows oil revenues as a percent of total per capita income.** Iraq, Kuwait, Saudi Arabia, and Venezuela again emerge as highly dependent petrostates that are exceptional vulnerable to cuts in revenues, but so do Qatar and UAE in terms of current economic activity.

  Like the estimates in all these figures, they would often change sharply if different sources were used to estimate per capita income. It should also be stressed that the basis for estimating population in developing countries is exceptionally uncertain even by the standards of international statistics. Such percentages also disguise the fact that truly poor and highly populated countries will be highly dependent on even low percentages. Algeria, Libya, Nigeria, and Iran are all examples, and Angola would be as well if an IMF estimate was available.

- **Figure Fourteen shows petroleum revenues as a percentage of the total budget.** These percentages are more important for what they do not tell than

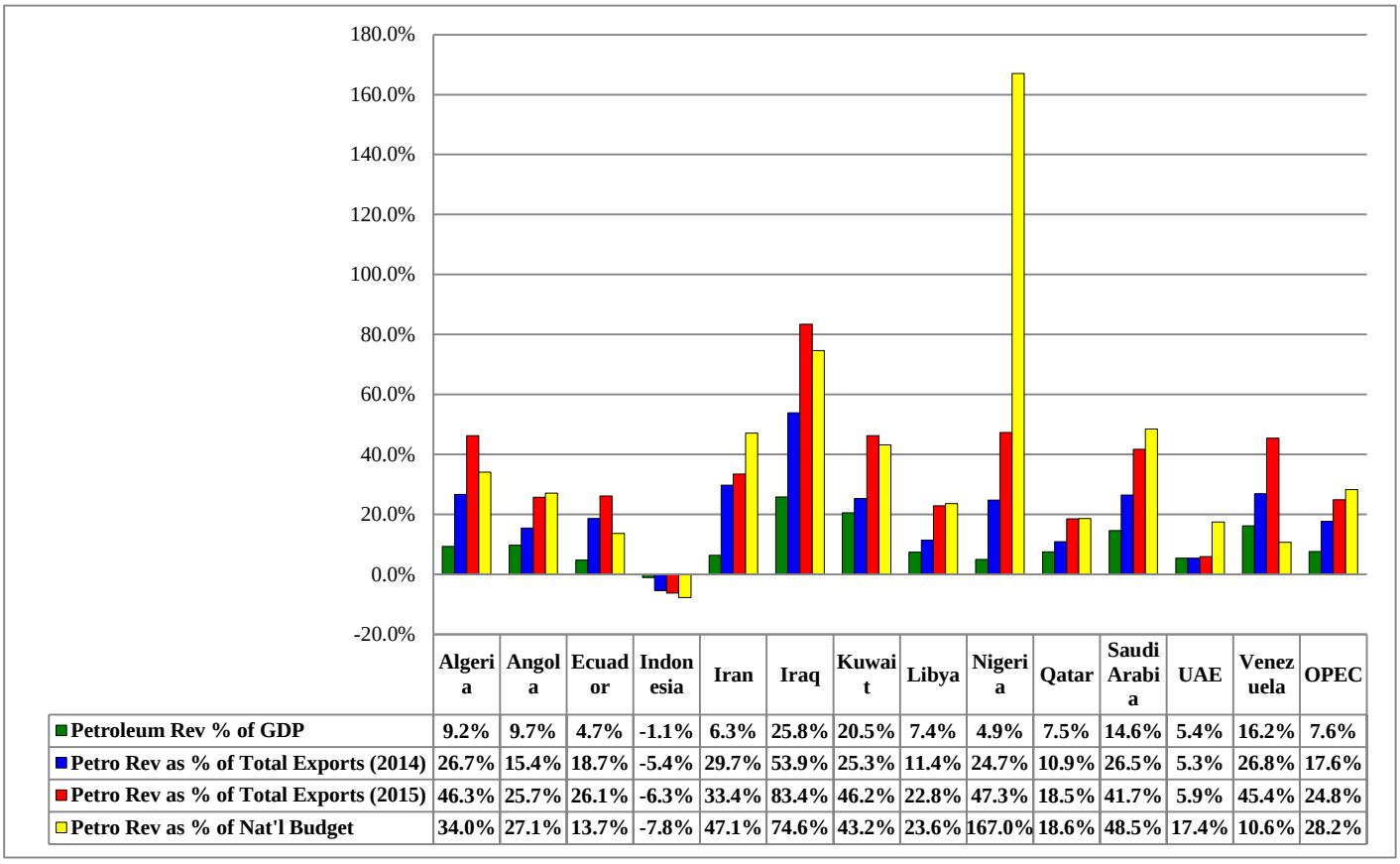
what they do. A number of sources attempt to provide more specific estimates of the dependence of national budgets on total petroleum export revenues. The problem is that it is clear such dependence is often high, but such estimates often ignore the fact that there are no reliable budget data, that defense or security spending may be sharply understated or not reported, that there are critical differences between the stated budget and the budget that is actually executed, that development plans may be decoupled from real world development efforts, and that oil exporting states often have extremely high levels of corruption and oil export revenues are particularly easy for some governments to divert or allocate in ways that favor the regime and/or its supporters.

- **Figure Fifteen and Figure Sixteen provide two different estimates of crude oil export revenues as a percent of total exports.** They again highlight the importance of the "oil crash" in a key aspect of national economic activity, but they also illustrate how different given sources of data can be and the dangers of assuming comparability and accuracy. The consistent failure of efforts to achieve international statistical standardization and enforce efforts to estimate uncertainty has its costs in every aspect of international analysis.

These are not casual issues when critical measures of development, stability and risk are involved. Mark Twain once remarked that, "figures don't lie, but liars figure." It is unfair to accuse the generators of most international data of being liars, but all too fair to say that far too few verify, ensure standardization and comparability, or present any clear picture of uncertainty. Far too often, rough estimates or uncertain models are presented as hard data. Estimates can differ sharply even with given parts of a given government and often differ between international institutions, or are accepted by outside organizations without proper examination of their validity.

The data in **Figure Eleven** to **Figure Sixteen** are still useful in providing broad indications of the interactions between the impacts of the oil crash and other current national metrics, but like most aspects of international economics, they are not truly comparable to the point where one can treat the data as either reliable or truly comparable.

Figure Eleven: Oil Revenue as a % of GDP, Exports, and National Budget

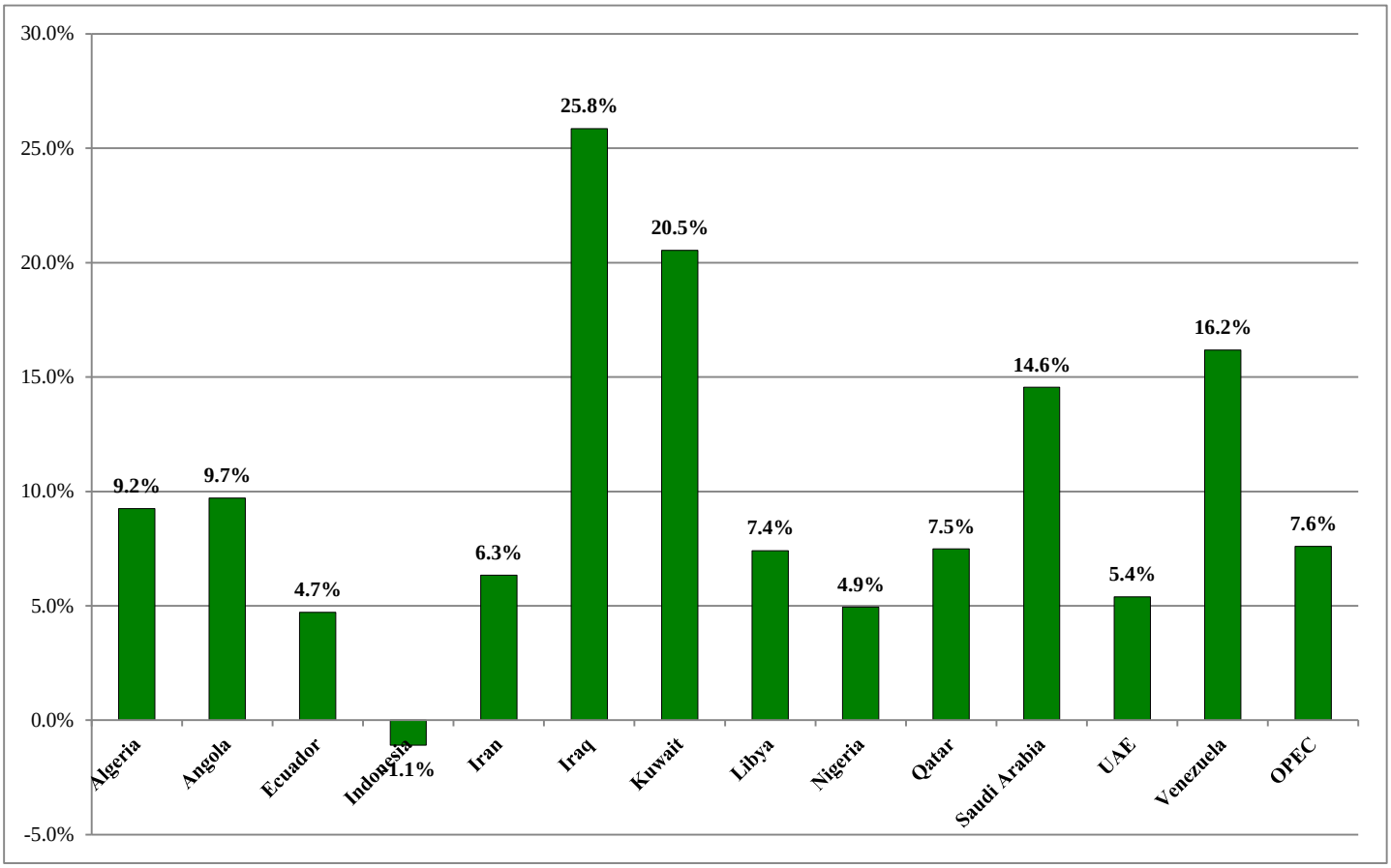


	Algeria	Angola	Ecuador	Indonesia	Iran	Iraq	Kuwait	Libya	Nigeria	Qatar	Saudi Arabia	UAE	Venezuela	OPEC
Petroleum Rev % of GDP	9.2%	9.7%	4.7%	-1.1%	6.3%	25.8%	20.5%	7.4%	4.9%	7.5%	14.6%	5.4%	16.2%	7.6%
Petro Rev as % of Total Exports (2014)	26.7%	15.4%	18.7%	-5.4%	29.7%	53.9%	25.3%	11.4%	24.7%	10.9%	26.5%	5.3%	26.8%	17.6%
Petro Rev as % of Total Exports (2015)	46.3%	25.7%	26.1%	-6.3%	33.4%	83.4%	46.2%	22.8%	47.3%	18.5%	41.7%	5.9%	45.4%	24.8%
Petro Rev as % of Nat'l Budget	34.0%	27.1%	13.7%	-7.8%	47.1%	74.6%	43.2%	23.6%	167.0%	18.6%	48.5%	17.4%	10.6%	28.2%

Source: Adapted by Max Markusen from EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8; IMF, *World Economic Outlook Database*, October 2015, https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/weoselco.aspx?g=2001&sg=All+countries; World Bank, *Merchandise exports (current US$)*, 2014, http://data.worldbank.org/indicator/TX.VAL.MRCH.CD.WT; CIA, *World Factbook*, 2015, https://www.cia.gov/library/publications/the-world-factbook/; *Accessed June 26, 2016.*

Note: Indonesia is a net importer of oil.

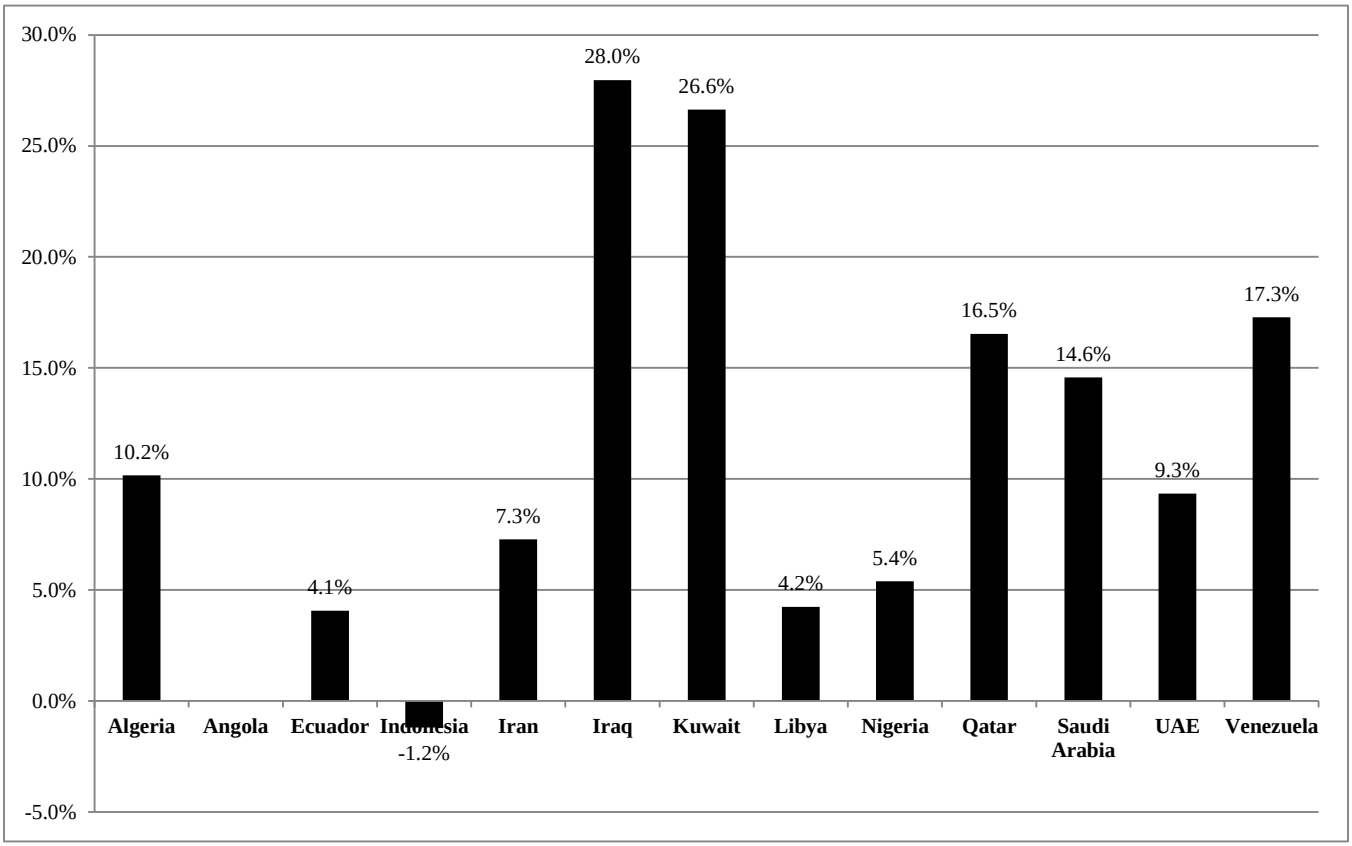
Figure Twelve: Net Oil Revenue (2016 EIA estimate) as a % of GDP (2016 IMF estimate)



Source: Adapted by Max Markusen from EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8; IMF, *World Economic Outlook Database*, October 2015, https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/weoselco.aspx?g=2001&sg=All+countries; *Accessed June 26, 2016.*

Note: Indonesia is a net importer of oil.

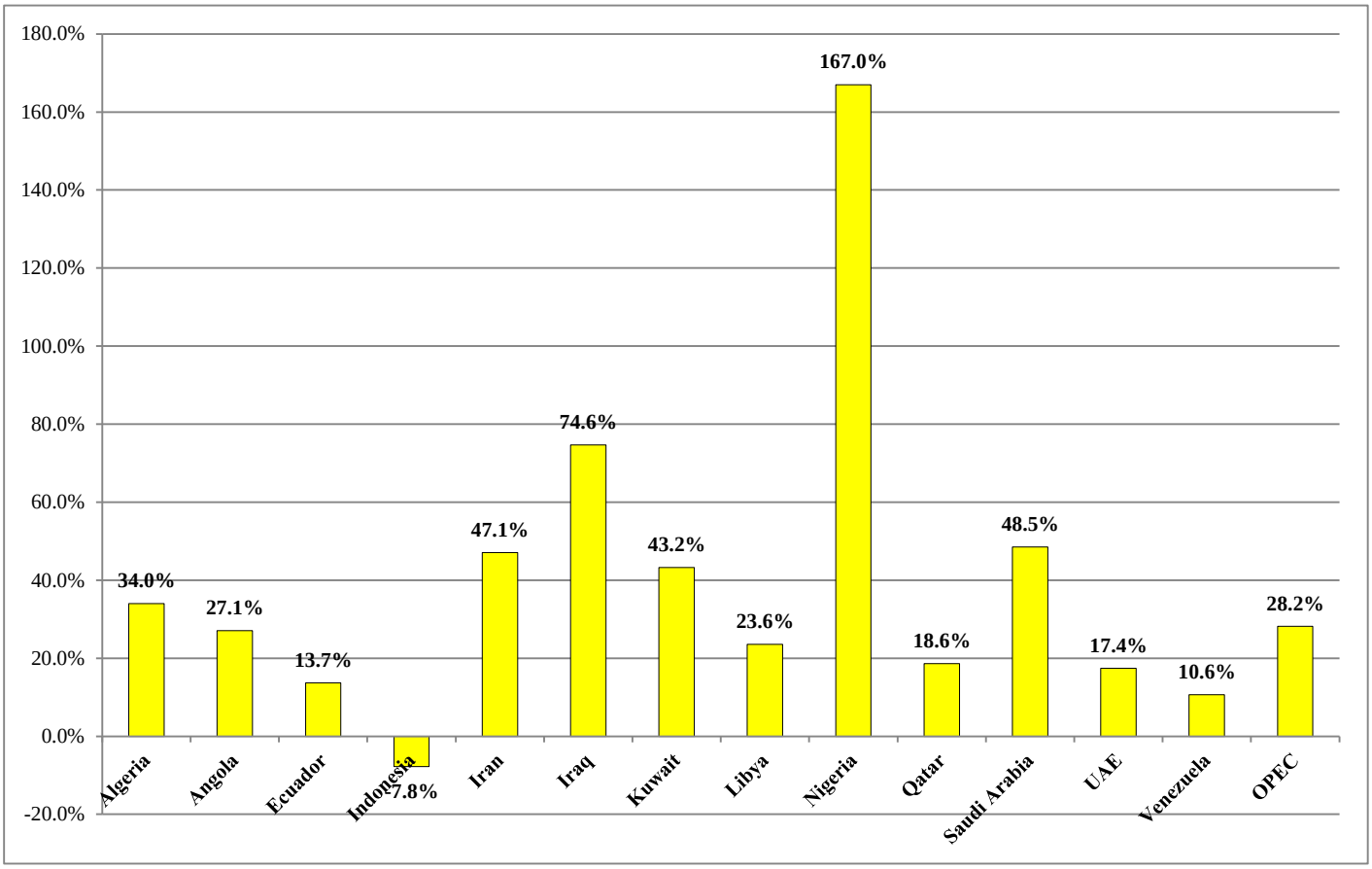
Figure Thirteen: Oil Revenue per Capita (2016 EIA estimate) as a % of GDP per Capita (2016 IMF estimate)



Source: Adapted by Max Markusen from EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8; IMF, *World Economic Outlook Database*, October 2015, https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/weoselco.aspx?g=2001&sg=All+countries; *Accessed June 26, 2016.*

Note: Indonesia is a net importer of oil.

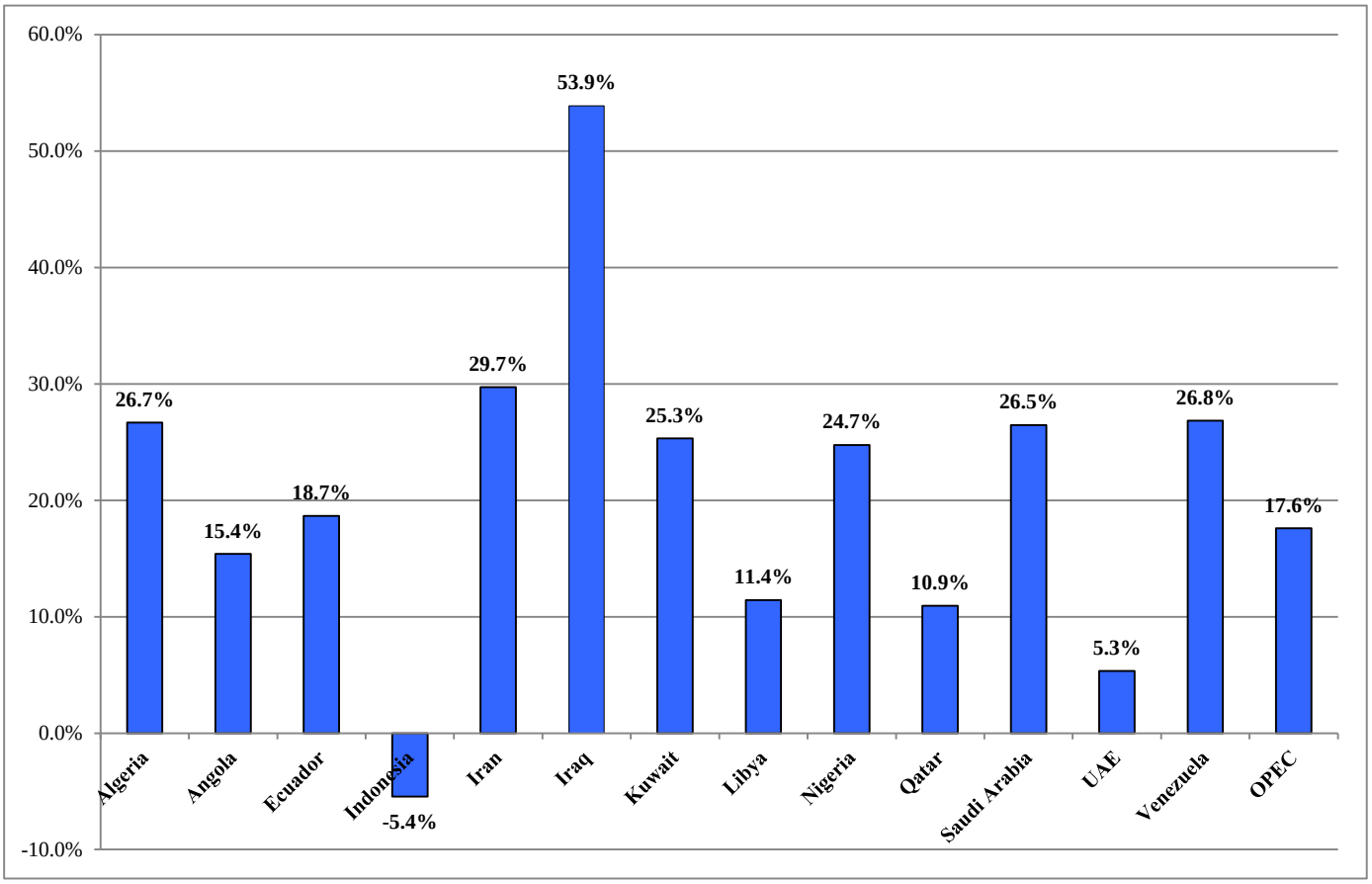
Figure Fourteen: Net Oil Revenue (2016 EIA estimate) as a % of National Budget (2015 CIA estimate)



Source: Adapted by Max Markusen from EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8; CIA, *World Factbook*, 2015, https://www.cia.gov/library/publications/the-world-factbook/; *Accessed June 26, 2016.*

Note: Indonesia is a net importer of oil.

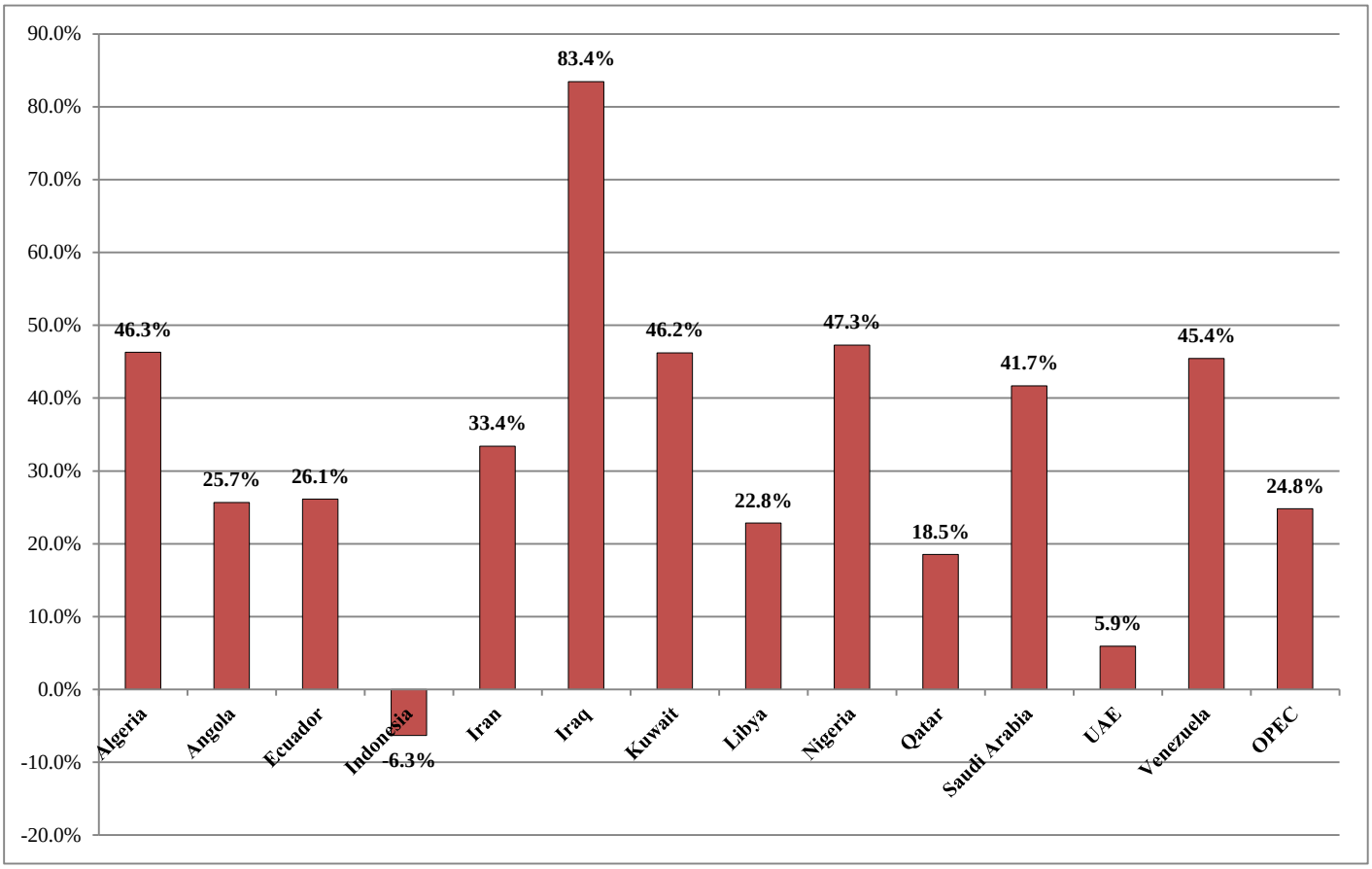
Figure Fifteen: Net Oil Revenue (2016 EIA estimate) as a % of Total Exports (2014 IMF estimate)



Source: Adapted by Max Markusen from EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8; World Bank, *Merchandise exports (current US$)*, 2014, http://data.worldbank.org/indicator/TX.VAL.MRCH.CD.WT; *Accessed June 26, 2016.*

Note: Indonesia is a net importer of oil.

Figure Sixteen: Net Oil Revenue (2016 EIA estimate) as a % of Total Exports (2015 CIA estimate)



Source: Adapted by Max Markusen from EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8; CIA, *World Factbook*, 2015, https://www.cia.gov/library/publications/the-world-factbook/; *Accessed June 26, 2016.*

Note: Indonesia is a net importer of oil.

The OPEC Disease: A Country-by-Country Risk Comparison

It is the differences between OPEC countries, however, that do the most to illustrate the structural problems of being over-dependence on petroleum revenues, the impact of the revenue cuts coming out of the oil "crash," the result risks and their strategic impact.

One key difference lies in their very different production levels. These figures are shown for each OPEC country in **Figure Seventeen**, which provides a good summary picture of the relative importance the OPEC state in world energy markets. These figures are drawn from the OPEC Monthly Oil Market Report for May 2016.[15] They do suffer from some uncertainties, and OPEC does report two sets of different figures.

Work by Ron Patterson of *Oil Price* also shows that the EIA and OPEC differ in detail over such production levels.[16] The figures for crude oil production from secondary sources do seem consistent enough with other sources, however, to be used as a reference.

OPEC states differ by more than oil production, however, and some are major producers of gas and product. They also differ in terms of politics, governance, economics, and security, and their strategic importance to other states. The moment they are judged by these terms, oil production only becomes part of the story.[17]

- *Saudi Arabia*: The Kingdom is the most important OPEC state by all of these standards. It averaged 10.12 MMBD of crude oil production in 2015 (32 % of the OPEC total), and was a major exporter of product. The crises in Egypt and Syria have made it even more of a key leader in the Arab world, and it has long been the de facto leader of the GCC and the key regional deterrent to Iran. It faces clear threats from terrorism ands outside states, and is a leader of the pro-government coalition in the war in Yemen, but has effective security and military forces and a major ally in the U.S. It does suffer from over-dependence on the petroleum sector, but its one of the few OPEC states that is actively seeking to cure its problems with the "OPEC disease" with major and comprehensive reform plans. *It currently is a country with a positive future and a low risk state.*

- *Iraq*: Iraq presents the other extreme. Its production levels have risen to more than 4.2 MMBD, and averaged 3.93 MMBD -- or 12% of the OPEC total -- in 2015. It is at war with ISIS, however, and faces critical divisions between its Sunnis and Shi'ites and Arabs and Kurds. Its politics are almost paralytically divisive. Corruption is near crippling, and it has long failed to developed effective economic development programs and policies. It has great strategic importance because of the need to defeat violent extremism and develop a buffer between Iran and the other Arab states. *It is currently a "failed state" that has high risk levels in virtually every area.*

- *Iran:* Iran produced an average of 2.84 MMBD of oil in 2015, or close to 9% of the OPEC total. This was marginally less than the production of the UAE, but Iran is a major gas producer and the lifting of sanction following its nuclear agreement with the P5+1 has led to its oil production rising to levels over 3.5 MMBD in mid-2016. Its revolutionary religious regime and ties to the Shi'ite world have made it a major opponent to Saudi Arabia, most of the Arab world, and the U.S. It currently presents the most serious threat of war in OPEC and the Gulf. It has not

broadly moderated its politics since the JCPOA, has a government with strong authoritarian elements, and badly needs economic reform at many levels. *It is a high risk state.*

- *UAE*: The UAE produced an average of 2.86 MMBD in 2015, or close to 9% of the OPEC total. The UAE is over dependent on petroleum income, but better diversified than almost all other OPEC states, and has a small native population, It does face a potential threat from Iran, and it too is a leader of the pro-government coalition in the war in Yemen but has but it has not faced serious terrorist threats, has been internal security and military forces, and it's a strong ally of Saudi Arabia and the U.S. *It is a low risk state*.

- *Kuwait:* Kuwait produced an average of 2.73 MMBD in 2015, or 8.6% of the OPEC total. Its government is broadly effective and its economy is basically sound, but it is extremely dependent on petroleum revenues and outside investment and has limited opportunities for diversification. Its location makes it one of the most vulnerable GCC state to Iran, and its divisive politics present serious problems to effective development and reform. *It is a moderate risk state*.

- *Venezuela:* Venezuela produced an average of 2.36 MMBD in 2015, or 8.6% of the OPEC total. It does not face external threats, but long periods of misgovernment have made it critically over-dependent on high petroleum revenues and funding key imports, including food. *Its misgovernment has now reached near catastrophic levels and turned it into a failed state because of its self-inflict wounds.*

- *Nigeria:* Nigeria produced an average of 1.87 MMBD in 2015, or 5.9% of the OPEC total. It has improved its political stability, and capability to deal with the extremist threat from Boko Haram. It still faces serious internal divisions, however, and militant attacks in its southern Niger Delta region has recently seriously cut is oil production. Its overall level of governance is poor and corrupt, and it badly needs overall economic reform. *It is a moderate to high risk state*.

- *Angola:* Angola produced an average of 1.75 MMBD in 2015, or 5.5% of the OPEC total. Oil revenues are a limited part of its economy, but critical to funding its government and development. It is now relatively peaceful and stable, but needs to reform its government and economy to reduce corruption and meet the needs of its people. *It is a moderate risk state.*

- *Algeria:* Algeria produced an average of 1.11 MMBD in 2015, or 3.5% of the OPEC total. Algeria is a gas exporter as well, however, and its location in North Africa isolates it from the tension in the Gulf, although scarcely from the threat of extremism and terrorism. It is also a state that defeated its Islamists through repression and state violence that is ruled by the equivalent of a military junta, and has poor levels of governance and badly needs consistent economic reform. *It is a moderate to high risk state.*

- *Indonesia:* Indonesia produced an average of 0.695 MMBD in 2015, or 2.2% of the OPEC total. It is now a net importer of petroleum, and the impact of the

OPEC disease is limited. It does, however, need further economic reform and better focused development activity. *It is a limited risk state*.

- *Qatar:* Qatar produced an average of 0.667 MMBD in 2015, or 2.1% of the OPEC total. It is, however, one of the world largest exporters of natural gas and \its strategic energy importance is far greater than its oil exports would indicate. Its strategic position in the Gulf, and role as the main U.S. air base in the region, also makes it a key factor in maintaining the balance of deterrence in the Gulf, and it has been relatively free of extremist and terrorist threats. Overall governance and economic policies are good. *It is a limited risk state*.

- *Ecuador:* Ecuador produced an average of 0.546 MMBD in 2015, or 1.7% of the OPEC total. It does not face internal or external threats, but has let its economy become sharply over dependent on petroleum revenues. *It is a high risk state*.

- *Libya: The EIA reports that* Libya holds the largest amount of proved crude oil reserves in Africa, the fifth-largest amount of proved natural gas reserves on the continent It exported 1.65 MMBD in 2010, and was an important contributor to the global supply of light, sweet (low sulfur) crude oil, largely to European markets. Libya's civil war reduced it to an average of only 0.405 MMBD in 2015, or 1.2% of the OPEC total, and production has dropped steadily since. The EIA also reports that Libya's Dry natural gas production averaged 277 Bcf in 2011, more than a 50% drop from the previous year, but. production recovered to an average of 431 Bcf in 2012 and stayed relatively unchanged in 2013 and 2014. Libya t has the resources to return as a significant Petroleum exporter, but may remain crippled by civil war for several more years. It suffers badly from structural overdependence on petroleum export revenues, chronic misgovernment, and the cost of past failed military adventures. *It has effectively become failed state in many ways, and is now a high risk state.*

Figure Seventeen: OPEC Oil Production by Country: 2014-2016

According to secondary sources, total OPEC crude oil production in May averaged 32.36 mb/d, a decrease of 100 tb/d over the previous month. Crude oil output increased mostly from Kuwait, IR Iran and Saudi Arabia, while production decreased in Nigeria, Venezuela and Iraq.

Table 5.5: OPEC crude oil production based on *secondary sources*, tb/d

	2014	2015	3Q15	4Q15	1Q16	Mar 16	Apr 16	May 16	*May/Apr*
Algeria	1,123	1,106	1,110	1,110	1,093	1,092	1,087	1,080	*-7.1*
Angola	1,654	1,754	1,763	1,780	1,760	1,797	1,790	1,773	*-16.8*
Ecuador	544	546	541	545	548	554	546	549	*3.9*
Indonesia	696	695	696	707	720	726	730	740	*10.4*
Iran, I.R.	2,778	2,840	2,861	2,874	3,093	3,236	3,473	3,562	*89.2*
Iraq	3,267	3,933	4,154	4,232	4,242	4,179	4,342	4,281	*-60.1*
Kuwait	2,781	2,730	2,717	2,720	2,765	2,768	2,647	2,740	*93.3*
Libya	470	405	382	401	370	338	348	296	*-52.0*
Nigeria	1,953	1,867	1,861	1,885	1,792	1,761	1,675	1,424	*-251.4*
Qatar	714	667	655	669	667	672	658	659	*1.9*
Saudi Arabia	9,688	10,123	10,263	10,122	10,147	10,146	10,157	10,241	*84.0*
UAE	2,759	2,856	2,878	2,881	2,807	2,724	2,753	2,826	*73.9*
Venezuela	2,361	2,357	2,357	2,354	2,309	2,286	2,257	2,188	*-69.0*
Total OPEC	**30,788**	**31,879**	**32,238**	**32,280**	**32,314**	**32,275**	**32,461**	**32,361**	***-99.8***

Note: Totals may not add up due to independent rounding.
Source: OPEC Secretariat.

Table 5.6: OPEC crude oil production based on *direct communication*, tb/d

	2014	2015	3Q15	4Q15	1Q16	Mar 16	Apr 16	May 16	*May/Apr*
Algeria	1,193	1,157	1,159	1,179	1,128	1,137	1,141	1,133	*-8.0*
Angola	1,654	1,767	1,777	1,742	1,773	1,782	1,733	1,707	*-26.0*
Ecuador	557	543	538	536	548	552	555	556	*0.5*
Indonesia	697	690	695	693	739	747	726	737	*11.6*
Iran, I.R.	3,117	3,152	3,170	3,313	3,385	3,400	3,500	3,600	*100.0*
Iraq	3,110	3,504	3,744	3,846	4,598	4,553	4,521	4,499	*-22.0*
Kuwait	2,867	2,859	2,870	2,876	3,000	3,000	2,900	2,950	*50.0*
Libya	480	..	..	..	..	..	..	..	..
Nigeria	1,807	1,748	1,790	1,778	1,667	1,505	1,570	1,506	*-64.5*
Qatar	709	656	640	651	675	699	625	671	*45.7*
Saudi Arabia	9,713	10,193	10,285	10,202	10,225	10,224	10,262	10,270	*8.4*
UAE	2,794	2,989	3,030	2,999	2,944	2,909	2,827	3,107	*280.0*
Venezuela	2,683	2,654	2,631	2,587	2,515	2,515	2,490	2,370	*-120.3*
Total OPEC	**31,380**	..	..	..	..	..	..	..	..

Note: Totals may not add up due to independent rounding.
.. Not available.
Source: OPEC Secretariat.

Source: OPEC Monthly Oil Report, June 2016, p. 57, http://www.opec.org/opec_web/static_files_project/media/downloads/publications/MOMR%20June%202016.pdf.

It is important to stress that petroleum export revenues are scarcely a curse, regardless of the current risk status of many OPEC states. A number of exporting countries have shown they can be a blessing, including key OPEC exporters like Kuwait, Qatar, Saudi Arabia, and the UAE, as well as exporters outside OPEC.

Any estimate of the broader impact of the current oil crash must, however, look beyond oil revenues and the previous metrics, and consider how cuts in revenues interact the full range of developments in given exporting countries. There is no simple way to summarize the range of issues involved, and experts differ strikingly over how to do so.

As a result, the following detailed discussions of each OPEC country draw on direct comparisons of key sources like recent World Bank, IMF, EIA, CIA, and other reporting to show that governance, security, and demographics all have critical interactions with the level of structural economic dependence on petroleum revenues and the recent "crash" in oil revenues.

Algeria

Algeria still has the same repressive regime it had in 2011, and is the only such state in the MENA region whose military leadership retained control with out major political upheavals. This, however, is largely the result of the Algeria fought a long and brutal civil war between its ruling military junta and its Islamists before 2011. The junta won the military elite called "the power" is still in changes in spite of limited reforms.

Algeria's recent crude oil production is shown in **Figure Eighteen**, using graphs developed by Ron Patterson for *Oil Price*.[18] If the estimates in **Figure Nine** are used, its net export revenue dropped from $48 billion in 2014 to $24.8 billion in 2015, and was on a path that would drop to $16.8 billion in 2016. Using **Figure Ten**, its oil export revenues per capita dropped from $1,331 in 2014 to $652 in 2015, and were on a path that would drop to $441 in 2016.

Figure Eighteen: Algerian Oil Production: January 2012-March 2106

Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***.

The EIA estimated in March 2016, that Algeria had some 2.2 billion barrels of proved crude oil reserves, noting that many areas are unexplored or underexplored. It also described Algeria's role in energy exports, and dependence upon them -- as follows in,[19]

> Algeria is the leading natural gas producer in Africa, the second-largest natural gas supplier to Europe outside of the region, and is one of the top three oil producers in Africa. Algeria became a member of the Organization of the Petroleum Exporting Countries (OPEC) in 1969, shortly after it began oil production in 1958. Algeria's economy is heavily reliant on revenues generated from its hydrocarbon sector, which account for about 25% of the country's gross domestic product (GDP), more than 95% of export earnings, and 60% of budget revenues, according to the International Monetary Fund (IMF).[1]
>
> Oil and natural gas export revenues amounted to $35.7 billion in 2015, down 41% from $60.3 billion in 2014. The average price for crude oil produced in Algeria in 2015 was $52.79 per barrel, down 47% from 2014. Foreign exchange reserves, which peaked at $194 billion in December 2013, tumbled to $153 billion in late 2015.
>
> Crude oil and gross natural gas production have gradually declined in recent years, mainly because of repeated project delays resulting from slow government approval, difficulties attracting investment partners, infrastructure gaps, and technical problems. In the past four licensing rounds, there was limited interest from investors to undertake new oil and natural gas projects under the government's terms, awarding only 4 of 31 blocks in the 2014 bid round.[4] An auction originally scheduled for late 2015 was canceled because of the failure of previous rounds.
>
> Algeria is estimated to hold the third-largest amount of shale gas resources in the world. The U.S. Energy Information Administration (EIA) estimates that Algeria contains 707 trillion cubic feet (Tcf) and 5.7 billion barrels of technically recoverable shale gas and oil resources, respectively. Some industry analysts are cautious about the prospects of Algeria becoming a notable shale producer. To develop these resources, Algeria will face many obstacles including the remote location of the shale acreage, the lack of infrastructure and accessibility to sites, water availability, the lack of roads and pipelines to move materials, and the need for more rigs because shale wells deplete quicker.
>
> The 2013 militant attack on the In Amenas gas facility prompted security concerns about operating in Algeria's remote areas, particularly in the south. Any major disruption to Algeria's hydrocarbon production would not only be detrimental to the local economy but, depending on the scale of lost production, could affect world oil prices. Because Algeria is the second-largest

natural gas supplier to Europe outside of the region, unplanned cuts to natural gas output could affect some European countries.[6]

Algeria relies on its own oil and natural gas production for domestic consumption, which is heavily subsidized. Natural gas and oil account for almost all of Algeria's total primary energy consumption. Prices for oil products (diesel, gasoline, and liquefied petroleum gas) and natural gas in Algeria are among some of the cheapest prices in the world. The IMF estimates that the cost of the implicit subsidies on oil products and natural gas (both in the intermediary and final-use stages) amounted to $22.2 billion in 2012, or 10.9% of GDP. The 2016 budget law includes increased prices for gasoline, diesel, natural gas, and electricity for the first time in more than a decade as the Algerian government copes with falling revenue.[9]

Natural gas accounted for 93% of power generation in Algeria in 2013, according to the International Energy Agency (IEA). Algeria's government is attempting to reduce the country's dependence on natural gas in the power sector by increasing the share of electricity generated by renewable energy. However, even if Algeria's share of renewables consumption increases, the country is still expected to increase its consumption of natural gas as well.

...In recent years, Algeria has experienced difficulties attracting foreign investors, particularly at licensing rounds. In the most recent licensing round in 2014, only 4 of 31 blocks were awarded. Some analysts believe that the lack of fiscal incentives to attract foreign investors to new projects, coupled with past Sonatrach corruption allegations, were to blame. Algeria's precarious security environment has also been a concern for investors.

In 2013, Algeria revised parts of the hydrocarbon law in an attempt to attract foreign investors to new projects. Amid declining hydrocarbon production and stagnant reserves, the Algerian government has stated it needs foreign partners to increase oil and natural gas reserves and explore new territories, such as offshore in the Mediterranean Sea and onshore areas containing shale oil and natural gas resources. The 2013 amendments introduced a profit-based taxation, as opposed to revenue-based taxation and lowered tax rates for unconventional resources. The amendments also allow for a longer exploration phase for unconventional resources (11 years compared to 7 years for conventional resources) and a longer operating/production period of 30 years and 40 years for unconventional liquid and gaseous hydrocarbons, respectively (compared to 25 years and 30 years for conventional liquids and gas, respectively). The amendments, however, do not change Sonatrach's mandated role as a majority stakeholder in all upstream oil and natural gas projects.[12]

Sonatrach owns roughly 80% of total hydrocarbon production in Algeria, while IOCs account for the remaining 20%, based on data from Rystad Energy. IOCs with notable stakes in oil and natural gas fields are: Cepsa (Spain), BP (United Kingdom), Eni (Italy), Repsol (Spain), Total (France), Statoil (Norway), and Anadarko (United States). Sonatrach's substantial assets in Algeria make it the largest oil and natural gas company not only in the country, but also in Africa. The company operates in several parts of the world, including: Africa (Mali, Niger, Libya, Egypt), Europe (Spain, Italy, Portugal, United Kingdom), Latin America (Peru), and the United States.

.. .Militant groups operating in North Africa and the Sahel have presented security risks to oil and natural gas installations in the region. In January 2013, a militant group stormed Algeria's In Amenas gas facility, resulting in several causalities and a temporary suspension of natural gas production at the facility.

Concerns over Algeria's security environment resurfaced on January 16, 2013 when a militant group attacked the In Amenas gas facility (Figure 2)[13], resulting in several worker and militant causalities. The attack reportedly damaged two of the facility's three processing trains, each of which has the capacity to process 3 billion cubic meters per year (Bcm/y), or 106 billion cubic feet per year (Bcf/y). Natural gas output at In Amenas was first partially restarted at the end of February 2013 at one of the three trains with the second train returning to service two months later. The third train is still out of service, but is expected to restart in 2016.[14]

The In Amenas gas processing facility, located near the Libyan border, is jointly operated by Sonatrach, BP, and Statoil. After the incident occurred, BP and Statoil withdrew their staff from In

Amenas and the In Salah gas facility (located 373 miles to the west of In Amenas), setting back plans to boost output at both projects.

The World Bank reported on March 31, 2016 that,[20]

> Amid political upheavals in other Arab countries, Algeria's government maintained stability through a combination of minimal political reforms and public sector expenditure. To fulfill a pledge that the Algerian President, Abdelaziz Bouteflika, made shortly after the outbreak of the Arab Spring, a raft of constitutional amendments were adopted in February 2016 to strengthen Algeria's governing structure and deepen separation of powers. Regional instability continues to be a major concern for the Algerian authorities that recently stepped up security measures along the border with Libya.
>
> On the economic front, Algeria's fundamentals have steadily worsened since mid-2014, in line with the slump in global oil prices, but the recent budget approved signal a turning point. In 2015, growth slowed to 2.9 percent from 3.8 percent in 2014, hit by a falling average oil price from US$100 p.b. in 2014 to US$59 p.b. in 2015. Under initial expectations that the fall in oil prices would be short-lived, lack of fiscal consolidation led the budget deficit to double to -15.9 percent of GDP in 2015. The current account deficit also tripled to -15.2 percent of GDP in 2015. Despite tight monetary policy, inflation rose to 4.8 percent as the partial result of pass-through effect from about a 20 percent nominal depreciation of the dinar, aimed to correct the external imbalance. Unemployment rose to double digits and is acute among women and youth.
>
> In response, in December 2015, the government adopted an overdue set of austerity policies. The 2016 budget calls for a 9 percent cut in expenditure (mostly investment) and a 4 percent increase in tax revenue based on a 36 percent hike in gasoline prices and higher taxes on electricity and gasoline VAT rates and on car registrations. The budget empowers finance authorities to approve further cuts if oil prices fall lower than its average oil price assumption, and to engage in external borrowing if needed. The Government will also apply new import licenses and is considering to raise electricity prices closer to their cost. Monetary Authorities will allow the dinar to further depreciate so as to prevent its misalignment.
>
> Policy makers will continue facing difficult trade-offs in 2016 with oil prices projected at US$35 p.b. in the budget 2016. Authorities have little choice but to restore fiscal and external balances. Growth, however, is projected to remain modest at 3.4 percent driven by modest dynamism in the hydrocarbon sector, with gas projects coming online and the non-hydrocarbon sectors. Growth would benefit from reduced, but still positive, public expenditure and stagnant hydrocarbon exports, especially if the oil prices remain weak or fall further and if the global recovery remains tepid. In 2017-18, following some recovery in oil prices, the growth slowdown will continue to be driven by public investment and still significant subsidies. Private investment will remain tepid as the country may also be undergoing a complex political transition with no clear succession plans, high pressure for jobs, continuous regional security threats and some social instability shaken by the first adjustment to energy products in decades.
>
> The long term structural challenges facing the economy remain unchanged, namely reducing subsidies, improving the business environment, diversifying the economy and creating private sector jobs. While the government talks about the need for reforms, the steps it has taken have been modest. The government formed following the April 2014 presidential elections promised more action but has yet to deliver on promises.
>
> A business climate marked by difficult access to credit, a complex regulatory environment, and time-consuming procedures to set up a business, holds back the private sector. Trade integration has also proceeded very slowly, and negotiations to join the WTO have not made much progress. To bolster the economy, the government is seeking to further develop its hydrocarbon resources and has also explicitly embraced private sector development by opening research centers and launching major transport and housing projects. Regarding the business climate, the government has established a committee to come up with an action plan to help reform it. Economic diversification and reduced reliance on the hydrocarbon sector are both key to strong and balanced growth.

IMF experts described the impact of the oil "crash" as follows in May 2016:[21]

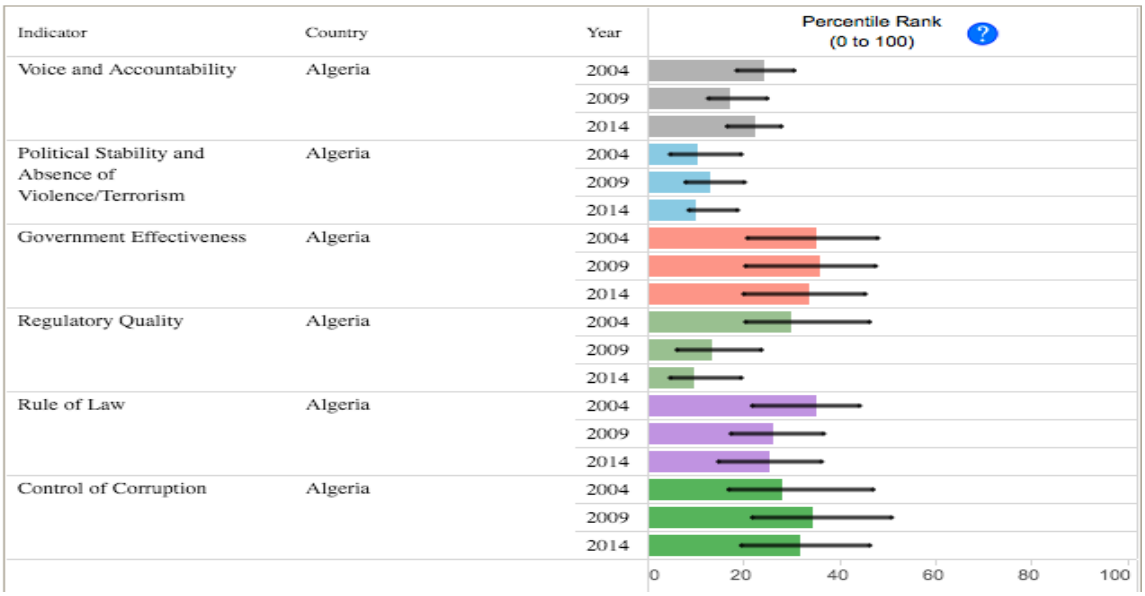
> Although the drop in oil prices has yet to translate into slower growth, it has significantly weakened Algeria's fiscal and external balances. The fiscal position—already weakened by a ramp-up in spending in the wake of the Arab Spring—has deteriorated further as oil revenues have plummeted. Fiscal savings have been nearly depleted to finance large budget deficits. Following several years of comfortable surpluses, the current account balance has swung sharply into deficit and official reserves, while still large, are diminishing. Public and external debt, however, remain low. The banking system as a whole appears healthy, but the fall in oil price increases financial stability risks.
>
> The policy response in 2015 was insufficient, but the 2016 budget calls for a sharp reduction in spending, and the authorities have initiated some reforms, including a much needed reform of the subsidy system and a strengthening of the financial sector prudential framework. The authorities will need to implement wide-ranging structural reforms to reduce Algeria's dependence on oil and diversify the economy.

The CIA reported in July 2016 that,[22]

> Abdelaziz Bouteflika, with the backing of the military, won the presidency in 1999 in an election widely viewed as fraudulent and won subsequent elections in 2004, 2009 and 2014. The government in 2011 introduced some political reforms in response to the Arab Spring, including lifting the 19-year-old state of emergency restrictions and increasing women's quotas for elected assemblies while also increasing subsidies to the populace. Algeria's reliance on hydrocarbon revenues to finance the government and large subsidies for the population is under stress because of declining oil prices.
>
> Hydrocarbons have long been the backbone of the economy, accounting for roughly 60% of budget revenues, 30% of GDP, and over 95% of export earnings. Algeria has the 10th-largest reserves of natural gas in the world and is the sixth-largest gas exporter. It ranks 16th in oil reserves. Hydrocarbon exports have enabled Algeria to maintain macroeconomic stability and amass large foreign currency reserves and a large budget stabilization fund available for tapping. In addition, Algeria's external debt is extremely low at about 2% of GDP. However, Algeria has struggled to develop non-hydrocarbon industries because of heavy regulation and an emphasis on state-driven growth.
>
> The government's efforts have done little to reduce high youth unemployment rates or to address housing shortages. A wave of economic protests in February and March 2011 prompted the Algerian Government to offer more than $23 billion in public grants and retroactive salary and benefit increases, moves which continue to weigh on public finances. Since late 2014, declining oil prices forced the government to spend down its reserves at a high rate in order to sustain social spending on salaries and subsidies, particularly since the government has been unable to boost exports of hydrocarbons or significantly grow its nonoil sector. In 2015, the Algerian Government imposed further restrictions on imports in an effort to reduce withdrawals from its foreign exchange reserves. The Government also increased the value-added tax on electricity and fuel, but said it would address subsidies at a later date.
>
> Long-term economic challenges include diversifying the economy away from its reliance on hydrocarbon exports, bolstering the private sector, attracting foreign investment, and providing adequate jobs for younger Algerians.

Algeria has a low overall quality of governance. The World Bank reports that government has moderate effectiveness, but has made little or no progress in political stability and the absence of violence/terrorism, accountability, rule of law, regulatory quality and control of corruption over time.[23] World Bank reporting is summarized in **Figure Nineteen** below:

Figure Nineteen: World Bank Estimate of Governance in Algeria



These are only some of the challenges that Algeria faces:

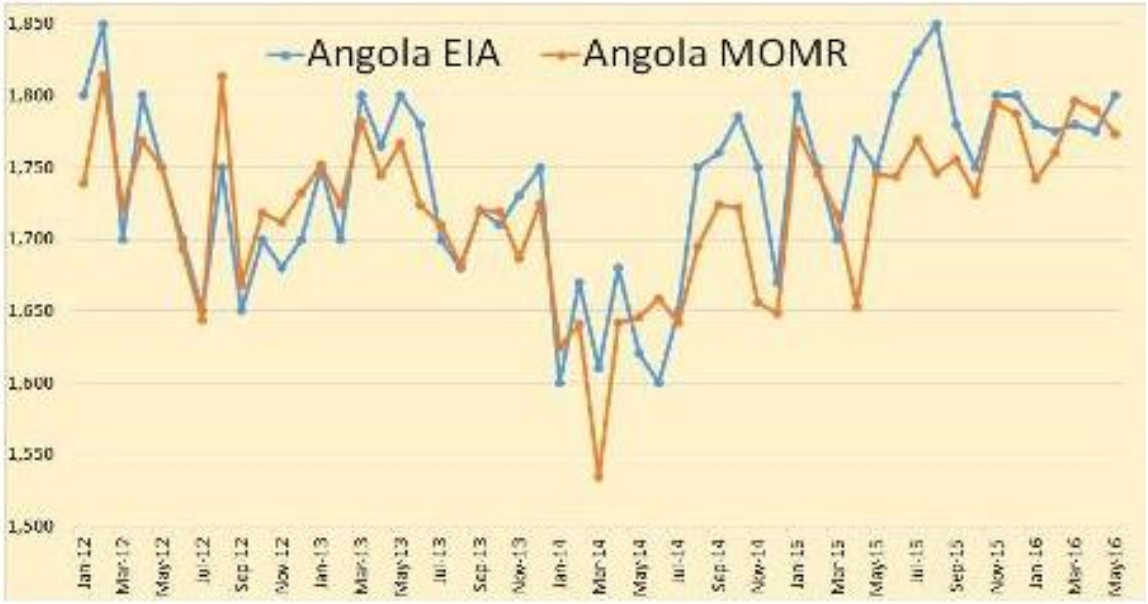
- Transparency International ranks it as the 88th most corrupt of 168 countries in its 2015 ranking of its perceptions index of corruption.[24]
- The Fragile States Index ranks it in the Elevated Warning category, with a ranking of 76 in a world where the most stable country is ranked at 177.[25]
- It has not created a climate that supports business development or outside investment. The World Bank ranks it 163rd in overall ease of doing business out of 189 countries.[26] The World Economic Forum ranked it 87th out of 140 countries in global competitiveness in 2015/2016. [27]
- Population pressure is a key factor. The U.S. Census Bureau estimates that its population increased by 4.4 times from 8.9 million in 1950 to 39.5 million in 2015, and will increase by 40 percent more to 55.4 million in 2050.[28]
- Youth employment is a critical factor. The CIA World Factbook reports that the median age is 27.5 years, and that 29% percent of the population is 14 years of age or younger, and 17% is 15-24 years of age. [29]
- Urbanization has radically changed the character of the population and distribution of tribes, ethnic groups, and sects. It is now 70.7%, and growing at 2.77% per year. [30]

Repression is not a substitute for true stability, and neither is the ability to ride out major failures in economic policy and reform for an unknown period of years. Algeria ruling elite has survived, but only at the cost of failing its people.

Angola

Unlike many OPEC states, Angola does not face major internal security or outside threats. Angola's recent crude oil production is shown in **Figure Twenty**, using graphs developed by Ron Patterson for *Oil Price*.[31] If the estimates in **Figure Nine** are used, its net export revenue dropped from $23 billion in 2014 to $13 billion in 2015, and was on a path that would drop to $9.6 billion in 2016. Using **Figure Ten**, its oil export revenues per capita dropped from $1,646 in 2014 to $898 in 2015, and were on a path that would drop to $631 in 2016.

Figure Twenty: Angola Oil Production: January 2012-March 2106



Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***

The EIA estimated that Angola holds some 8.4 billion barrels of proven crude reserves in May 2016.[32] It has become critically dependent on petroleum export revenues, and has been hit hard by the oil crash –especially because of the poverty that is the result of the previous years of civil war. Many of its problems are structural, however, and result of government policies and the need for economic reform.

The EIA reported on May 16, 2016 that,[33]

> In 2015, Angola produced nearly 1.8 million barrels per day (b/d) of crude oil. Angola's oil production grew by an annual average of 15% from 2002 to 2008, as production started in several deepwater fields that were discovered in the 1990s. The first deepwater field to come online was the Chevron-operated Kuito field (Block 14) in late 1999.[2] Since then, international oil companies (IOCs), led by Total, Chevron, ExxonMobil, and BP, have started production at additional deepwater fields and are in the process of developing new ones.
>
> Angola is a small natural gas producer. Most of Angola's natural gas production is associated gas at oil fields, and it is vented and flared (burned off) or re-injected into oil wells to enhance oil recovery. Angola lacks the infrastructure needed to commercialize more of its natural gas resources. The country's new liquefied natural gas (LNG) plant at Soyo was developed to commercialize more of its natural gas. However, the plant experienced chronic problems and was temporarily shut down almost a year after it exported its first cargo to Brazil in June 2013. The plant is expected to resume operations in 2016.
>
> Angola's economy depends heavily on oil production. From 2011—2013, the oil sector accounted for about 95% of the country's total exports, 45% of gross domestic product (GDP), and about 80% of total revenue, according to the International Monetary Fund (IMF).[3] Oil revenue as a share of total government revenue dropped to 68% in 2014 because of the drop in oil prices and a decline in Angola's oil production. Angola earned $23.4 billion in oil revenues in 2014, almost $7 billion less than in 2013. Although Angola's production increased in 2015, lower oil prices resulted in the country's oil revenues dropping even further to below $15 billion, although these estimates are still preliminary. Angola's dependence on oil revenue makes its economy vulnerable to a decline in oil prices. Real GDP growth is projected to be 3.5% in 2015, compared to 6.8% in

2013. Angola's oil basket averaged $53 per barrel in 2015, down from about $100 per barrel in 2014.[4] In April 2016, negotiations began with the IMF for a three-year loan facility of approximately $1.5 billion per year.[5]

Despite being the third-largest economy in sub-Saharan Africa (in terms of nominal GDP), approximately 37% of Angolans live below the poverty line (less than $1.25 per day), although that proportion has declined substantially from 68% in 2001.[6] The latest estimate from the International Energy Agency indicates that only 30% of Angolans had access to electricity in 2013, leaving 15 million people without access.[7] As a result, most people use traditional solid biomass and waste (typically consisting of wood, charcoal, manure, and crop residues) to meet off-grid heating and cooking needs, mainly in rural areas where the electrification rate is only 18%.[8] In 2013, more than 50% of Angola's primary energy consumption consisted of traditional solid biomass and waste (Figure 2).[9] However, that amount may be understated. Estimates of traditional biomass consumption are imprecise because biomass sources are not typically traded in easily observable commercial markets.

A World Bank review of Angola in April 2016, revealed the following mix of progress and challenges,[34]

Economic Overview

Over the past year, the Angolan economy has shown signs of slowing down. Gross Domestic Product (GDP) grew by 2.8% in 2015, down from 4.8% in 2014, mostly as a result of the drop in oil prices. The decline in international crude oil price has had a substantial impact on budget balances. The average price for Angolan crude was $104 in the third quarter of 2014, declining to $85 in the fourth quarter. Prices continued to drop in 2015 with the average oil price at $52, a decline of approximately 48% in 12 months. Prices dropped even further in early 2016, averaging $30 in the first two months of the year.

Angolan oil production has fluctuated around 1.7 million bps/day in the last five years while the long term goal target is 2 million bps/day. After reaching its peak in 2010 – 1.786 million bps/day – production fell slightly to 1.660 million bps/day in 2014. Despite the fall of oil prices, production increased by 5.7% in 2015 compared to a decline of about 2.6% in 2014.

Growth in the non-oil economy also slowed in 2015 on account of delays in the execution of key electricity and industrial investments. Non-oil growth is nevertheless estimated to have reached 1.3%, with 2.5% growth in the energy sector, 3.5% growth in construction, 3.2% growth in diamonds, and 0.2% in the agriculture sector.

The second largest export product in Angola is diamonds. Diamond production grew swiftly until 2006, when production volume reached 9.2 million carats. Since then, production has fluctuated between 8.2 and 9.2 million carats. In 2015, it grew by 4% and reached 9 million carats. The country has still high potential to expand mining since only 40% of the Angolan mining resources are known. Diamond exploration is being conducted in 13 provinces and 108 new projects are available for private investors.

Oil exports in the last 10 years accounted on average for 97% of Angolan exports. In 2014 and in 2015, the share of oil in total export remained around the same level. Oil exports brought in $60.2 billion in revenues to the country in 2014. In 2015, FX inflow generated by oil exports was at $33.4 billion, a 44.5% decline in relation to the same period the previous year.

The Central Bank has sold slightly less FX in 2014 and 2015: $17.5 billion in 2014 vis-à-vis $19.2 billion in 2015. Sales by private banks were reduced drastically – 83% in the same period. The total FX sales to the market were reduced by 42.2% from 2014 to 2015.

Inflation has been increasing steadily since June of 2014, when it reached the record low of 6.8%. In 2015, inflation almost doubled to 14.3%. Producers' prices have followed a similar pattern going from 6% by the end of 2014 to 11.3% as of November 2015. The central bank raised interest rates from 9 to 12% and reserve requirements from 12.5 to 25%.

As expected, revenues showed a steep decline of 11 percentage points (p.p.) of GDP in 2015. Overall oil revenues declined from 23.8 p.p to 12.6 p.p of GDP. Non-oil revenues showed a small increase, but are far from compensating the reduction in oil revenues. The government has recently increased the consumption tax over several products – mainly on luxury goods, but has also introduced the same tax on fuels, which will help boost revenues in 2016.

Expenditures were reduced from 42 p.p. to 30.4p.p. of the GDP from 2014 to 2015, however public debt has loomed. From a debt to GDP ratio of 21% in 2013, Angola's debt grew to 31% in 2014 and was expected to escalate to 47% of GDP by the end of 2015.

Angola bond issuance was well received and the country was able to raise $1.5 billion – the largest amount by an African country in 2015.

Political Context

Angola has maintained political stability since the end of the civil war in 2002. In February 2010, the Constitution established a presidential parliamentary system. Under the new system, the president is no longer elected by direct popular vote, but instead the head of the party winning the most seats in Parliament becomes president. The 2010 Constitution sets a limit of two, five-year presidential terms.

Parliamentary elections were held under the new Constitution in August 2012. The ruling party Movimento Popular de Libertação de Angola (MPLA) won 175 out of 220 seats in 2012, receiving over 72% of the votes. As a result, the incumbent Jose Eduardo dos Santos was sworn in as President. União Nacional para a Independência Total de Angola (UNITA) is the main opposition party with 32 parliamentary seats, while Convergência Ampla de Salvação de Angola (CASA-CE), established six months before the elections, and Partido de Renovação Social (PRS) won eight and three seats respectively.

The next legislative elections are scheduled to take place in 2017. At the polls, the MPLA is likely to take advantage of its solid funding base, strong business connections and domination of the media to win another majority and retain its hegemonic grip on all aspects of power. Should President Jose dos Santos decide to relinquish power before the poll, the constitution dictates that the vice president (currently Manuel Vicente) would complete the term of office "with full powers." This term of office would run until the next election, which only the acting head of state would have the power to call.

Opposition groups had hoped that they would be able to build political momentum at long-delayed municipal elections, scheduled for 2015. However, this has been derailed following the announcement that the polls are unlikely to be held before 2018 at the earliest. Opposition parties accuse the MPLA of deliberately delaying local elections to protect its power base, and have also expressed concern about the government's planned alterations to the current electoral law to facilitate a new voter-registration process ahead of the 2017 legislative elections.

Internationally, Angola is becoming more assertive and has been demonstrating steadfast commitment to peace and stability in Africa, in particular in the Great Lakes region. After Angola took over the presidency of the International Conference of the Great Lakes Region in January 2014, the situation in the region has improved significantly, most likely a result of Angola's leadership. In this role, Angola was able to secure a commitment from the states of the region to economic and political sanctions against armed rebel groups for the first time. Angola continues to chair the International Conference of the Great Lakes in the current year.

In October 2014, Angola, together with Malaysia, New Zealand, Spain and Venezuela were elected by the United Nations General Assembly to serve as non-permanent members on the Security Council for two-year terms beginning on 1 January 2015 until 31st of December 2016.

In March 2016, Angola assumed the rotating presidency of the United Nations Security Council for the month of March.

Development Challenges

> Angola has made substantial progress in economic and political terms since the end of the war in 2002. However, the country continues to face massive developmental challenges which include reducing the dependency on oil and diversifying the economy, rebuilding its infrastructure, improving institutional capacity, governance, public financial management systems, human development indicators and the living conditions of the population. Large pockets of the population still remain in poverty and without adequate access to basic services and could benefit from more inclusive development policies.

The IMF provided the following description of the impact of the oil "crash" on Angola:[35]

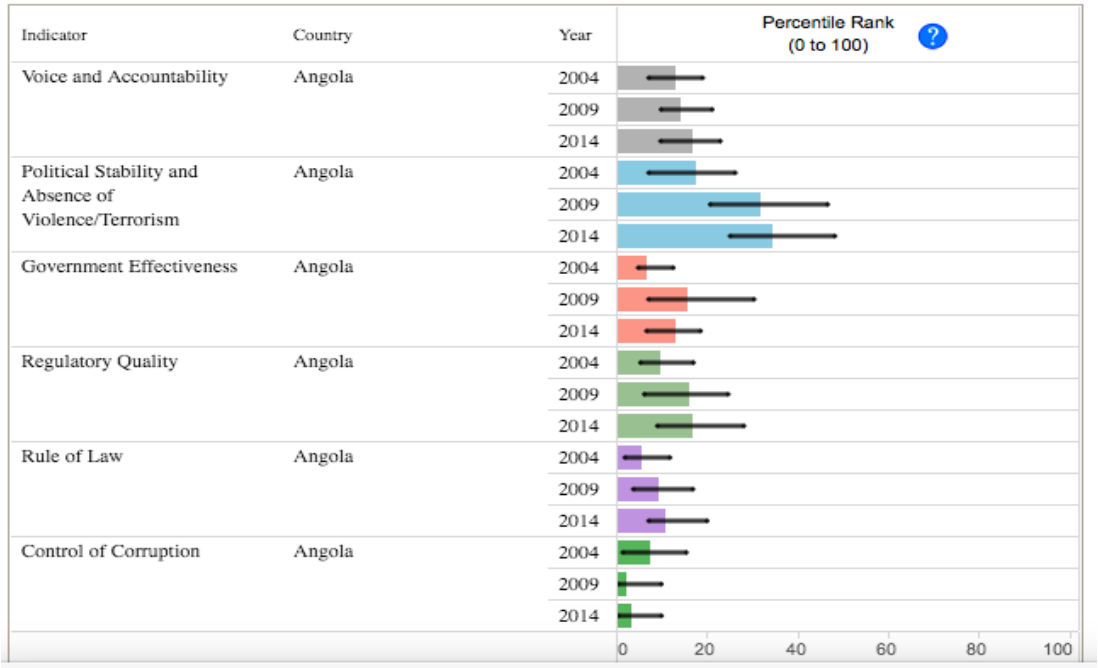
> The Angolan economy continues to be severely affected by the oil price shock of the last two years. Economic growth slowed to 3 percent in 2015 driven by a sharp slowdown in the non-oil sector. Inflation has accelerated and reached (year-on-year) 29.2 percent in May 2016, reflecting a weaker kwanza that has depreciated over 40 percent against the U.S. dollar since September 2014, higher domestic fuel prices following the removal of fuel subsidies, and loose monetary conditions. The external current account balance has moved into deficit, although international reserves have been protected and remain at relatively comfortable levels.
>
> "The outlook for 2016 remains difficult, despite the increase of oil prices in recent weeks, and economic activity will likely decelerate further. However, a modest recovery could materialize in 2017, if Angola's terms-of-trade continue to improve and shortages of foreign exchange that have adversely affected non-oil sector production are tackled.
>
> "Adjusting economic policies is required to facilitate the needed transition of the economy to the 'new normal' in the international oil market… Looking ahead, it is important to enable the private sector to lead economic growth. Fostering a strong financial sector and a business-friendly environment is thus critical to encourage savings and private investment that will form the basis for private sector led economic diversification. It is also critical to improve the efficiency and transparency of public spending, as the public sector will need to do more with fewer resources.

The CIA World Factbook summarized Angola's problems as follows in July 2016,[36]

> Angola's economy is overwhelmingly driven by its oil sector. Oil production and its supporting activities contribute about 50% of GDP, more than 70% of government revenue, and more than 90% of the country's exports. …Increased oil production supported growth averaging more than 17% per year from 2004 to 2008. A postwar reconstruction boom and resettlement of displaced persons has led to high rates of growth in construction and agriculture as well. Some of the country's infrastructure is still damaged or undeveloped from the 27-year-long civil war. However, the government since 2005 has used billions of dollars in credit lines from China, Brazil, Portugal, Germany, Spain, and the EU to help rebuild Angola's public infrastructure.
>
> …The global recession that started in 2008 stalled economic growth. In particular, lower prices for oil and diamonds during the global recession slowed GDP growth to 2.4% in 2009, and many construction projects stopped because Luanda accrued $9 billion in arrears to foreign construction companies when government revenue fell in 2008 and 2009. Angola formally abandoned its currency peg in 2009, and in November 2009 signed onto an IMF Stand-By Arrangement loan of $1.4 billion to rebuild international reserves. Consumer inflation declined from 325% in 2000 to less than 9% in 2014. Falling oil prices and slower than expected growth in non-oil GDP have reduced growth prospects for 2015. Angola has responded by reducing government subsidies and by proposing import quotas and a more restrictive licensing regime. Corruption, especially in the extractive sectors, is a major long-term challenge.

Angola has made moderate progress in some areas in the years since the end of its civil war. The World Bank still, however, ranks it as having some of the worst overall governance in the world. These rankings are summarized in **Figure Twenty-One** below:[37]

Figure Twenty-One: World Bank Estimate of Governance in Angola



Angola ranks as follows in other areas affecting its overall stability and security:

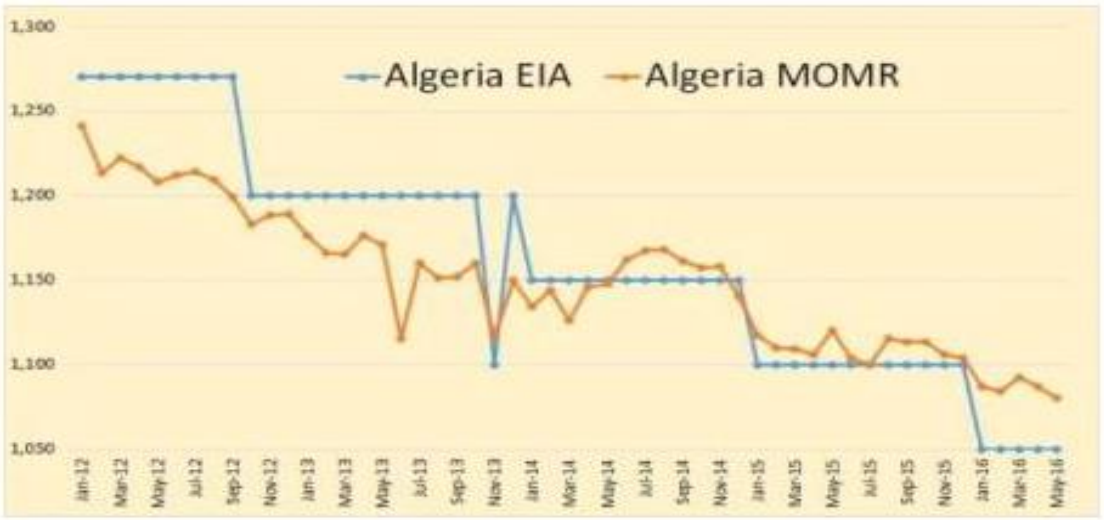
- Transparency International ranks it as 163rd in it ranking of 168 countries in its 2015 ranking of its perceptions index of corruption. The higher the ranking, the more the corrupt the country is. Angola's ranking is one of the worst in the world.[38]
- The Fragile States Index ranks it in the Alert category, with a ranking of only 37 in a world where the most stable country is ranked at 177.[39]
- It has not created a climate that supports business development or outside investment. The World Bank ranked it 181st in overall ease of doing business out of 189 countries.[40] The World Economic Forum ranked it 140th out of 144 countries in global competitiveness in 2014, and did not rank it in 2015/2016.[41] This too is some of the worst performance in the world.[42]
- Population pressure is a key factor. The U.S. Census Bureau estimates that its population increased by 4.78 times from 4.1 million in 1950 to 19.6 million in 2015, and will increase by 134 percent more to 45.9 million in 2050.[43]
- Youth employment is a critical factor. The CIA World Factbook reports that the median age is 18 years, and that 42.95 percent of the population is 14 years of age or younger, and 20.65 percent is 15-24 years of age.[44]
- Urbanization is changing the character of the population and distribution of tribes, ethnic groups, and sects. It is now only 44 percent, but growing rapidly at 4.97 percent per year.[45]

Stability, and an end to most violence are important, but they are scarcely enough. Overdependence on petroleum revenues will remain a serious structural problem – even if total revenues rise -- and Angola needs to further improve its governance and move toward effective economic reform.

Ecuador

Ecuador is a relatively small OPEC oil exporter with uncertain economic stability. Ecuador's recent crude oil production is shown in **Figure Twenty-Two**, using graphs developed by Ron Patterson for *Oil Price*.[46] If the estimates in **Figure Nine** are used, its net export revenue dropped from $10 billion in 2014 to $5 billion in 2015, and was on a path that would drop to $4.8 billion in 2016. Using **Figure Ten**, its oil export revenues per capita dropped from $693 in 2014 to $338 in 2015, and were on a path that would drop to $293 in 2016.

Figure Twenty-Two: Ecuador's Oil Production: January 2012-March 2106



Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***

The CIA described Ecuador as follows in July 2016:[47]

> A border war with Peru that flared in 1995 was resolved in 1999. Although Ecuador marked 30 years of civilian governance in 2004, the period was marred by political instability. Protests in Quito contributed to the mid-term ouster of three of Ecuador's last four democratically elected presidents. In late 2008, voters approved a new constitution, Ecuador's 20th since gaining independence. General elections were held in February 2013, and voters reelected President Rafael Correa.

Ecuador has since been peaceful by comparison, but has become steadily more unstable as a result of poor economic policies and the "crash" in oil prices. As the CIA also reports,

> Ecuador is substantially dependent on its petroleum resources, which have accounted for more than half of the country's export earnings and approximately 25% of public sector revenues in recent years.
>
> In 1999/2000, Ecuador's economy suffered from a banking crisis, with GDP contracting by 5.3% and poverty increasing significantly. In March 2000, the Congress approved a series of structural reforms that also provided for the adoption of the US dollar as legal tender. Dollarization stabilized the economy, and positive growth returned in the years that followed, helped by high oil prices, remittances, and increased non-traditional exports.

> The economy grew an average of 4.3% per year from 2002 to 2006, the highest five-year average in 25 years. After moderate growth in 2007, the economy reached a growth rate of 6.4% in 2008, buoyed by high global petroleum prices and increased public sector investment. President Rafael Correa Delgado, who took office in January 2007, defaulted in December 2008 on Ecuador's sovereign debt, which, with a total face value of approximately US$3.2 billion, represented about 30% of Ecuador's public external debt. In May 2009, Ecuador bought back 91% of its "defaulted" bonds via an international reverse auction.
>
> Economic policies under the Correa administration - for example, an announcement in late 2009 of its intention to terminate 13 bilateral investment treaties, including one with the US - have generated economic uncertainty and discouraged private investment. China has become Ecuador's largest foreign lender since Quito defaulted in 2008, allowing the government to maintain a high rate of social spending; Ecuador contracted with the Chinese government for more than $9.9 billion in forward oil sales, project financing, and budget support loans as of December 2013.
>
> The level of foreign investment in Ecuador continues to be one of the lowest in the region as a result of an unstable regulatory environment, weak rule of law, and the crowding-out effect of public investments. Faced with a 2013 trade deficit of $1.1 billion, Ecuador erected technical barriers to trade in December 2013, causing tensions with its largest trading partners. Ecuador also decriminalized intellectual property rights violations in February 2014. In March, 2015 Ecuador imposed tariff surcharges for 15 months from 5% to 45% on an estimated 32% of imports. In 2014, oil output increased slightly and production remained steady in 2015. In 2015, however, lower oil prices forced Correa to cut the budget twice, and the government has considered further budget and subsidy cuts for 2016.

An EIA country analysis -- dated March 17, 2015 -- stated that Ecuador had 8.8 billion barrels of proven crude reserves, and that,[48]

> In Ecuador, the oil sector accounts for more than half of the country's export earnings and approximately two-fifths of public sector revenues.[1] Resource nationalism and debates about the economic, strategic, and environmental implications of oil sector development are prominent issues in the politics of Ecuador and the policies of its government. Ecuador is the smallest producer in the Organization of the Petroleum Exporting Countries (OPEC) and it produced 556,000 barrels per day (bbl/d) of petroleum and other liquids in 2014, of which crude oil production was 555,000 bbl/d. A lack of sufficient domestic refining capacity to meet local demand has forced Ecuador to import refined products, limiting net oil revenue.
>
> In 1992, Ecuador left OPEC owing a debt of more than U.S. $5 Billion. Ecuador rejoined the organization following a near 15-year hiatus in 2007.[2] Ecuador has a challenging investment environment prompted by government initiatives to increase the share of crude oil revenue for the state, which has contributed to near-stagnant oil production as output has stayed within a close range over the past 10 years.

The World Bank warned in April 2016 that,[49]

> Between 2006 and 2014, GDP growth averaged 4.6 percent, thanks to robust oil prices and important external financing flows. This stimulus allowed for increased social spending, particularly in the energy and transportation sectors. According to national poverty lines, poverty rates fell from 37.6 percent to 22.5 percent during this period. The Gini Index declined from 0.54 to 0.47 given that growth benefitted the poorest population more than other segments.
>
> Nevertheless, the advances of the past decade are at risk due to the economic deceleration the country is experiencing as a result of the decline in oil prices since late 2014, the difficulty in accessing new funding sources and the appreciation of the dollar. Poverty even rose slightly, from 22.5 percent in 2014 to 23.3 percent in 2015, which reflected an increase in rural poverty, from 35.3 percent to 39.3 percent.
>
> Given Ecuador's lack of a local currency and the limited liquid assets needed to confront the complex economic situation, the new global context has triggered a significant decline in domestic demand, especially public demand. The government has been forced to sharply reduce public

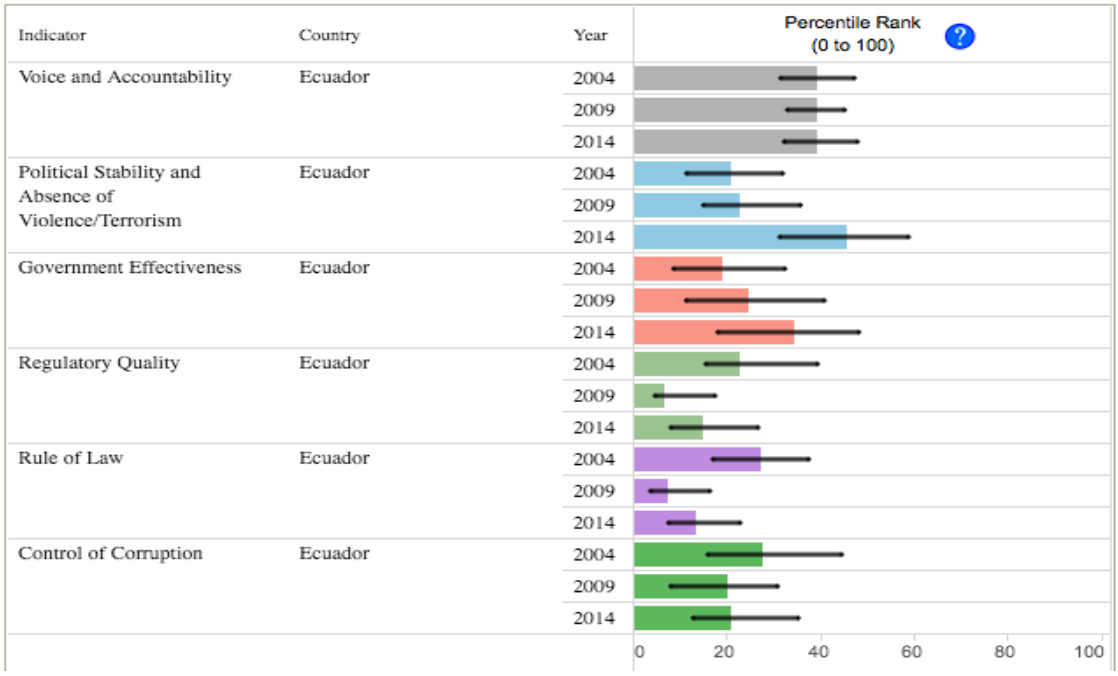
> investment and to curb spending, despite efforts to explore external financing options and increase non-oil revenue. This reduction of public spending has negatively affected economic activity, despite government protection of strategic investments and more rational public spending. Additionally, the rapid macroeconomic deceleration has affected prospects of households and firms – reflected, for example, in levels of consumer and business confidence, as well as private consumption levels – putting added pressure on domestic demand.
>
> In this difficult period, Ecuador must adapt to the new international context in an organized way to maintain economic stability, resume strong growth in the medium term and protect the important social advances made during the past decade. To this end, it is essential to strengthen the efficiency of and gradual increase in public spending to ensure that fiscal consolidation does not threaten poverty reduction or the most important investment projects. Finally, with less dynamic public investment, the country must improve the investment climate and confidence levels of private investors to revitalize private investment. More robust private sector activity would also help to diversify the Ecuadorian economy and increase its productivity.

The IMF is also critical of the management of the economy. The IMF described the impact of lower petroleum revenues as follows in October 2015:[50]

> **Context:** Article IV discussions with Ecuador were conducted on-site for the first time since 2007 ,,, After growing at an average of about 4ó percent over the past decade—on the wave of high oil prices, a strong public investment agenda, and the anchor of full dollarization—the economy has been hit by significant external shocks since late 2014. The sharp decline in oil prices and significant real exchange rate appreciation have undercut exports and fiscal revenues. The authorities responded rapidly with a large fiscal adjustment, introduction of temporary import surcharges, and moderation of minimum wage growth. The economy is projected to contract in 2015 and growth to remain subdued in 2016, while medium-term potential has been revised down given prospects of lower investment and employment growth.
>
> **Risks:** Risks to the outlook are tilted to the downside. The main external risks are additional softness in oil prices, persistence of dollar appreciation, and global financial instability. Ecuador-specific risks center on limits to the availability of external financing, potential domestic financial system pressure associated with the economic adjustment and uncertainty about the policy response, and delays in strengthening Ecuador's energy balance, as well as possible natural disasters. On the upside, future oil production could be higher, especially if oil prices rise again facilitating the financing of larger investment plans.
>
> **Policy issues:** The authorities' significant adjustment measures should fully offset the fiscal implications of the shocks, but—given limited policy alternatives in a dollarized economy—any shortfall in financing would have to be addressed through further spending retrenchment. To regain competitiveness in the face of overvaluation and prevent protracted slow growth, substantial real wage and price adjustments are called for. Diminishing liquidity in the banking system warrants close monitoring and rapid reaction if pressures continue, while eliminating restrictions and distortions in the banking system as well as enhancing supervision would make the system more resilient to systemic shocks. Import surcharges should be removed as soon as possible, and within the announced timeframe. Restoring private sector confidence by improving the business environment will be key both to stemming deposit declines and preserving dollarization, as well as to sustaining healthy medium-term growth and reducing oil dependence. A broad structural reform agenda will be essential to foster productivity, crowd-in the private sector, and attract FDI.

The World Bank reports the trends in governance shown in **Figure Nineteen** below: [51]

Figure Twenty-Three: World Bank Estimate of Governance in Ecuador



Ecuador ranks as follows in other areas affecting its overall stability and security:

- Transparency International ranks it as the 107th in its ranking of 168 countries in its 2015 ranking of its perceptions index of corruption. The higher the ranking, the more the corrupt the country is. Ecuador's ranking is dangerously high.[52]
- The Fragile States Index ranks it in the Elevated Warning category, with a ranking of 84 in a world where the most stable country is ranked at 177.[53]
- It has not created a climate that supports business development or outside investment. The World Bank ranked it only 117^{t} in overall ease of doing business out of 189 countries in 2016.[54] The World Economic Forum ranked it 76^{h} out of 144 countries in global competitiveness in 2015/2016.[55]
- Population pressure is a factor. The U.S. Census Bureau estimates that its population increased by 4.1 times from 3.37 million in 1950 to 13.66 million in 2015, and will increase by 54 percent more to 21.10 million in 2050.[56]
- Youth employment is also a growing problem. The CIA World Factbook reports that the median age is 27 years, and that 27.99 percent of the population is 14 years of age or younger, and 18.56 percent is 15-24 years of age. [57]
- Urbanization has radically changed the character of the population and distribution of tribes, ethnic groups, and sects. It is now 63.7 percent, although it is only growing at 1.9 percent per year. [58]

Some aspects of governance have improved and the level of violence and instability is limited. Ecuador does, however, face serious economic challenges.

Indonesia

Indonesia is an example of a more successful OPEC state, but largely because it has become a diversified and moderately well-governed state with a diversified economy that

is now a net importer of petroleum. Indonesia's recent crude oil production is shown in **Figure Twenty-Four**, using graphs developed by Ron Patterson for *Oil Price.*[59] Indonesian does not have net oil export revenues or per capita revenue income because it has become an oil importer.

Figure Twenty-Four: Indonesian Oil Production: January 2012-March 2106

Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***.

The EIA reported in October 2015, however, that some of the reason for its current net import dependence has been poor management and planning by the state,[60]

> Indonesia, with a population of 253 million people in 2014, is the most populous country in Southeast Asia and the fourth most populous country in the world, behind China, India, and the United States.[1] Formerly a net oil exporter in the Organization of the Petroleum Exporting Countries (OPEC) for several decades, Indonesia now struggles to attract sufficient investment to meet growing domestic energy consumption because of inadequate infrastructure and a complex regulatory environment. Indonesia encompasses more than 17,000 islands, presenting geographical challenges in matching energy supply in the eastern provinces with demand centers in Java and Sumatra. Also, urbanization and demand in other areas of the country are rising at a faster pace than energy infrastructure development.
>
> After suspending its OPEC membership seven years ago, Indonesia is scheduled to rejoin the cartel by 2016 as the country attempts to secure more crude oil supplies for its swiftly rising demand and greater investment from Middle Eastern members in its downstream infrastructure projects. Despite Indonesia's energy struggles, it was the world's largest exporter of coal by weight and the fifth-largest exporter of liquid natural gas (LNG) in 2014. As Indonesia seeks to meet its energy export obligations and earn revenues through international market sales, the country is also trying to meet energy demand at home.
>
> Indonesia's total primary energy consumption grew by 43% between 2003 and 2013, according to the Indonesian government. The country's petroleum share, although decreasing, continues to account for the highest portion of Indonesia's energy mix at 38% in 2013. In the past decade, coal consumption more than doubled, surpassing natural gas consumption and becoming the second most consumed fossil fuel as Indonesia turned to less expensive sources of indigenous fuels. Indonesia intends to reduce its reliance on petroleum in its energy consumption portfolio to a 25%

maximum share while raising the coal and natural gas portions to at least 30% and 22%, respectively, by 2025.

Indonesia is also a significant consumer of traditional biomass and waste in its residential sector, particularly in the more remote areas that lack connection to the country's energy transmission networks. In 2013, biomass and waste (which includes firewood and charcoal) consisted of nearly 18% of total primary energy consumption, although its share has declined over the past several years. As Indonesia industrializes and expands its electricity and transportation sectors, the country is using more fossil fuels, particularly coal and oil products. Indonesia also plans to leverage the country's vast renewable sources of hydroelectricity, geothermal, solar, and biomass and waste, to generate electricity for domestic consumption.

Indonesia's total energy demand is closely linked to the country's economic expansion. According to World Bank data, Indonesia sustained relatively strong economic performance throughout the global recession, with an average gross domestic product (GDP) growth rate of more than 6% per year between 2007 and 2012, with the exception of 2009 when GDP growth dropped to 4.6%. However, GDP growth started declining after 2012 and fell to 5% in 2014 as a result of weaker demand from trade partners, lower exports, lower commodity prices, and a tighter monetary policy following the government's decision to raise interest rates substantially between mid-2013 and late 2014.

Indonesia's energy sector continues to influence the economy to a large degree, although the decline in oil and natural gas production during the past few years has lowered its impact. Oil and natural gas alone constituted 15% of merchandise exports in 2014, a decline from 23% in 2000. In addition, revenues from the oil and gas sector, which historically accounted for about 20% of total state revenues, fell below 20% after 2008 and were less than 12% in 2014, despite high oil prices during most of the year. The significant drop in global crude oil prices, which started in June 2014, is expected to reduce Indonesia's oil and gas revenues by at least one-third in 2015. A combination of healthy growth, some market reforms, higher hydrocarbon prices, and a stable government encouraged rapid investment, particularly in the commodity sector until around 2010. Factors that have greatly hindered foreign investment in the past few years include more technically challenging oil and natural gas plays, rising domestic energy demand and accompanying limitations on exports, higher taxes on exploration and production, and lengthier processes to procure and renew contracts.

Despite the government's emphasis on more private sector involvement in infrastructure expansion, many infrastructure projects continue to be delayed, because regulatory challenges and uncertainties have reduced predictability for foreign investors.

Indonesia's recently elected government under President Joko Widodo is attempting several energy sector reforms to address the country's regulatory burdens and lack of legal transparency and to attract much-needed foreign investment for its more capital-intensive and technically challenging energy projects. President Widodo's new reforms attempt to address corruption and informal markets, streamline the regulatory process for investors, make domestic prices more competitive with international markets, and reduce upstream oil and natural gas costs for investors. However, Indonesia's energy security policy of retaining more of its hydrocarbon production for domestic use and maintaining local content requirements will continue to hamper investment from international companies.

…Indonesia's declining oil production and rising domestic demand resulted in the country's exit from OPEC in 2009 and higher levels of petroleum imports to meet demand. Indonesia is scheduled to rejoin OPEC in December 2015.

… Indonesia possessed 3.7 billion barrels of proved crude oil reserves at the end of 2014, down from 4 billion barrels two years earlier, according to *Oil & Gas Journal* (OGJ). According to the Indonesian Petroleum Association, replacement of oil reserves had dropped to 47% in 2013 as a result of declining investment in oil exploration, especially in deepwater blocks. Petroleum and other liquids (or total liquid fuels) production declined from a high of nearly 1.7 million barrels per day (b/d) in 1991 to an estimated 911,000 b/d in 2014. Crude oil and lease condensate

production made up about 790,000 b/d of this total, a level below the government's revised 2014 target of 818,000 b/d reported in the state budget.

The government's annual crude oil and lease condensate production target, which has not been reached each year since 2009, is 825,000 b/d for 2015, revised down from an original goal of 900,000 b/d.[16] Several factors put downward pressure on Indonesia's oil output each year, including: licensing approvals at the regional level of government, land acquisition and permit issues, oil theft in the South Sumatra region, aging oil fields and infrastructure, and insufficient investment in unexplored reserves. Indonesia's two oldest, largest producing fields are Duri and Minas, both located on the eastern coast of Sumatra. Chevron, the operator, has employed enhanced oil recovery (EOR) techniques in both fields to try sustaining output. However, production from these fields continues to decline.

The government expects new production from the Cepu and Ketapang blocks, located in East Java, to peak at the end of 2015. Industry analysts believe this major project could offset some of the declines from mature fields.[17] Indonesia also set the 2016 production target between 830,000 b/d and 850,000 b/d as the large Banyu Urip field in the Cepu block is expected to reach its full production and enhanced recovery efforts are likely to stem production declines from mature fields. Banyu Urip is currently the only producing field in the Cepu PSC, which is located in the East Java Basin and is estimated to hold 600 million barrels of recoverable reserves. Banyu Urip reached a production level of about 80,000 b/d by August 2015.[18] The partners (ExxonMobil, Pertamina, and local governments) expect Cepu to reach a peak capacity of 205,000 b/d in 2016 and to settle at a plateau production of 165,000 b/d for the following two years.[19]

Pertamina now faces the combined challenges of stemming oil production declines and meeting domestic demand. Much of the reserves remaining under Pertamina's control are from mature fields and require enhanced oil recovery (EOR) techniques, currently beyond the technological scope of domestic firms, or the development of basic infrastructure in remote areas of the country (mainly in the eastern region). Partly because of an uncertain regulatory atmosphere and government measures to support local companies, foreign investment in extracting these reserves remains limited. In addition, Indonesia's domestic operations have been limited by disputes with IOCs operating within Indonesia. Under current regulation, Domestic Market Obligations (DMOs) require that a minimum 25% of oil production be made available to the Indonesian market. This production floor is part of Indonesia's policy to offset its rising oil imports and serve its domestic needs.

…Indonesia produced 911,000 barrels per day (b/d) of petroleum and other liquids in 2014, ranking as the 22nd-largest oil producer in the world in 2014 and accounting for about 1% of world production. Although Indonesia's petroleum and other liquids production has declined over the past two decades, the country continues to export crude oil and condensates within the region. Indonesia is also located along a strategic maritime transit route, the Strait of Malacca, which serves much of East Asia with oil imports from the Middle East.

Indonesia is scheduled to rejoin OPEC in December 2015, after suspending its membership in January 2009. Indonesia originally joined OPEC in 1962. The 2009 exit was prompted by growing internal demand for energy, declining production (most notably in mature fields), and limited investment to increase capacity. Indonesia had become a net oil importer by 2004 after domestic demand outstripped production, which has been on a general decline since 1991 (Figure 2). Indonesia claims that rejoining OPEC will strengthen its cooperation with oil-producing countries, provide greater access to crude oil supplies, and allow the country to be a link between energy producers and consumers. Indonesia currently buys crude oil and oil products through third-parties or traders and wants direct access to long-term crude oil supply contracts through negotiations made between national oil companies. These crude oil imports are needed to meet expected refining capacity additions from proposed upgrades and expansions slated to come online within the next decade. Indonesia also hopes to attract more infrastructure investment by OPEC members for its upstream and downstream energy infrastructure projects. OPEC notified Indonesia that it plans to accept the country's request to re-activate its membership with the organization as a full

member at the next OPEC meeting in December 2015. Indonesia currently imports crude oil and refined products to meet domestic demand.

The World Bank provided a relatively favorable overview in April 2016, but noted that Indonesia still faced major challenges:[61]

> The largest economy in Southeast Asia, Indonesia – a diverse archipelago nation of more than 300 ethnic groups -- has charted impressive economic growth since overcoming the Asian financial crisis of the late 1990s. The country's gross national income per capita has steadily risen, from $560 in the year 2000 to $3,630 in 2014. Today, Indonesia is the world's fourth most populous nation, the world's 10th largest economy in terms of purchasing power parity, and a member of the G-20. It has made enormous gains in poverty reduction, cutting the poverty rate to more than half since 1999, to 11.2% in 2015.
>
> Indonesia's economic planning follows a 20-year development plan, spanning from 2005 to 2025. It is segmented into 5-year medium-term plans, called the RPJMN, each with different development priorities. The current medium-term development plan – the third phase of the long-term plan -- runs from 2015 to 2020, focusing, among others, on infrastructure development and improving social assistance programs in education and healthcare. Such shifts in public spending has been enabled by a reform of long-standing energy subsidies, allowing for more investments in programs that directly impact the poor and near-poor, as well as vast improvements in infrastructure investment.
>
> Considerable challenges remain in achieving Indonesia's goals.
>
> Due to weaker demand for commodities – the fuel for Indonesia's economic boom in the past decade – Indonesia's GDP growth has been slowing since 2012. The pace of growth in fixed investment, exports, and consumption, has slowed – and these developments have impacted the rate of poverty reduction.
>
> The poverty rate declined by 1% annually from 2007 to 2011, but has fallen by an average of only 0.3 percentage points per year since 2012. Out of a population of 252 million, 28.6 million Indonesians still live below the poverty line and approximately 40% of all people remain clustered around the national poverty line set at 330,776 rupiah per person per month ($22.60).
>
> The slowdown has also impacted job creation, with employment growth slower than population growth. Public services remain inadequate by middle income standards, and this has led to alarming indicators in health and education.
>
> For example, the maternal mortality rate in Indonesia is 126 maternal deaths per 100,000 live births, higher than the Millennium Development Goal of 102 maternal deaths per 100,000 live births. Some 37% of children under the age of 5 suffer from stunting, or short height, which reflects stunted brain development, affecting the children's future opportunities.
>
> And despite recent progress, access to hygienic toilet facilities currently stands at 68% of the population, significantly short of the MDG target of 86%.
>
> The investment climate, though generally positive, faces continued regulatory uncertainties and high logistics costs. However, a series of reform packages shows that the government wants to convince investors that Indonesia is open for business. The packages include a reduction of the Negative Investment List, a list of some 600 sectors that represent about 70% of the economy. The government has pledged further reforms.

The CIA assessed its mix of progress and threats as follows in July 2016: [62]

> Indonesia is now the world's third most populous democracy, the world's largest archipelagic state, and the world's largest Muslim-majority nation. Current issues include: alleviating poverty, improving education, preventing terrorism, consolidating democracy after four decades of authoritarianism, implementing economic and financial reforms, stemming corruption, reforming the criminal justice system, holding the military and police accountable for human rights violations, addressing climate change, and controlling infectious diseases, particularly those of

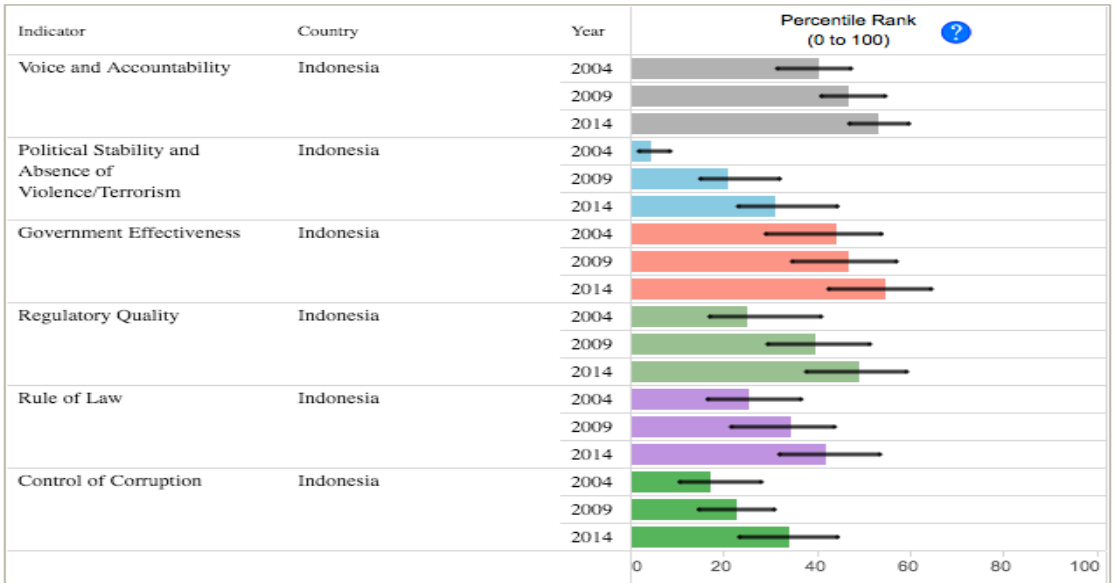
> global and regional importance. In 2005, Indonesia reached a historic peace agreement with armed separatists in Aceh, which led to democratic elections in Aceh in December 2006. Indonesia continues to face low intensity armed resistance in Papua by the separatist Free Papua Movement.
>
> …Indonesia, the largest economy in Southeast Asia, has seen a slowdown in growth since 2012, mostly due to the end of the commodities export boom. During the global financial crisis, Indonesia outperformed its regional neighbors and joined China and India as the only G20 members posting growth. Indonesia's annual budget deficit is capped at 3% of GDP, and the Government of Indonesia lowered its debt-to-GDP ratio from a peak of 100% shortly after the Asian financial crisis in 1999 to less than 25% today. Fitch and Moody's upgraded Indonesia's credit rating to investment grade in December 2011.
>
> Indonesia still struggles with poverty and unemployment, inadequate infrastructure, corruption, a complex regulatory environment, and unequal resource distribution among its regions. (It) seeks to develop Indonesia's maritime resources and pursue other infrastructure development, including significantly increasing its electrical power generation capacity. Fuel subsidies were significantly reduced in early 2015, a move which has helped the government redirect its spending to development priorities. Indonesia, with the nine other ASEAN members, will continue to move towards participation in the ASEAN Economic Community, though full implementation of economic integration has not yet materialized.

The IMF assessed the impact of cuts in oil prices as follows in March, 2016:[63]

> … Despite the sharp fall in international oil prices, episodes of capital outflows, and turbulent global financial markets, the Indonesian economy performed well in 2015. Growth is estimated to have stabilized at 4.7 percent (y/y) (down from 5.1 percent in 2014). Headline inflation fell to 3.4 percent at end-2015 on account of lower food and fuel prices, and dissipating effect of the fuel price increases in late 2014. Inflation expectations appear to be well anchored, with surveys indicating price expectations within the target band. The current account deficit is estimated to have fallen to 2.0 percent of GDP in 2015, mainly due to a contraction of imports.
>
> Substantially lower oil prices reduced oil imports by almost 2 percent of GDP from 2014 levels. Portfolio inflows remained supportive on balance, although equity outflows have continued in line with developments in other EMs. Gross international reserves fell somewhat to US$105.9 billion (or 7.4 months of imports of goods and services) at end-2015, but remained adequate at 119 percent of the IMF's reserve adequacy metric. The rupiah depreciated by about 10 percent relative to the U.S. dollar but remained broadly stable in nominal effective terms, while bond yields rose by about 100 basis points—in both cases relatively modest compared with other EMs. The government successfully placed international bonds amounting to US$3.5 billion in December 2015.
>
> … The near-term outlook continues to be supported by domestic demand yet affected by the severe commodity down-cycle and weak global growth, in particular in major trading partners.
>
> In 2016, real GDP growth is projected to increase moderately to 4.9 percent. Domestic demand would be the main driver of growth, while exports are expected to remain weak reflecting low commodity prices. Growth will be led by capital spending of the government and state-owned enterprises (SOEs) in the first half of the year, and by private investment later in the year conditioned on positive reform momentum. Private consumption will increase somewhat on account of lower fuel prices, but the recovery will be constrained by reduced commodity income in rural areas and cuts in electricity subsidies.

A World Bank summary of Indonesia's progress in governance is shown in **Figure Twenty-Five**.[64] Political stability, corruption and the rule of law continue to be problems, but Indonesia is clearly making progress in governance as well in in its economy.

Figure Twenty-Five: World Bank Estimate of Governance in Indonesia



Indonesia ranks as follows in other areas affecting its overall stability and security:

- Transparency International ranks it as 88 in its ranking of 168 countries in its 2015 ranking of its perceptions index of corruption. The higher the ranking, the more the corrupt the country is. This ranking is moderately high.[65]
- The Fragile States Index ranks it in the Elevated Warning category, with a ranking of 86 in a world where the most stable country is ranked at 177.[66]
- It has a created a climate where sources disagree on its support for business development or outside investment. The World Bank ranked it 109th in overall ease of doing business out of 189 countries. [67] The World Economic Forum ranked it 37th out of 140 countries in global competitiveness in 2015/2016. [68]
- Population pressure is a factor. The U.S. Census Bureau estimates that its population increased by 3.1 times from 82.98 million in 1950 to 255.99 million in 2015, and will increase by 17.3 percent more to 300.18 million in 2050.[69]
- Youth employment is a moderate problem. The CIA World Factbook reports that the median age is 29.6 years, and that 25.82 percent of the population is 14 years of age or younger, and 17.07 percent is 15-24 years of age. [70]
- Urbanization is changing the character of the population and distribution of tribes, ethnic groups, and sects. It is now 53.7 percent, and growing at 2.69 percent per year. [71]

Indonesia shows that that one way to avoid the "OPEC disease" is to cease becoming dependent on petroleum exports and OPEC's very rationale for existence. It still, however, needs major economic reform.

Iran

Iran's recent crude oil production is shown in **Figure Twenty-Six**, using graphs developed by Ron Patterson for *Oil Price*.[72] If the estimates in **Figure Nine** are used, its net export revenue dropped from $47 billion in 2014 to $27 billion in 2015, and was on a

path that would drop to $26.4 billion in 2016. Using **Figure Ten**, its oil export revenues per capita dropped from $679 in 2014 to $384 in 2015, and were on a path that would drop to $367 in 2016.

Figure Twenty-Six: Iranian Oil Production: January 2012-March 2106

Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***.

Iran's economic development has been critically limited in recent years by a combination of UN, EU, and US sanctions, and by its own failures to develop effective economic policies and development plans. Its nuclear agreement with the P5+1 and the election of the Rouhani government have sharply eased sanctions and put it on the path towards more realistic economic policies and development, but it still faces major challenges, cuts in oil world prices mean it will receive only limited increases in oil export revenues at best, and its growing confrontation with Saudi Arabia creates serious future security risks and increases its military budget.

The EIA country analysis of Iran dates back to June 2015, but notes that Iran has some 158 billion barrels of proven oil reserves, and provides useful data on the Iran nuclear agreement with the P5+1.[73]

> Iran holds the world's fourth-largest proved crude oil reserves and the world's second-largest natural gas reserves. Despite the country's abundant reserves, Iran's crude oil production has substantially declined, and natural gas production growth has been slower than expected over the past few years. International sanctions have profoundly affected Iran's energy sector and have prompted a number of cancellations or delays of upstream oil and gas projects.
>
> Iran holds some of the world's largest deposits of proved oil and natural gas reserves, ranking as the world's fourth-largest and second-largest reserve holder of oil and natural gas, respectively. Iran also ranks among the world's top 10 oil producers and top 5 natural gas producers. Iran produced almost 3.4 million barrels per day (b/d) of petroleum and other liquids in 2014 and an estimated 5.7 trillion cubic feet (Tcf) of dry natural gas in 2013.
>
> The Strait of Hormuz, off the southeastern coast of Iran, is an important route for oil exports from Iran and other Persian Gulf countries. At its narrowest point, the Strait of Hormuz is 21 miles wide, yet an estimated 17 million b/d of crude oil and refined products flowed through it in 2013 (roughly 30% of all seaborne traded oil and almost 20% of total oil produced globally). Liquefied natural gas (LNG) volumes also flow through the Strait of Hormuz. Approximately 3.7 Tcf of

LNG was transported from Qatar via the Strait of Hormuz in 2013, accounting for more than 30% of global LNG trade.

Iran's oil production has declined substantially, and natural gas production growth has been slower than expected, despite the country's abundant reserves. International sanctions have stymied progress across Iran's energy sector, especially affecting upstream investment in both oil and natural gas projects. The sanctions have prompted a number of cancellations and delays of upstream projects. The United States and the European Union (EU) enacted measures at the end of 2011 and during the summer of 2012 that affected the Iranian energy sector more profoundly than any previously enacted sanctions. The sanctions impeded Iran's ability to sell oil, resulting in a near 1.0-million b/d drop in crude oil and condensate exports in 2012 compared with the previous year.

Iran's oil and natural gas export revenue was $118 billion in the 2011/2012 fiscal year (ending March 20, 2012), according to the International Monetary Fund (IMF) In the 2012/2013 fiscal year, oil and natural gas export revenue dropped by 47% to $63 billion. The IMF estimates that Iran's oil and natural gas export revenue fell again in the 2013/2014 fiscal year by 10% to $56 billion.[1] The revenue loss is attributed to the sharp decline in the volume of oil exports from 2011 to 2013. Iran's natural gas exports increased slightly over the past few years. However, Iran exports only a small volume of natural gas, because most of its production is domestically consumed.

Nonetheless, international sanctions have also affected Iran's natural gas sector. Iran's natural gas sector has been expanding, but production growth has been lower than expected as a result of the lack of foreign investment and technology. However, in 2014, Iran experienced higher production growth than usual because new phases at the South Pars natural gas field came online.[2] The South Pars natural gas field is the largest hydrocarbon upstream project currently being developed in Iran and continues to encounter delays. South Pars, located offshore in the Persian Gulf, holds almost 40% of Iran's proved natural gas reserves.[3] It is now being developed mostly by Iranian companies because most international companies have pulled out. The field's development entails 24 phases.

Over the past couple of years, there has been progress made during negotiations between Iran and world powers over Iran's nuclear program and international sanctions. On November 24, 2013, a Joint Plan of Action (JPOA) was established between Iran and the five permanent members of the United Nations Security Council (the United States, United Kingdom, France, Russia, and China) plus Germany (P5+1). Implementation of the JPOA started in January 2014. Under the JPOA, Iran agreed to scale back or freeze some of its nuclear activities during negotiations in exchange for some sanctions relief. The JPOA did not directly allow for additional Iranian oil sales.

On April 2, 2015, Iran and the P5+1 reached a framework agreement to guide the next months of negotiations, which targets a comprehensive agreement by June 30, 2015. Under the framework, if a comprehensive agreement is reached, then U.S. and European Union nuclear-related sanctions (which include oil-related sanctions) would be suspended after the International Atomic Energy Agency verifies that Iran complied with key nuclear-related steps.

Iran's crude oil and condensate exports started increasing in late 2013 and averaged 1.4 million b/d in 2014, almost 150,000 b/d above the 2013 level, according to U.S Energy Information Administration (EIA) estimates. These estimates are based on data from, Eurostat, Global Trade Information Services, Lloyd's List Intelligence (APEX), and trade press reports. Exports to China and India accounted for almost all of the increase.

Later EIA reports indicate that Iran's production rose from 2.8 MMDB in the four quarters of 2015 to 3.03 MMBD in the first quarter of 2016. The OPEC figures have been shown earlier in the first Figure in this chapter.

The IMF summarized Iran's situation as follows in early 2016, before the full impact of cuts in oil prices became apparent, but still stressed the critical need for economic reform:[74]

Comprehensive reforms are needed to entrench macroeconomic stability and to foster a more inclusive growth, so that the economy can fully benefit from the lifting of economic sanctions," said Martin Cerisola, the IMF's mission chief for Iran.…The outlook for 2016/17 would improve," he added, "with a successful implementation of the comprehensive agreement of July 2015 between world powers and Iran."

…Economic performance has stalled in recent months with key sectors—manufacturing and construction—contracting significantly. Real GDP growth is now projected to decelerate from 3 percent in 2014/2015 to between ½ percent to – ½ percent in 2015/2016, because of the drop in oil prices, and the postponement of investment and consumption decisions ahead of the expected lifting of sanctions.

… The relief of sanctions also brings forth many challenges to address. Higher oil revenue and greater capital inflows stemming from increased trade and financial transactions could potentially lead to exchange rate appreciation. Mitigating such pressures could be achieved through reforms that support the authorities' goal of bringing Iran's inflation to the single digits by 2016-2017 sustainably, down from the high levels experienced in recent years, the IMF noted.

The IMF report welcomes the authorities' commitment to sound fiscal policy. The overall fiscal deficit declined over the past year, from 2¼ percent of GDP to nearly 1¼ percent of GDP, thanks to increased domestic revenue and subsidy reforms…"Continued efforts in reducing fuel subsidies and mobilizing domestic tax revenue would help contain and reduce the fiscal deficit in the years ahead and dampen upward pressures on the real exchange rate, and thus provide room for infrastructure investment," said Cerisola.

The report also recommends a medium-term fiscal framework, to increase domestic tax revenue collection, and to develop fiscal buffers to protect the fiscal space for investment spending on infrastructure and human capital….Reducing and stabilizing inflation is also important. Here the authorities' focus on strengthening the Central Bank of Iran's mandate on price stability is a critical step in consolidating macroeconomic stability.

"Central to the need to boost sustainable growth and employment are reforms to address structural weaknesses in the economy," said Cerisola. A durable reduction of real interest rates should be predicated on addressing financial sector vulnerabilities, namely resolving the high nonperforming assets, restructuring banks, addressing unlicensed financial institutions, and strengthening the Central Bank of Iran supervisory framework.

In addition, the country can take measures to increase productivity by attracting modern technology from trading partners, and by implementing reforms targeting specifically labor-intensive sectors, such as services and agriculture.

"By sustaining the progress made towards stabilizing economic conditions, enhancing the policy framework, and repairing corporate and bank balance sheets, the country would take a decisive step to becoming a fast-growing emerging economy," Cerisola concluded.

The World Bank summarized Iran's status as follows in April 2016,[75]

Iran is the second largest economy in the Middle East and North Africa (MENA) region after Saudi Arabia, with an estimated Gross Domestic Product (GDP) in 2015 of US$393.7 billion. It also has the second largest population of the region after Egypt, with an estimated 78.8 million people in 2015. Iran's economy is characterized by a large hydrocarbon sector, small scale agriculture and services sectors, and a noticeable state presence in manufacturing and financial services. Iran ranks second in the world in natural gas reserves and fourth in proven crude oil reserves. Economic activity and government revenues still depend to a large extent on oil revenues and therefore remain volatile.

Government of Iran's Vision for the Future and Its Reform Agenda

Iranian authorities have adopted a comprehensive strategy encompassing market-based reforms as reflected in the government's 20-year vision document and the recently issued sixth five-year development plan for the 2016-2021 period. The sixth five-year development plan remains

ambitious, comprised of three pillars, namely, the development of a resilient economy, progress in science and technology, and the promotion of cultural excellence. On the economic front, the development plan envisages an annual economic growth rate of 8 percent and considers the implementation of reforms of state-owned enterprises, the financial and banking sector, and the allocation and management of oil revenues among the main priorities of the government during the five-year period.

The Iranian state continues to play a key role in the economy with large public and quasi-public enterprises dominating to some extent the manufacturing and commercial sectors. The financial sector is also dominated by public banks. Moreover, the business environment remains restrictive with the country ranking 118 out of the 189 countries surveyed in the 2016 Doing Business.

The Iranian government has implemented a major reform of its subsidy program on key staples such as petroleum products, water, electricity and bread, which has resulted in a moderate improvement in the efficiency of expenditures and economic activities. The overall indirect subsidies, which were estimated to be equivalent to 27 percent of GDP in 2007/2008 (approximately US$77.2 billion), have been replaced by a direct cash transfer program to Iranian households. Domestic fuel prices have risen in parallel, thereby contributing toward reducing the deficit of the Targeted Subsidies Organization (TSO) (estimated at -0.3 percent of GDP in 2015). A second phase of subsidy reform is being considered which would involve a more gradual fuel price adjustment than previously envisaged and the greater targeting of cash transfers to low-income households.

Recent Economic Developments

Following the economic recovery experienced in 2014 , the Iranian economy is estimated to have advanced at an annual growth rate of only 0.5 percent during the 2015 Iranian calendar year (i.e., March 21, 2015-March 20, 2016). This performance came in spite of the signing of the Joint Comprehensive Plan of Action (JCPOA) in July 2015 and the significant economic prospects it offered. Inflationary pressures on the economy continued to abate under the less accommodative monetary policy stance, with the Consumer Price Index falling to 12.6 percent per annum in January 2016, from a peak of 45.1 percent in October 2012. Despite this positive development, the fiscal balance of the central government deteriorated due to low oil prices, from a deficit of 1.2 percent of GDP in 2014 to a deficit of 2.7 percent of GDP in 2015. Similarly, Iran's current account surplus is estimated to have deteriorated from a surplus of 3.8 percent of GDP in 2014 to a surplus of 0.6 percent of GDP in 2015 due to the fall in oil exports. Stimulating private sector growth and job creation is a continued focus for the government considering the number of workers who should enter the labor market in the coming years, including women and youth and the persistently high unemployment rate (11.7 percent). Tackling youth unemployment in particular is a pressing policy issue in line with the evolving demographic profile of the country, which is characterized by more than 60 percent of its population estimated to be under the age of 30 in 2013.

Poverty Conditions

Poverty is estimated to have fallen from 15 percent to 9 percent between 2009 and 2013, using a poverty line of US$5.5 per day (PPP), as Iran has no official poverty line. This was likely due to the implementation of a universal cash transfer program in late 2010, which preceded the elimination of subsidies on energy and bread. The cash transfer program appears to have more than compensated for the likely increase in energy expenditures of less-well-off households thus contributing to positive consumption growth for the bottom 40 percent of the population. However, the recession years took their toll, with overall consumption growth between 2009 and 2013 being negative.

Political Developments

The January 2016 lifting of the nuclear-related sanctions will provide a short-term boost to Iran's economy. For the recovery to be sustained, longstanding structural reforms are needed. The February 2016 elections for Parliament and Assembly of Experts resulted in gains for moderates

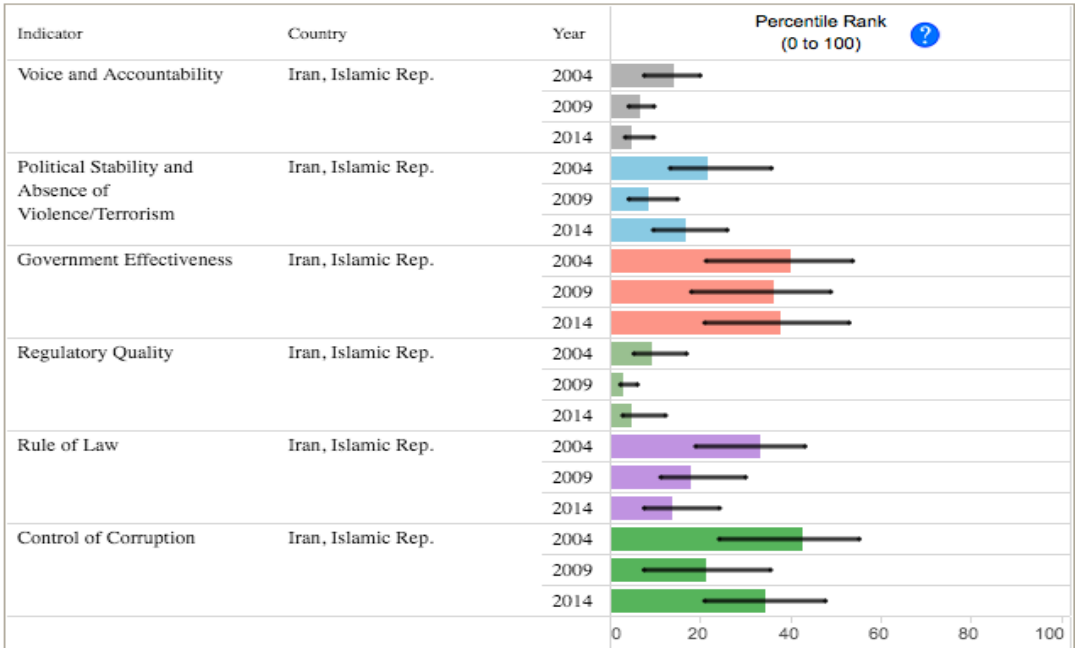
and reformers, providing an expected favorable climate for economic-reforms.

Economic Outlook

Due to the lifting of the sanctions and a more business-oriented environment, real GDP growth is projected to reach 4.2 percent and 4.6 percent in 2016 and 2017, respectively. On the production side, growth will be mainly driven by higher hydrocarbon production. On the expenditure side, consumption, investment and exports are expected to be the main drivers. Notwithstanding the narrowing of the output gap over the coming years, inflation is forecast to remain moderate, by Iran's standard. The lifting of sanctions, and in particular the positive impact this will have on the banking system, will significantly reduce international transaction costs. Strong capital inflows, including FDI and the repatriation of part of the frozen assets, could put upward pressure on the Iranian rial which will help contain imported inflation. Fiscal policy, is projected to be slightly contractionary with the deficit projected to narrow to 1.8 and 1 percent in 2016 and 2017, respectively, mostly on account of improved oil revenues. Iran's current account position is expected to turn into a surplus in 2017, also primarily driven by rising oil exports.

A World Bank summary of its progress in governance is shown in **Figure Twenty-Seven.**[76] Progress is erratic at best, and poor political stability and the absence of violence/terrorism, accountability, rule of law, and regulatory quality.

Figure Twenty-Seven: World Bank Estimate of Governance in Iran



The cuts in petroleum export revenues o presents a serious risk that the Iranian people will reject moderate policies and reforms because they do not see any short term benefits, and Iran will focus on security and confrontation with its neighbors rather than development. The IMF and World Bank both warn that Iranian economic growth and stability require major economic reform and the CIA noted in July 2016, that,[77]

Conservative clerical forces led by Ayatollah Ruhollah KHOMEINI established a theocratic system of government with ultimate political authority vested in a learned religious scholar referred to commonly as the Supreme Leader who, according to the constitution, is accountable only to the Assembly of Experts - a popularly elected 86-member body of clerics. US-Iranian relations became strained when a group of Iranian students seized the US Embassy in Tehran in

November 1979 and held embassy personnel hostages until mid-January 1981. The US cut off diplomatic relations with Iran in April 1980. During the period 1980-88, Iran fought a bloody, indecisive war with Iraq that eventually expanded into the Persian Gulf and led to clashes between US Navy and Iranian military forces. Iran has been designated a state sponsor of terrorism for its activities in Lebanon and elsewhere in the world and remains subject to US, UN, and EU economic sanctions and export controls because of its continued involvement in terrorism and concerns over possible military dimensions of its nuclear program. Following the election of reformer Hojjat ol-Eslam Mohammad KHATAMI as president in 1997 and a reformist Majles (legislature) in 2000, a campaign to foster political reform in response to popular dissatisfaction was initiated. The movement floundered as conservative politicians, supported by the Supreme Leader, unelected institutions of authority like the Council of Guardians, and the security services reversed and blocked reform measures while increasing security repression.

Starting with nationwide municipal elections in 2003 and continuing through Majles elections in 2004, conservatives reestablished control over Iran's elected government institutions, which culminated with the August 2005 inauguration of hardliner Mahmud AHMADI-NEJAD as president. His controversial reelection in June 2009 sparked nationwide protests over allegations of electoral fraud. These protests were quickly suppressed, and the political opposition that arose as a consequence of AHMADI-NEJAD's election was repressed. Deteriorating economic conditions due primarily to government mismanagement and international sanctions prompted at least two major economically based protests in July and October 2012, but Iran's internal security situation remained stable. President AHMADI-NEJAD's independent streak angered regime establishment figures, including the Supreme Leader, leading to conservative opposition to his agenda for the last year of his presidency, and an alienation of his political supporters. In June 2013 Iranians elected a moderate conservative cleric, Dr. Hasan Fereidun RUHANI to the presidency. He is a longtime senior member in the regime, but has made promises of reforming society and Iran's foreign policy. The UN Security Council has passed a number of resolutions calling for Iran to suspend its uranium enrichment and reprocessing activities and comply with its IAEA obligations and responsibilities, and in July 2015 Iran and the five permanent members, plus Germany (P5+1) signed the Joint Comprehensive Plan of Action (JCPOA) under which Iran agreed to restrictions on its nuclear program in exchange for sanctions relief.

Iran's economy is marked by statist policies, inefficiencies, and reliance on oil and gas exports, but Iran also possesses significant agricultural, industrial, and service sectors. The Iranian government directly owns and operates hundreds of state-owned enterprises and indirectly controls many companies affiliated with the country's security forces. Distortions - including inflation, price controls, subsidies, and a banking system holding billions of dollars of non-performing loans - weigh down the economy, undermining the potential for private-sector-led growth….Iran continues to suffer from high unemployment and underemployment. Lack of job opportunities has prompted many educated Iranian youth to seek employment overseas, resulting in a significant "brain drain."

In June 2013, the election of President Hasan Rouhani generated widespread public expectations of economic improvement and greater international engagement. Almost two years into his term, Rouhani has achieved some success, including reining in inflation and, in July of 2015, securing the promise of sanctions relief for Iran by signing the Joint Comprehensive Plan of Action (JCPOA) with the P5+1. The JCPOA, which severely limits Iran's nuclear program in exchange for unfreezing Iranian assets and reopening Iran to international trade, should bolster foreign direct investment, increase trade, and stimulate growth. In spite Rouhani's efforts, Iran's growth was tepid in 2015, and significant economic improvement resulting from sanctions relief will take months or years to materialize.

Iran ranks as follows in other areas affecting its overall stability and security:

- Transparency International ranks it as the 130th most corrupt of 168 countries in its 2015 ranking of its perceptions index of corruption.[78]

- The Fragile States Index ranks it in the High Warning category, with a ranking of 47 in a world where the most stable country is ranked at 177.[79]
- It has not created a climate that supports business development or outside investment. The World Bank ranked it 118th in overall ease of doing business out of 189 countries in 2016.[80] The World economic Forum ranked it 74d out of 140 countries in global competitiveness in 2015/2016. [81]
- Population pressure is a factor. The U.S. Census Bureau estimates that its population increased by 3.7 times from 16.36 million in 1950 to 81.8 million in 2015, and will increase by 22 percent more to 100 million in 2050.[82]
- Youth employment is also a factor. The CIA World Factbook reports that the median age is 28.8 years, and that 23.9 percent of the population is 14 years of age or younger, and 17.58 percent is 15-24 years of age. [83]
- Urbanization has radically changed the character of the population and distribution of tribes, ethnic groups, and sects. It is now 73.4 percent, and still growing at 2.07 percent per year. [84]

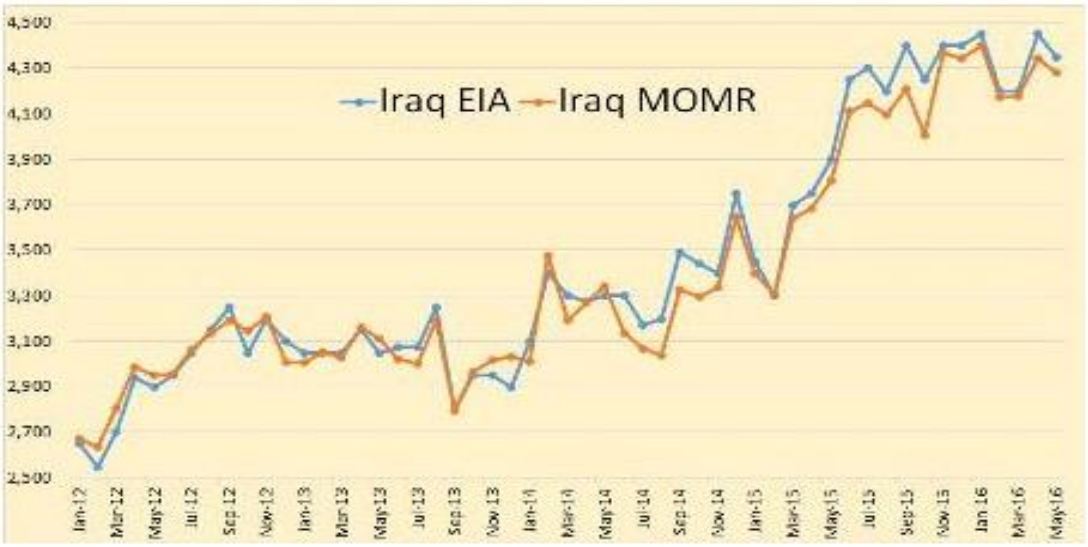
Iran's primary problems have been its own economic mismanagement and the impact of sanctions, but over-dependence on petroleum revenues also labels it as a victim of the "OPEC disease." It badly needs economic reform and a focus on internal development and security, but its present focus is on security and expanding its regional influence.

Iraq

Iraq has suffered from decades of poor governance, poor economic policies, gross over-employment in its governance and SOE sectors, and a pattern of war and violence that began in 1980 and has continued ever since. This included the Iran-Iraq War in 1980-1988, invasion of Kuwait in1990, Gulf War in1991, US-led invasion in 2003, insurgency from 2004-2010, and invasion by ISIS in late 2013 –where the fighting still continues. Sectarian and ethnic tensions also continue to present serious problems and threaten separation or civil war.

Algeria's recent crude oil production is shown in **Figure Twenty-Eight**, using graphs developed by Ron Patterson for *Oil Price*.[85] If the estimates in **Figure Nine** are used, its net export revenue dropped from $89 billion in 2014 to $57 billion in 2015, and was on a path that would drop to $45.6 billion in 2016. Using **Figure Ten**, its oil export revenues per capita dropped from $2,740 in 2014 to $1,7182 in 2015, and were on a path that would drop to $1,313 in 2016.

Figure Twenty-Eight: Iraqi Oil Production: January 2012-March 2106



Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***.

The EIA described Iraq's crude oil reserves as follows in April 2016,

> According to the *Oil & Gas Journal* (OGJ), Iraq held 143 billion barrels of proved crude oil reserves at the end of 2015, representing 18% of proved reserves in the Middle East and almost 9% of global reserves, ranking fifth in the world.[4] Iraq's resources are not evenly divided across sectarian-demographic lines. Most known oil and natural gas resources are concentrated in the Shiite areas of the south and the ethnically Kurdish region in the north, with few known resources in control of the Sunni minority in central/western Iraq.

It also provided the following summary of energy developments, which had been affected by the fighting with ISIS:

> Iraq is the second-largest crude oil producer in the Organization of the Petroleum Exporting Countries (OPEC) after Saudi Arabia, and it holds the world's fifth-largest proved crude oil reserves after Venezuela, Saudi Arabia, Canada, and Iran. Most of Iraq's major known fields are producing or in development, although much of its known hydrocarbon resources have not been fully exploited. All of Iraq's known oil fields are onshore. The largest fields in the south have relatively low extraction costs owing to uncomplicated geology, multiple supergiant fields, fields located in relatively unpopulated areas with flat terrain, and the close proximity of fields to coastal ports.
>
> Iraq is re-developing its oil and natural gas reserves after years of sanctions and wars. Iraq's crude oil production grew by almost 1.5 million barrels per day (b/d) over the past five years, increasing from 2.6 million b/d in 2011 to almost 4.1 million b/d in 2015. These production estimates include oil produced in the Iraqi Kurdistan Region, the semiautonomous northeast region in Iraq governed by the Kurdistan Regional Government (KRG). The country's production grew at a slower rate than the Iraqi government had expected over the past decade because of infrastructure bottlenecks in the south, supply disruptions in the north, and delays in awarding contracts. However, Iraq's production boomed in 2015, increasing by almost 700,000 b/d compared with the level in 2014 and representing the largest year-over-year increase since Iraq's production recovery in 2004, following the start of the Iraq war.
>
> Despite the near-record level production growth in 2015, the Iraqi government lowered its future oil production targets and slashed investment plans. Iraq has been struggling to keep up its share

of payments to the international oil companies (IOCs) operating its oil fields. The drop in crude oil prices, coupled with the war against the Islamic State of Iraq and the Levant (ISIL) in northern Iraq that began in mid-2014, caused Iraq's budget deficit to grow substantially in 2015.

Iraq's economy is heavily dependent on oil revenues. In 2014, crude oil export revenue accounted for 93% of Iraq's total government revenues, according to the International Monetary Fund (IMF).[2] In 2015, Iraq (excluding KRG) earned slightly more than $49 billion dollars in crude oil export revenue, $35 billion less than in 2014, despite a substantial increase in export volumes.

… The Islamic State of Iraq and the Levant (ISIL) launched an attack in Iraq in early June 2014, taking over Mosul, one of the largest cities in the north, and subsequently other nearby towns. ISIL affected northern Iraqi (not including the Iraqi Kurdistan Region) production and refinery operations, but it did not affect southern production and exports, which accounted for about 95% of Iraq's total crude oil exports in 2014.[10] ISIL did not significantly affect production in the Iraqi Kurdistan Region in northern Iraq, although fighting came very close to fields produced under the KRG—the Khurmala Dome and Shaikan. Some oil companies were forced to abandon exploration projects, which could delay future development.

During the second half of June 2014, ISIL attacked Baiji, Iraq's largest oil refinery, causing the refinery to halt operations. The closure of the Baiji refinery caused a near halt to commercial production in northern Iraq (not including the Iraqi Kurdistan Region). The Iraq portion of the Iraq (Kirkuk) to Turkey (Ceyhan) pipeline (IT pipeline) had already been severely damaged after being sabotaged by militants, and it has not operated since March 2014. As a result of the closure of both the Baiji refinery and the Iraq portion of the IT pipeline, northern Iraqi oil production (the Kirkuk and Bai Hassan fields) lacked a significant commercial outlet for several months.

ISIL initially took over some smaller northern Iraqi oil fields, including Ajeel, Hamrin, Qayara, Balad, Ain Zalah, Batma, and Najma, but ISIL later lost control of some of those fields following the U.S.-led air strikes that began in early August 2014.[11] The Ajeel field, with a capacity of 28,000 b/d, was one of ISIL's main sources of Iraq's production, but it was bombed in August 2014, causing significant damage to the field's control room.[12] ISIL has also stolen oil from storage tanks, pipelines, and pumping stations, estimated to be as high as 3.0 million barrels.[13] Currently, ISIL is believed to be producing a small amount of oil at Iraq's northern Qayara field.[14]

The IMF Article IV report described Iraq as follows in August 2015,[86]

On July 29, 2015, the Executive Board of the International Monetary Fund (IMF) approved SDR 891.3 million (about US$1.24 billion or 75 percent of quota) for Iraq under the Rapid Financing Instrument (RFI)1. The purpose of this financial assistance is to help Iraq address present and urgent balance of payment and budget needs in 2015 related to the ISIS insurgency and a decline in oil prices. The IMF financing will support the authorities' current economic program, which includes fiscal adjustment measures and structural reforms.

Following the Executive Board's discussion of Iraq, Mr. Mitsuhiro Furusawa, IMF Deputy Managing Director and Acting Chair of the Board, issued the following statement:

"The twin shocks faced by Iraq from the ISIS insurgency and the drop in global oil prices

have severely widened the government deficit and caused a decline in international reserves. The authorities' policies to deal with the shocks, including sizable fiscal adjustment and maintenance of the exchange rate peg, go in the right direction. Access under the IMF's Rapid Financing Instrument will help address Iraq's urgent balance of payments and budget needs. However, large fiscal and external financing gaps remain.

"The large financing gap calls for the rigorous implementation of the authorities' policies, but also additional fiscal adjustment measures and identification of domestic and internal financing. In this context, it will be important to implement the new electricity tariff schedule as soon as possible, or adopt compensatory measures. Looking ahead, the authorities should lay the ground for medium-term structural reforms that would better support macroeconomic policy management and boost the economy's resilience to shocks."

The IMF described Iraq's key issues as follows, [87]

> *Context*: Iraq is facing a double shock arising from the ISIS insurgency and the sharp drop in global oil prices. The conflict is hurting the non-oil economy through destruction of infrastructure and assets, disruptions in trade, and deterioration of investor confidence. The impact of the oil price decline—already felt in 2014—will fully unfold in 2015, affecting the budget, the external sector, and medium-term growth potential. The authorities are responding to the crisis through mix of fiscal adjustment and financing, maintaining their commitment to the exchange rate peg.
>
> *Rapid Financing Instrument*: To help address the present and urgent balance of payment and budget needs triggered by the ISIS insurgency and the collapse in oil prices, the authorities have requested financial assistance under the Rapid Financing Instrument (RFI) for 50 percent of quota (SDR 594.2 million).
>
> *Outlook and Risks*: Assuming a resolution of the conflict in the coming years, the baseline medium-term outlook still looks positive, even though it would be significantly less favorable than at the time of the 2013 Article IV report. Under much improved security conditions, the macroeconomic scenario would continue to be driven by the expansion in oil production and non-oil sector growth, assuming the implementation of structural reform to diversify the economy and support private sector development. But risks remain very high, arising primarily from a worsening of the conflict, political tensions, and poor policy implementation.
>
> *Key Article IV Policy Recommendations:*
>
> - In 2015, strong fiscal consolidation is needed to address the fall in oil revenues and contain central bank financing to the budget.
> - In the medium term, continued fiscal discipline, supported by stronger public financial management, will be essential to raise investment and eventually rebuild fiscal buffers.
> - The exchange rate peg remains appropriate, but the authorities should press ahead with the gradual liberalization of the foreign exchange market.
> - Close monitoring of the financial sector is warranted in light of the impact of the conflict, the state-owned banks' financing of the budget, and AML/CFT shortcomings.
> - The authorities should continue to pursue medium-term structural reform, including: strengthening public financial management and governance and streamlining public spending; improving the business environment and restructuring state-owned enterprises; and promoting private sector job creation.

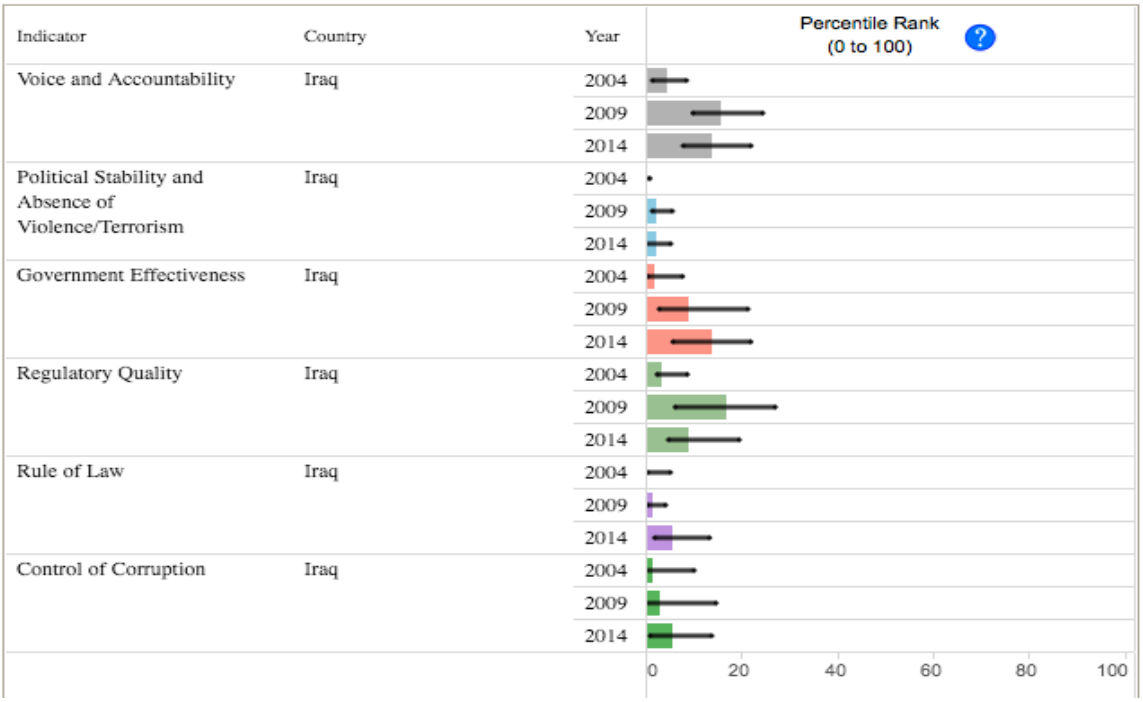
The World Bank described Iraq's situation as follows in April 2016,[88]

> The Iraqi economy is facing severe and pressing challenges. The decline in oil prices and the financing needs associated with the ISIS insurgency have contributed to a sharp deterioration of economic activity, public finances and the balance of payments. Macroeconomic risks remain elevated due to Iraq's continued exposure to a volatile oil market. The government is facing the challenge of maintaining macroeconomic stability, undertaking structural reforms to improve the delivery of public services, and reconstructing core physical infrastructure in the areas liberated from the Islamic State of Iraq and Syria (ISIS).
>
> Iraq's GDP per capita was estimated at US$6,147 in 2014, putting Iraq in the category of upper-middle-income countries. However, economic and security conditions in Iraq worsened since mid-2014, leading to increased poverty, vulnerability, and unemployment. The GDP per capita is estimated to have contracted to nearly US$5,000 in 2015. Economic growth is estimated to have contracted by 2.4% in 2014 and is estimated to have barely expanded in 2015 (by 0.5%). Weak growth is mainly attributed to the non-oil economy which contracted by 7% in 2014 and is expected to have declined by an additional 7% in 2015. The oil price and ISIS crisis, combined with political instability, impacted private sector consumption and investment.

> The severe decline in global oil prices caused oil export revenues to decline by US$40 billion. Lower oil revenues, in addition to higher humanitarian and security-related expenditures, led to a fiscal deficit of 14.5% of GDP in 2015. Such deficit could have reached 18.4% had the government not implemented a number of fiscal consolidation measures to address the situation. The current account deficit increased from 0.7%of GDP in 2014 to an estimated 6.6% in 2015. At the same time, imports remained unchanged during 2015, in part reflecting capital goods needed to expand oil-production. In light of pressing fiscal and balance of payment needs, the IMF supported Iraq through a one-off disbursement of US$1.23 billion in July 2015 under its Rapid Financing Instrument. In addition, to safeguard economic stability and basic service delivery, the World Bank provided US$1.2 billion through a Development Policy Financing operation in December 2015.
>
> Moreover, Iraq also faces severe security challenges. As a result of the ongoing conflict, 20,035 civilians were killed in Iraq in 2014, the highest number since 2007, and a further 17,080 were killed in 2015. It is estimated that a total of 151,383 civilians were killed due to violence between 2003-2015.
>
> The population remains extremely vulnerable to the ongoing security problems and reduction in oil prices. Poverty levels have increased and now stand at 22.5%. The number of people living below the poverty line increased by an estimated 2.8 million by end-2014.
>
> The displacement of 3.2 million Iraqis and some 250,000 Syrian refugees have further disrupted local economic conditions. The public distribution system provides the only safety net for the vast majority of the poor, and is currently being stretched to its limits in much of the country, and is not available in some governorates. Internally displaced persons (IDPs) are receiving cash grants of US$842 per month, but the 2.8 million new poor are left largely uncovered by any public safety net.

The World Bank also has long ranked Iraq as having one of the worst governments in the world. A summary of its assessments is shown in **Figure Twenty-Nine.**[89] They have improved in some ways under Prime Minister Maliki but remain low and lack in consistent progress in every area.

Figure Twenty-Nine: World Bank Estimate of Governance in Iraq



The CIA described Iraq as follows in July 2016,[90]

> Formerly part of the Ottoman Empire, Iraq was occupied by Britain during the course of World War I; in 1920, it was declared a League of Nations mandate under UK administration. In stages over the next dozen years, Iraq attained its independence as a kingdom in 1932. A "republic" was proclaimed in 1958, but in actuality a series of strongmen ruled the country until 2003. The last was SADDAM Husayn. Territorial disputes with Iran led to an inconclusive and costly eight-year war (1980-88). In August 1990, Iraq seized Kuwait but was expelled by US-led UN coalition forces during the Gulf War of January-February 1991. Following Kuwait's liberation, the UN Security Council (UNSC) required Iraq to scrap all weapons of mass destruction and long-range missiles and to allow UN verification inspections. Continued Iraqi noncompliance with UNSC resolutions over a period of 12 years led to the US-led invasion of Iraq in March 2003 and the ouster of the SADDAM Husayn regime. US forces remained in Iraq under a UNSC mandate through 2009 and under a bilateral security agreement thereafter, helping to provide security and to train and mentor Iraqi security forces.
>
> In October 2005, Iraqis approved a constitution in a national referendum and, pursuant to this document, elected a 275-member Council of Representatives (COR) in December 2005. The COR approved most cabinet ministers in May 2006, marking the transition to Iraq's first constitutional government in nearly a half century. Nearly nine years after the start of the Second Gulf War in Iraq, US military operations there ended in mid-December 2011. In January 2009 and April 2013, Iraq held elections for provincial councils in all governorates except for the three comprising the Kurdistan Regional Government and Kirkuk Governorate. Iraq held a national legislative election in March 2010 - choosing 325 legislators in an expanded COR - and, after nine months of deadlock the COR approved the new government in December 2010. In April 2014, Iraq held a national legislative election and expanded the COR to 328 legislators. Prime Minister Nuri al-MALIKI dropped his bid for a third term in office, enabling new Prime Minister Haydar al-ABADI, a Shia Muslim from Baghdad, to win parliamentary approval of his new cabinet in September 2014. Since early 2015, Iraq has been engaged in a military campaign against the Islamic State of Iraq and the Levant (ISIL) to recapture territory lost in the western and northern portion of the country.

During 2015, worsening security and financial stability throughout Iraq - driven by an ongoing insurgency, decreasing oil prices, and political upheaval - decreased prospects for improving the country's economic environment and securing much-needed foreign investment. Long-term fiscal health, a strengthened investment climate, and sustained improvements in the overall standard of living still depend on a rebound in global oil prices, the central government passing major policy reforms, and finishing the conflict with ISIL.

Iraq's largely state-run economy is dominated by the oil sector, which provides more than 90% of government revenue and 80% of foreign exchange earnings. Oil exports in 2015 averaged 3.0 million barrels per day, up from 2014, but a failed revenue- and oil-sharing agreement with the Iraqi Kurdistan Region's (IKR) autonomous Kurdistan Regional Government (KRG) resulted in a loss of exports from northern oil fields. Moreover, falling global oil prices resulted in declining export revenues. Iraq's contracts with major oil companies have the potential to further expand oil exports and revenues, but Iraq will need to make significant upgrades to its oil processing, pipeline, and export infrastructure to enable these deals to reach their economic potential. The Iraqi Kurdistan Region's (IKR) autonomous Kurdistan Regional Government (KRG) passed its own oil law in 2007, and has directly signed about 50 contracts to develop IKR energy reserves. The federal government has disputed the legal authority of the KRG to conclude most of these contracts, some of which are also in areas with unresolved administrative boundaries in dispute between the federal and regional government. In December 2014, the federal government and the KRG agreed to sell oil exports from Kurdish-controlled oilfields under the federal oil ministry, in exchange for the central government paying $1 billion to the Kurdish Peshmerga forces and resuming budget transfers to the KRG that amount to 17% of Iraq's national budget. However, that deal fell apart in 2015.

Iraq is making slow progress enacting laws and developing the institutions needed to implement economic policy, and political reforms are still needed to assuage investors' concerns regarding the uncertain business climate. The Government of Iraq is eager to attract additional foreign direct investment, but it faces a number of obstacles, including a tenuous political system and concerns about security and societal stability. Rampant corruption, outdated infrastructure, insufficient essential services, skilled labor shortages, and antiquated commercial laws stifle investment and continue to constrain growth of private, nonoil sectors. Under the Iraqi constitution, some competencies relevant to the overall investment climate are either shared by the federal government and the regions or are devolved entirely to local governments. Investment in the IKR operates within the framework of the Kurdistan Region Investment Law (Law 4 of 2006) and the Kurdistan Board of Investment, which is designed to provide incentives to help economic development in areas under the authority of the KRG.

Inflation has remained under control since 2006. However, Iraqi leaders remain hard pressed to translate macroeconomic gains into an improved standard of living for the Iraqi populace. Unemployment remains a problem throughout the country despite a bloated public sector. Encouraging private enterprise through deregulation would make it easier for Iraqi citizens and foreign investors to start new businesses. Rooting out corruption and implementing reforms - such as restructuring banks and developing the private sector - would be important steps in this direction.

Iraq ranked as follows in other areas affecting its overall stability and security:

- Transparency International ranks it as the 161st most corrupt of 168 countries in its 2015 ranking of its perceptions index of corruption.[91]
- The Fragile States Index ranks it in the Elevated Warning category, with a ranking of 11 in a world where the most stable country is ranked at 177.[92]
- It has not created a climate that supports business development or outside investment. The World Bank ranked only it 161st in overall ease of doing business out of 189 countries.[93] The World Economic Forum did not rank it in 2015/2016.[94]

- Population pressure is a key factor. The U.S. Census Bureau estimates that its population increased by 7.1 times from 5.2 million in 1950 to 37.1 million in 2015, and will increase by 106 percent more to 76.5 million in 2050.[95]
- Youth employment is a critical factor. The CIA World Factbook reports that the median age is 19.7 years, and that 40.25 percent of the population is 14 years of age or younger, and 18.98 percent is 15-24 years of age. [96]
- Urbanization has radically changed the character of the population and distribution of tribes, ethnic groups, and sects. It is now 69.5 percent, and growing at 3.01 percent per year. [97]

The crash in oil export revenues has hurt Iraq more than many other exporting states. It is making progress against ISIS, but is deeply divided between Arab and Kurd and Sunni and Shi'ite, and faces serous internal pressure from Iran.

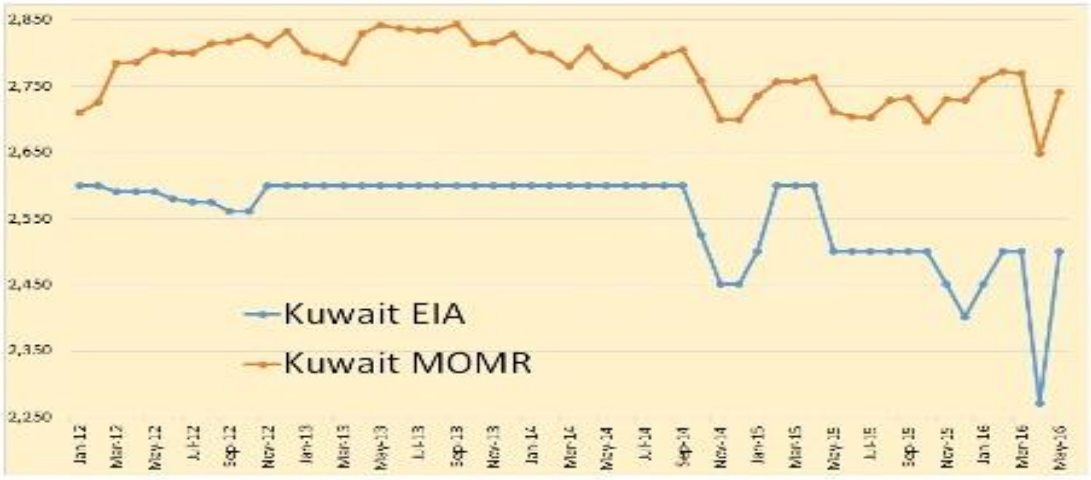
It is effectively bankrupt, cannot afford to support both war and its inflated state sector, and has few funds for development. As a result, it has had to seek major international financing. It also has a grossly corrupt government, poor ability to formulate and execute a budget, and deep ethnic, sectarian, and regional differences over development and how money should be allocated that will remain even if ISIS is fully defeated.

Kuwait

Kuwait has the wealth to ride out the decline in export revenues, but has long suffered from overdependence on a rentier economy, gross overemployment in the state sector and dependence on foreign labor. It does face increasing security problems and tensions with Iran, although these are scarcely critical at present.

Kuwait's recent crude oil production is shown in **Figure Thirty**, using graphs developed by Ron Patterson for *Oil Price*.[98] If the estimates in **Figure Nine** are used, its net export revenue dropped from $80 billion in 2014 to $40 billion in 2015, and was on a path that would drop to $26.4 billion in 2016. Using **Figure Ten**, its oil export revenues per capita dropped from $25,297 in 2014 to $12,133 in 2015, and were on a path that would drop to $7,98 in 2016.

Figure Thirty: Kuwaiti Oil Production: January 2012-March 2106



Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***.

Kuwait does, however, suffer from a legislature than often paralyzes progress as a result of conflicting political interests. As the CIA reports,[99]

> The Al-Sabah family returned to power in 1991 and established one of the most independent legislatures in the Arab World. The country witnessed the historic election in 2009 of four women to its National Assembly. Amid the 2010-11 uprisings and protests across the Arab world, stateless Arabs, known as bidoon, staged small protests in February and March 2011 demanding citizenship, jobs, and other benefits available to Kuwaiti nationals. Youth activist groups - supported by opposition legislators - rallied repeatedly in 2011 for the prime minister's dismissal amid allegations of widespread government corruption, ultimately prompting the prime minister to resign in late 2011.
>
> Demonstrations, following a short lull, renewed in late 2012 in response to an Amiri decree amending the electoral law to reduce the number of votes per person from four to one. The opposition, led by a coalition of Sunni Islamists, tribalists, some liberals, and myriad youth groups, largely boycotted legislative elections in 2012 and 2013, which ushered in a legislature more amenable to the government's agenda. Since coming to power in 2006, the Amir has dissolved the National Assembly on five occasions (the Constitutional Court annulled the Assembly in June 2012 and again in June 2013) and shuffled the cabinet over a dozen times, usually citing political stagnation and gridlock between the legislature and the government.

The EIA reports that Kuwait has some 102 billion barrels of proven oil reserves. This compares with 298 billion for Venezuela, 266 billion for Saudi Arabia, 173 billion for Canada, 158 billion for Iran, 98 billion for the UAE, 80 billion for Russia, and 37 billion for Nigeria.[100] It summarized Kuwait's energy status as follows in October 2014,[101]

> Kuwait's economy is heavily dependent on petroleum export revenues, which account for nearly 60% its gross domestic product and about 94% of export revenues, according to OPEC and IMF data. EIA estimates these revenues were $92 billion in 2013. Kuwait attempts to remain one of the world's top oil producers as the country targets crude oil and condensate production of 4 million barrels per day (bbl/d) by 2020. However, Kuwait has struggled to boost oil and natural gas production for more than a decade because of upstream project delays and insufficient foreign investment.
>
> To diversify its oil-heavy economy, Kuwait has increased efforts to explore and develop its nonassociated natural gas fields, which currently make up a small portion of its natural gas production. Greater natural gas production would increase Kuwait's feedstock for its struggling electricity sector, which frequently cannot meet demand in peak times. Kuwait has increased the share of natural gas in its primary energy consumption from 34% in 2009 to 42% in 2012, while the remaining share, consisting solely of petroleum and other liquids, has declined.
>
> Energy policy is set by the Supreme Petroleum Council, overseen by the Ministry of Petroleum and is executed by the Kuwait Petroleum Corporation and its various subsidiaries. Kuwait also has an active sovereign-wealth fund, the Kuwait Investment Authority, which oversees all state expenditures and international investments.
>
> Despite Kuwait's constitutional ban on foreign ownership of its resources and revenues, the government has taken measures to increase foreign participation in the oil and natural gas sectors through technical and service contracts. Kuwait is a constitutional emirate led by the Emir of Kuwait, a hereditary seat led by the Al-Sabah family. The Prime Minister and his deputy and the council of ministers are approved by the Emir. Kuwait's frequent delays of major energy projects are the result of political disagreements between the Emir and the parliament over contract management, especially those contracts involving foreign companies and project logistics.

> … Because of the constitutional ban on foreign ownership of Kuwait's natural resources, development of domestic fields has stalled. There have been several discoveries of lighter crudes in the center of the country, but progress has not moved toward production. In 1984, a discovery was made in South Maqwa in the Greater Burgan field, revealing light crude of API 35° to 40° grade, and after drilling began at Kra'a al-Mara in 1990, significant volumes of 49° API crude oil grade were found. Another discovery was made in 2006 in the Sabriya and Umm Niqa areas in the northern region of the country, which added an estimated 20 to 25 billion barrels of reserves, although mostly of a heavier, sour quality and more technically challenging to develop.
>
> In a plan to circumvent the constitutional ban, international oil companies (IOCs) were allowed involvement through Enhanced Technical Service Agreements (ETSA) and through agreements to assist Kuwait in enhanced oil recovery (EOR) of its mature fields. Royal Dutch Shell, in February 2010, signed an ETSA to develop the Jurassic natural gas field in northern Kuwait, although progress to boost production has been slow. KOC is also having trouble developing the Lower Fars reservoir of the northern Ratqa field. KOC initially negotiated with ExxonMobil, Shell, and Total to develop this field, but KOC subsequently abandoned plans for a joint project development. KOC also signed a memorandum of understanding (MOU) in July 2010 with Japan Oil, Gas, and Metals National Corporation (JOGMEC) to assess the feasibility of carbon dioxide injection as a potential EOR technique.
>
> KPC announced a $75-billion capital spending plan over five years (2015-20) for the upstream sector ($40 billion) and the downstream ($35 billion) sector, according to MEES. In efforts to continue economic reform and funding for large infrastructure projects, this plan encompasses some of the delayed projects that were part of the five-year spending plan expiring at the end of 2014. Kuwait intends to upgrade its production and export infrastructure, expand exploration, and build downstream facilities, both domestically and abroad. This effort is expected to boost total oil production capacity to 4 million bbl/d by 2020, and it is projected that the production capacity would be maintained through 2030. To achieve its 2020 target, IOC investment and participation will be necessary.

There is no current World Bank Overview for Kuwait. The IMF Article IV report for December 2015 stated that,[102]

> The decline in oil prices has adversely affected Kuwait's fiscal and current account balances and slowed growth in 2014–15. With high financial buffers and substantial borrowing space, the government can smooth the fiscal adjustment in response to the decline in oil prices, and continue to support growth through sizable investment spending. Real non-oil GDP growth is projected to slow in 2015 and 2016, and pick up to 4 percent in the medium term, supported by government investment in infrastructure and private investment. Average inflation is projected to increase to 3.4 percent in 2015 and will remain broadly stable at that level over the medium term, given limited global inflation.
>
> The fiscal and external positions are projected to deteriorate further in 2015 and 2016, and improve somewhat over the medium term as oil prices and production recover partially. The oil price decline has increased the urgency of diversifying the economy and creating high productivity jobs is a priority to reduce Kuwait's dual dependency on oil revenue and expatriate workers. The government is focusing on reforms to contain current expenditure, prioritize capital expenditure and pursue with policies aimed towards increasing the role of private sector investment and job creation for nationals.
>
> Context. With persistently lower oil revenues over the medium term, Kuwait is facing a more challenging policy environment as it needs to adjust spending while continuing to diversify the economy to create jobs for the growing young national population. Large financial buffers and space to borrow provide cushion to smooth the adjustment, which the authorities have been able to initiate by implementing diesel subsidy reforms. The 2015/16 budget appropriately curtails current expenditure growth while increasing capital spending on infrastructure. The new five-year Development Plan (DP) (2015–19) provides direction for prioritizing capital expenditure, encouraging private investment and creating jobs for nationals in the private sector.

Outlook and risks. Real non-oil GDP growth is projected to slow in 2015 and 2016on account of slower consumption and private investment activity, and pick up to 3.5-4 percent in the medium term, supported by government investment in infrastructure and private investment. The main downside risks to the outlook arise from lower global oil demand and prices, slow implementation of the DP, and regional geopolitical uncertainty.

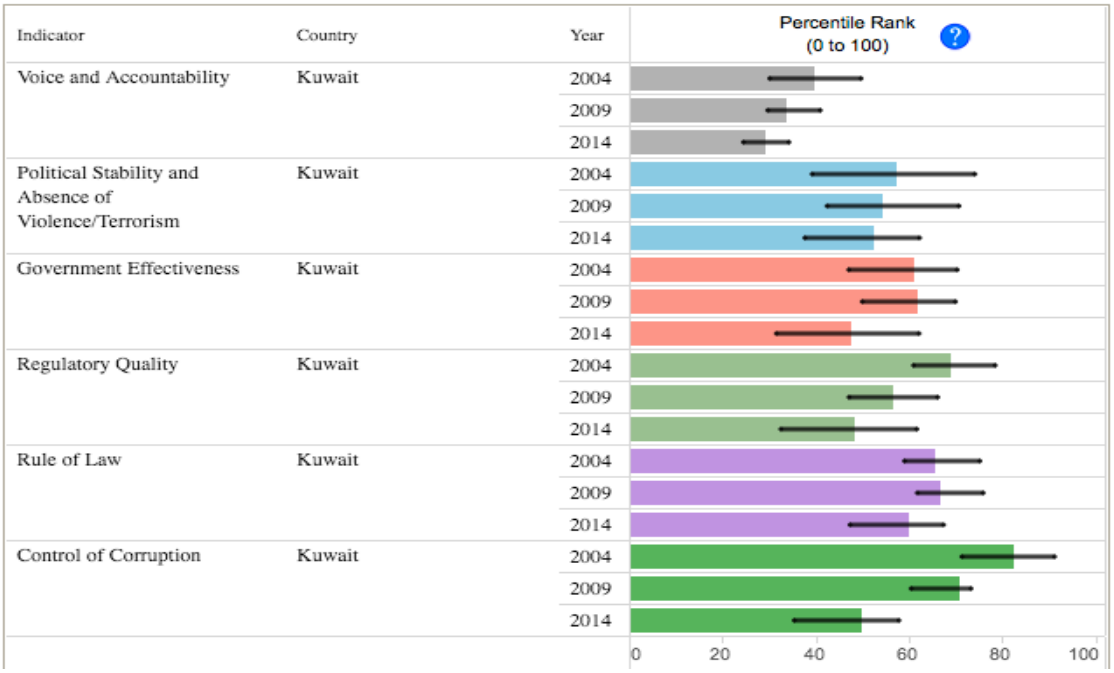
Macroeconomic policies. The fiscal and external positions are projected to deteriorate further in 2015 and 2016, and improve slightly over the medium term as oil prices and production recover partially. The government needs to implement gradual but sustained adjustment of current spending, and improve the efficiency of capital expenditure to strengthen non-oil growth and ensure intergenerational equity. Monetary policy settings and the peg to a basket of currencies remain appropriate for the Kuwaiti economy.

Financial sector. Banks are in a strong position to weather the challenges of lower oil prices and slower growth. The Central Bank of Kuwait (CBK) has continued to strengthen regulation and supervision of the banking system to safeguard financial stability. Enhancing the macroprudential policy framework would underpin systemic stability as economic activity moderates.

Economic diversification. Reforms are needed for improving the business environment, governance indicators, and education and skills of nationals, and for creating the appropriate incentive frameworks to increase employment of nationals in the private sector.

Kuwait's overall level of governance is good, in spite of its service politics, and is reflected in the World Bank estimate shown in **Figure Thirty-One**.[103]

Figure Thirty-One: World Bank Estimate of Governance in Kuwait



Kuwait ranks as follows in other areas affecting its overall stability and security:

- Transparency International ranks it as the 55th most corrupt of 168 countries in its 2015 ranking of its perceptions index of corruption.[104]
- The Fragile States Index ranks it in the Stable category, with a ranking of 126 in a world where the most stable country is ranked at 177.[105]

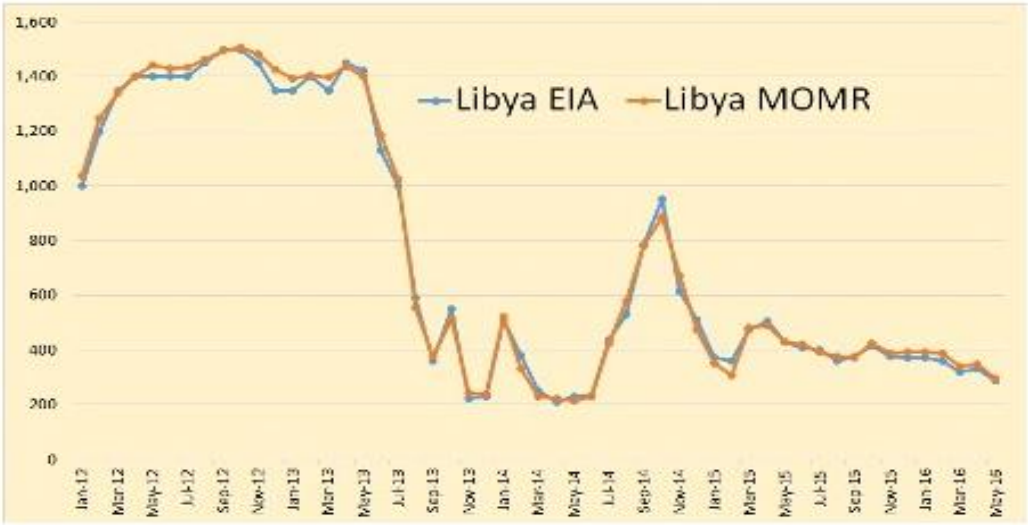
- It has had mixed review of its ability to create a climate that supports business development or outside investment. The World Bank ranked it 101st in overall ease of doing business out of 189 countries in 2016.[106] The World economic Forum ranked it 37th out of 144 countries in global competitiveness in 2015/2016.
- Population pressure is a factor, largely because of foreign workers. The U.S. Census Bureau estimates that its population increased by 19.3 times from 145 thousand in 1950 to 2.8 million in 2015, and will increase by 39 percent more to 3.9 million in 2050.[107]
- Youth employment is a critical factor. The CIA World Factbook reports that the median age is 29 years, and that 25.32 percent of the population is 14 years of age or younger, and 15.21 percent is 15-24 years of age. [108]
- Urbanization has radically changed the character of the population and distribution of tribes, ethnic groups, and sects. It is now 98.3 percent, and growing at 3.63 percent per year. [109]

Libya

Libya has suffered form a long period of erratic government, military adventures, an failed development policies under Qaddafi. His fall has, however, made things worse. Libya is caught up in a civil war, tribal tensions and factionalism, and an attempt by ISIS to take control of at least part of the country. It now lacks an effective central government, any ability to manage and develop its economy, and the ability to sustain its oil and gas exports at anything like the level it needs.

Libya's recent crude oil production is shown in **Figure Thirty-Two**, using graphs developed by Ron Patterson for *Oil Price*.[110] If the estimates in **Figure Nine** are used, its net export revenue dropped from $9 billion in 2014 to $4 billion in 2015, and was on a path that would drop to $2.4 billion in 2016. Using **Figure Ten**, its oil export revenues per capita dropped from $1,253 in 2014 to $517 in 2015, and were on a path that would drop to $202 in 2016.

Figure Thirty-Two: Libyan Oil Production: January 2012-March 2106



Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***.

The CIA described Libya's political, security, and economic problems as follows in July 2015,

> The Italians supplanted the Ottoman Turks in the area around Tripoli in 1911 and did not relinquish their hold until 1943 when defeated in World War II. Libya then passed to UN administration and achieved independence in 1951. Following a 1969 military coup, Col. Muammar al-Qadhafi assumed leadership and began to espouse his political system at home, which was a combination of socialism and Islam. During the 1970s, Qadhafi used oil revenues to promote his ideology outside Libya, supporting subversive and terrorist activities that included the downing of two airliners - one over Scotland, another in Northern Africa - and a discotheque bombing in Berlin. UN sanctions in 1992 isolated Qadhafi politically and economically following the attacks; sanctions were lifted in 2003 following Libyan acceptance of responsibility for the bombings and agreement to claimant compensation. Qadhafi also agreed to end Libya's program to develop weapons of mass destruction, and he made significant strides in normalizing relations with Western nations.
>
> Unrest that began in several Middle Eastern and North African countries in late 2010 erupted in Libyan cities in early 2011. Qadhafi's brutal crackdown on protesters spawned a civil war that triggered UN authorization of air and naval intervention by the international community. After months of seesaw fighting between government and opposition forces, the Qadhafi regime was toppled in mid-2011 and replaced by a transitional government. Libya in 2012 formed a new parliament and elected a new prime minister. The country subsequently elected the House of Representatives in 2014, but remnants of the outgoing legislature refused to leave office and created a rival, Islamist-led government, the General National Congress. In October 2015, UN envoy to Libya, Bernardino LEON, proposed a power-sharing arrangement - known as the Libyan Political Agreement, which was signed by the rival governments two months later and subsequently endorsed by the UN. The agreement called for the formation of an interim Government of National Accord or GNA and the holding of general elections within two years.
>
> Libya's economy, almost entirely dependent on oil and gas exports, struggled during 2015 as the country plunged into civil war and world oil prices dropped to seven-year lows. In early 2015, armed conflict between rival forces for control of the country's largest oil terminals caused a decline in Libyan crude oil production, which never recovered to more than one-third of the average pre-Revolution highs of 1.6 million barrels per day. The Central Bank of Libya continued to pay government salaries to a majority of the Libyan workforce and to fund subsidies for fuel and food, resulting in an estimated budget deficit about 49% of GDP.
>
> Libya's economic transition away from Qadhafi's notionally socialist model has completely stalled as political chaos persists and security continues to deteriorate. Libya's leaders have hindered economic development by failing to use its financial resources to invest in national infrastructure. The country suffers from widespread power outages in its largest cities, caused by shortages of fuel for power generation. Living conditions, including access to clean drinking water, medical services, and safe housing, have all declined as the civil war has caused more people to become internally displaced, further straining local resources.
>
> Extremists affiliated with the Islamic State of Iraq and the Levant (ISIL) attacked Libyan oilfields in the first half of 2015; ISIL has a presence in many cities across Libya including near oil infrastructure, threatening future government revenues from oil and gas.
>
> …Prior to the onset of hostilities in 2011, Libya had been producing an estimated 1.65 million b/d of mostly high-quality light, sweet crude oil. Libya's production had increased for most of the previous decade, from 1.4 million b/d in 2000 to 1.74 million b/d in 2008, but production remained well below peak levels of more than 3 million b/d achieved in the late 1960s. Oil production in Libya from the 1970s to the 2000s had been affected by the partial nationalization of the industry and later by sanctions imposed by the United States and the UN that impeded the investment and equipment purchases needed to sustain oil production at higher levels.
>
> Libya is currently going through another crisis that has crippled its oil sector. In mid-2013, a blockade at several major eastern ports led by Ibrahim Jidran, a branch leader of the Petroleum

> Facilities Guard (PFG), coupled with protests and closures at oil fields and pipelines in the west, caused the shut-in of most of Libya's oil production. Oil production recovered somewhat during the second half of 2014 after deals were made to reopen some major ports, but by late 2014 major disruptions restarted and output has not recovered. From January to October 2015, Libya's crude oil production averaged slightly more than 400,000 barrels per day (b/d), significantly below the 1.65 million b/d that Libya produced in 2010
>
> The situation in Libya has become even more complicated as vital oil infrastructure has been attacked or caught in cross fire, leading to severe damage that would take months, or maybe years, to repair. During the 2011 civil war, oil infrastructure, for the most part, was not damaged or targeted. However, in December 2014, the eastern Es Sidra export terminal, Libya's largest export terminal, caught on fire after it was hit by a rocket. Many of its storage tanks were severely damaged, significantly lowering its export capacity. In addition, groups claiming to be affiliated with the Islamic State of Iraq and the Levant (ISIL) have severely damaged pipelines and vital equipment at oil fields in the eastern Sirte region that were operated by the Waha Oil Company, which includes companies from the United States, and an oil field operated by Total.

Libya was badly over-dependent on petroleum export revenues before the fall of Qadhafi and a new wave of export reductions caused by its civil war. The EIA reports that Libya's economy was heavily dependent on hydrocarbon production.[111]

> ,According to the International Monetary Fund (IMF), oil and natural gas accounted for nearly 96% of total government revenue and 98% of export revenue in 2012. Roughly 79% of Libya's export revenue came from crude oil exports, which brought in about $4 billion per month (or about $48 billion total for the year) of net revenues in 2012.[2] The U.S. Energy Information Administration's (EIA) OPEC Revenues Fact Sheet shows that Libya's net oil export revenues totaled $9 billion in 2014 as a result of the drop in oil export volumes. During the 2011 civil war, the drop in oil and natural gas production led to an economic collapse, and real gross domestic product (GDP) declined by 62% for the year. Libya's GDP growth rebounded in 2012, reflecting the relative stability of oil production, but it contracted by almost 14% in 2013 and by 24% in 2014, reflecting the ongoing production disruptions."

There is no current article IV report for Libya. The World Bank described Libya as follows in March 2016,[112]

> The cost of the political conflict has taken a severe toll on the Libyan economy, which has remained in recession for the third consecutive year in 2015. Political strife, weak security conditions, and blockaded oil infrastructures continue to constrain the supply side of the economy. Production of crude oil fell to around 0.4 million barrels per day (bpd) or the fourth of potential. The non-hydrocarbon output remained weak due to disruptions in the supply chains of both domestic and foreign inputs, as well as lack of financing. In this context, GDP is estimated to have declined by 10 percent and per capita income has fallen to less than US$ 4,500 compared to almost US$ 13,000 in 2012. Inflation strongly accelerated last year driven by high food prices. Lack of funding to finance imports, especially subsidized food, generated chronic shortages in basic commodities and expansion of black markets activities. This situation was exacerbated by households attempting to stockpile food. Inflation averaged 9.2 percent in 2015, mainly driven by a 13.7 percent rise in food prices. Prices of flour and bread quintupled.
>
> Protracted political standoff, coupled with lower international oil prices and generous subsidies have weakened public finances and external position. Budget revenues from the hydrocarbon sector have fallen to only a fifth of their pre-revolution levels, while spending has remained high. The share of the public wage bill in GDP is astronomic (around 60 percent), mainly reflecting a plethoric public sector. Meanwhile, investments have been insufficient for sustaining adequate public provision for health, education, electricity, water and sanitation services. However, savings have been realized on subsidies thanks to tougher control of the supply chains of subsidized products and lower import prices. Overall, the budget deficit rose from 43 percent of GDP in 2014 to more than 75 percent of GDP in 2015. Being highly dependent on hydrocarbon exports and food imports, Libya's balance of payments suffered in 2015. Representing 97 percent of total

exports, oil receipts are estimated to have declined to less than 15 percent of their 2012 level. Meanwhile, consumption driven imports remained high. As a result, the current account swung from balance in 2013 to a deficit estimated at around 76 percent of GDP in 2015. To finance these deficits, net foreign reserves are rapidly being depleted.

Improvement of the economic outlook depends crucially on the endorsement by the House of Representatives of the Government of National Accord (GNA) formed under the auspices of the UN. The economic and social outlook assumes that the GNA is eventually empowered to restore security and launch a comprehensive program to rebuild the economic and social infrastructures. In this context, GDP is projected to increase strongly in 2016. However, the twin deficits will prevail as oil revenues will not be sufficient to cover the high budget expenditures and consumption-driven imports. Over the medium term, as oil production returns to full capacity, growth is projected to rebound at two digit growth rates in 2017 and 2018, before stabilizing thereafter between 5 and 6 percent.

Libya Public Finance

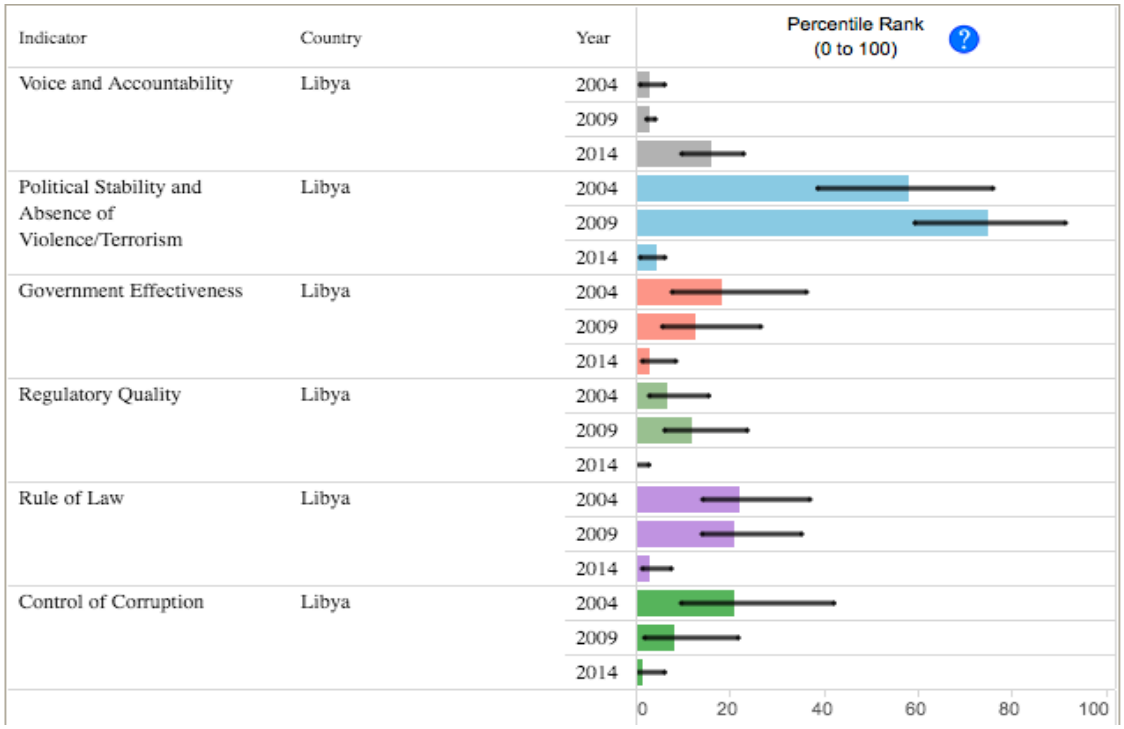
Figure 1 below provides a snapshot of 2012-2015 Libyan national budget. During the 2010-2013 period, the executed budget did not typically exceed the overall amount authorized by parliament, but its composition substantially differed from that of the approved budget. The overall rate of budget execution was around 80 percent in 2010 and 2012 and was about 93 percent in 2013. There has been no approved (official) budget over the past two years (2014-2015). In FY2012, development budget spending accounted for slightly more than 52% of all government spending, with wages and salaries comprising 24%. However, over the past several years, development spending has virtually collapsed, comprising an estimated 15% of total government spending in FY2015, down from a budgeted 52% of total budget spending in FY2012.

Although several budgets have been presented by the Tripoli Administration and the HOR **(**Tobruk, Eastern Administration), the Central Bank of Libya (CBL) did not acknowledge any budget as being the legal, legitimate Libyan budget for FY2015. In effect, neither the budget submitted by rival Parliaments in Tripoli and in the Eastern city of Tobruk have been recognized. The Central Bank of Libya (CBL) has only disbursed funds regarding wages and salaries (Chapter 1); student scholarships abroad; oil/gas sector development; electricity (chapter 3); and, essential subsides items (Chapter 4).

Immediate challenges are to manage fiscal spending pressures while restoring and improving basic public services. A longer term goal is to help develop the framework and institutions for a more diversified market-based economy, broadening the economic base beyond the oil and gas sector. Although the Bank's post-conflict engagement was initially expected to accompany only Libya's short term economic recovery efforts, the transition program will lay the foundation for longer term goals. This includes creating a more vibrant and competitive economy with a level playing field for the private sector to create sustainable jobs and wealth. It also includes transforming the management of oil revenues to ensure they are used in the best interests of the country and to the benefit of all citizens equally. This will also ensure that citizens have a role in defining and voicing their communities' best interests.

A World Bank assessment of its governance is shown in **Figure Thirty-Three,** but is almost irrelevant. Libya must end its civil war to have a real government, make economic progress, and make the crash in oil revenues a key issue. [113]

Figure Thirty-Three: World Bank Estimate of Governance in Libya



Libya ranked as follows in other areas affecting its overall stability and security:

- Transparency International ranks it as the 161st most corrupt of 168 countries in its 2015 ranking of its perceptions index of corruption.[114]
- The Fragile States Index ranks it in the Alert category, with a ranking of 25 in a world where the most stable country is ranked at 177.[115]
- It has not created a climate that supports business development or outside investment. The World Bank ranks it 188th in overall ease of doing business out of 189 countries.[116] The World Economic Forum did not rank it in global competitiveness in 2015/2016. [117].
- Population pressure is a key factor. The U.S. Census Bureau estimates that its population increased by 6.6 times from 961 thousand in 1950 to 6.4 million in 2015, and will increase by 40 percent more to 8.97 million in 2050.[118]
- Youth employment is also a factor. The CIA World Factbook reports that the median age is 28 years, and that 26.52 percent of the population is 14 years of age or younger, and 17.77 percent is 15-24 years of age. [119]
- Urbanization has radically changed the character of the population and distribution of tribes, ethnic groups, and sects. It is now 78.6 percent, and growing at 1.13 percent per year. [120]

Like Venezuela, Libya ranks as a "failed state." It is making some progress in defeating ISIS enclaves on its territory, but its civil war and divided government greatly compound decades of previous misgovernment and failure to develop the economy, along with population growth.

Nigeria

Nigeria has made progress in many areas since the end of military rule in 1998, but has been hit hard by the drop in oil expert revenues, the threat Boko Haram poses in its north

\and problems in its Southern Delta region that have cut its petroleum exports. These are critical to Nigeria because they have recently provided some 70% of Otis government revenues.

A rising threat by militants in its Niger delta region in the south have become more of an economic threat that than larger Boko Haram terrorist movement in its north. They cut Nigeria's production by as much as 800,000 barrels a day by May 2016, and from an average of 2.2 million bpd to 1.4 million bpd, and forced Chevron to shut down on of its major offshore facilities. Angola was then producing 1.8 million bpd, while Nigeria was producing 1.69 million bpd. [121]

The attacks occurred after Nigeria's anti-corruption agency issued an arrest warrant in January 2016 for the Niger delta militant leader Government Ekpemupolo—known better as Tompolo— for money laundering some 46 billion naira ($231 million).[122] It also came after reports that lower oil revenues would lead the government to halt the amnesty, subsidy and aid program it had developed a decade earlier, when a different group called, the Movement for the Emancipation of the Niger Delta blew up pipelines in protect against the fact the government kept most revenue ion the north and Nigeria's leaders spent much of it upon themselves. [123]

The main militant group, the Niger Delta Avengers, stated on their web site that, [124]

> We are not asking for much, but to free the people of the Niger Delta from environmental pollution, slavery and oppression," the Avengers wrote on their website, explaining their attacks. "We want a country that will turn the creeks of the Niger Delta to a tourism heaven, a country that will achieve its full potentials, a country that will make health care system accessible by everyone. With Niger Delta still under the country Nigeria we can't make it possible."

They also stated, however, that that their goal was to "to cripple the Nigerian economy."

The Nigerian government attempted to react quickly, but the Niger Delta Avengers provide very effective in attacking targets at sea and in the creeks near key pipelines, and other parts of Nigeria's pipeline system. The militants continued to attack Nigeria's petroleum infrastructure, and Shell, ENI and Chevron were forced to declare force majeure on deliveries on Bonny Light, Brass River and Forcados crude oil. [125] The militants also disrupted fuel deliveries inside Nigeria, crippling much of the rest of its economy.

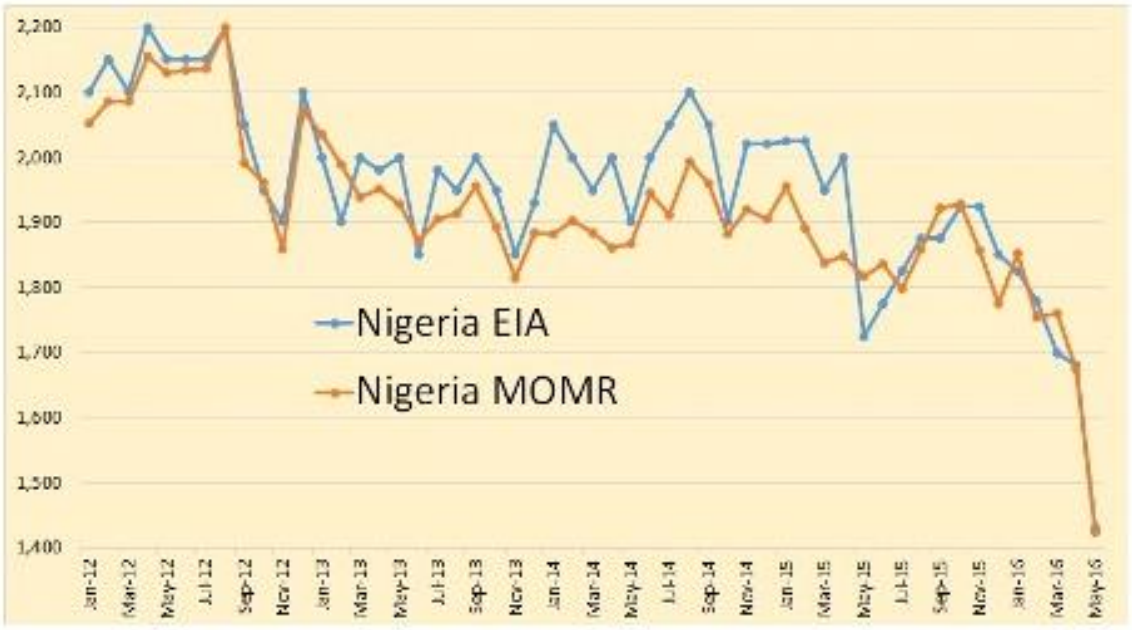
Reports in July 2016 indicated that Nigeria's output was down by 25% in the second quarter of 2016. They also indicated that the problems in the Delta had grown so serious that President Muhammadu Buhari had had to move troops committed to destroying Boko Haram to the south in an effort to restore security and oil export production.[126]

At the same time, reports indicated that Nigeria faced a third threat in the middle of the country because of fighting "between farmers and nomadic Fulani herdsmen looking for grazing pastures. Hundreds have been killed in battles as herdsmen roam into new territory to look for vegetation for their cattle. Officials have blamed climate change and the nation's rapidly growing population for the scarcity of pastureland."[127]

Nigeria's recent crude oil production is shown in **Figure Thirty-Four**, using graphs developed by Ron Patterson for *Oil Price.*[128] If the estimates in **Figure Nine** are used, its net export revenue dropped from $68 billion in 2014 to $39 billion in 2015, and was on a

path that would drop to $24 billion in 2016. Using **Figure Ten**, its oil export revenues per capita dropped from $492 in 2014 to $240 in 2015, and were on a path that would drop to $149 in 2016.

Figure Thirty-Four: Nigerian Oil Production: January 2012-March 2106



Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***.

Nigeria suffered from the "OPEC disease" long before the emergence of the Niger Delta Avengers. The EIA reported that Nigeria had some 37 billion barrels of proven oil reserves on May 23, 2016. It also reported that,[129]

> Nigeria is the largest oil producer in Africa, holds the largest natural gas reserves on the continent, and was the world's fourth-largest exporter of liquefied natural gas (LNG) in 2015. Nigeria became a member of the Organization of the Petroleum Exporting Countries (OPEC) in 1971, more than a decade after oil production began in the oil-rich Bayelsa State in the 1950s. Although Nigeria is the leading oil producer in Africa, production is affected by sporadic supply disruptions, which have resulted in unplanned outages of up to 500,000 barrels per day (b/d).
>
> Nigeria's oil and natural gas industry is primarily located in the southern Niger Delta area, where it has been a source of conflict. Local groups seeking a share of the wealth often attack the oil infrastructure, forcing companies to declare *force majeure* on oil shipments (a legal clause that allows a party to not satisfy contractual agreements because of circumstances beyond their control). At the same time, oil theft leads to pipeline damage that is often severe, causing loss of production, pollution, and forcing companies to shut in production.
>
> Aging infrastructure and poor maintenance have also resulted in oil spills. Natural gas flaring (the burning of associated natural gas that is produced with oil) has contributed to environmental pollution. Protests from local groups over environmental damages from oil spills and natural gas flaring have exacerbated tensions between some local communities and international oil companies (IOCs). The industry has been blamed for pollution that has damaged air, soil, and water, leading to losses in arable land and decreases in fish stocks.

> Nigeria's oil and natural gas resources are the mainstay of the country's economy. According to the International Monetary Fund (IMF), oil and natural gas export revenue, which was almost $87 billion in 2014, accounted for 58% of Nigeria's total government revenue in that year. Oil and natural gas revenue is the country's main source of foreign exchange, making up more than 95% of Nigeria's total exports to the world in 2014.
>
> Because Nigeria heavily depends on oil revenue, its economy is noticeably affected by crude oil price changes. The IMF projects that Nigeria's oil and natural gas exports earned $52 billion in 2015, $35 billion less than in 2014, which is mostly attributed to the fall in oil prices.[4] Nigeria's fiscal buffers—the Excess Crude Account and the Sovereign Wealth Fund—include savings generated when oil revenues exceed budgeted revenues. However, those funds have declined from $11 billion at the end of 2012 to $2 billion at the end of 2014. Nigeria also held $34.25 billion in gross international reserves at the end of 2014.

The EIA also warned that Nigeria had had problems with the militants in the Niger delta in the past, and showed how critical it could be for Nigeria to reach a stable agreement with them: [130]

> Nigeria produces mostly light, sweet (low sulfur) crude oil. Most of this oil is exported to global markets. Crude oil production in Nigeria peaked at 2.44 million b/d in 2005, but it began to decline significantly soon after as violence from militant groups surged, forcing many companies to withdraw staff and shut-in production. The lack of transparency on oil revenues, tensions over revenue distribution, environmental damages from oil spills, and local ethnic and religious tensions created a fragile situation in the oil-rich Niger Delta. By 2009, crude oil production plummeted by more than 25% to average 1.8 million b/d (Figure 3).
>
> In late 2009, amnesty was declared, and the militants came to an agreement with the Nigerian government whereby they handed over weapons in exchange for cash payments and training opportunities. The rise in oil production after 2009 was partly because of fewer attacks on oil facilities following the implementation of the Niger Delta Amnesty Program, allowing companies to repair some damaged infrastructure and bring supplies back online.

The World Bank issued the following summary of Nigeria's status in September 2015, before these militants had a critical impact on its oil production,[131]

> With a population of about 173 million people, Nigeria is the largest country in Africa and accounts for 47% of West Africa's population. It is also the biggest oil exporter in Africa, with the largest natural gas reserves in the continent. The challenging process of implementing reforms was revitalized through a Roadmap developed in 2010, which clearly outlines the government's strategy and actions for implementing comprehensive power sector reforms to expand supply, open the door to private investment and address some of the chronic sector issues hampering improvement of service delivery. To date, over 10 generation and distribution companies were successfully privatized in 2014 while the transmission company was placed under a management contract awarded to a reputable international company selected on a competitive basis.
>
> **Economic Outlook**
>
> Real gross domestic product (GDP) is estimated to have grown by 6.1% owing to continued strong performance mainly in services, but also industry (apart from oil mining) and agriculture. The oil sector was in decline, albeit at a slower rate than in the previous year. Oil and gas GDP was estimated to have declined by 1.3%, relative to a decline of 13.1% in 2013.
>
> The sharp decline in oil prices since the third quarter of 2014 has posed major challenges to the country's external balance and public finances. Oil accounts for close to 90% of exports and roughly 75% of the country's consolidated budgetary revenues. The GDP numbers indicate that telecommunications, real estate, manufacturing, construction, entertainment increased their shares of GDP.

Nevertheless, much lower oil prices will continue to pose strong challenges for public finance at all levels of government during the year, and will also represent a major constraint on the ability of the new federal government to launch some of its ambitious programs.

Political context

The fifth consecutive national elections held in March and April 2015 and won by an opposition party were considered as fair and relatively peaceful by national and international Election Monitors as compared to the post-election killings and destructions of 2011.The successful general elections in 2015 is largely credited to Independent National Electoral Commission (INEC) and the leadership of the Presidential candidates. The New Government is focusing on anti-corruption, Jobs and unemployment, the economy and Security.

Development Challenges

In the North East, Boko Haram remains a threat, and millions of displaced persons require assistance. There has been major destruction of infrastructure along with the loss of lives and impoverishment in this region. The new government will have a difficult time in the short term financing the major programs that it wants to roll out as well as reconstructing the North East devastated by the activities of insurgents

Accelerating the creation of productive jobs through private sector growth and improvements in education (skills) remains the major medium-term challenge. So far, the pace of job creation has been inadequate, leading to increasing frustration among underemployed Nigerian youth.

The CIA World Factbook ignored the militants in its World Factbook summary as of July 2016 that,[132]

In 1999, a new constitution was adopted and a peaceful transition to civilian government was completed. The government continues to face the daunting task of institutionalizing democracy and reforming a petroleum-based economy, whose revenues have been squandered through corruption and mismanagement. In addition, Nigeria continues to experience longstanding ethnic and religious tensions. Although both the 2003 and 2007 presidential elections were marred by significant irregularities and violence, Nigeria is currently experiencing its longest period of civilian rule since independence. The general elections of April 2007 marked the first civilian-to-civilian transfer of power in the country's history and the elections of 2011 were generally regarded as credible.

The 2015 election is considered the most well run in Nigeria since the return to civilian rule, with the umbrella opposition party, the All Progressives Congress, defeating the long-ruling Peoples Democratic Party that had governed since 1999… Because of lower oil prices, GDP growth in 2015 fell to around 3%, and government revenues declined, while the nonoil sector also contracted due to economic policy uncertainty.

President Buhari, elected in March 2015, has established a cabinet of economic ministers that includes several technocrats, and he has announced plans to increase transparency, diversify the economy away from oil, and improve fiscal management. The government is working to develop stronger public-private partnerships for roads, agriculture, and power. The medium-term outlook for Nigeria is positive, assuming oil output stabilizes and oil prices recover

An IMF report in April 2016 was more critical, but again ignored the militants,[133]

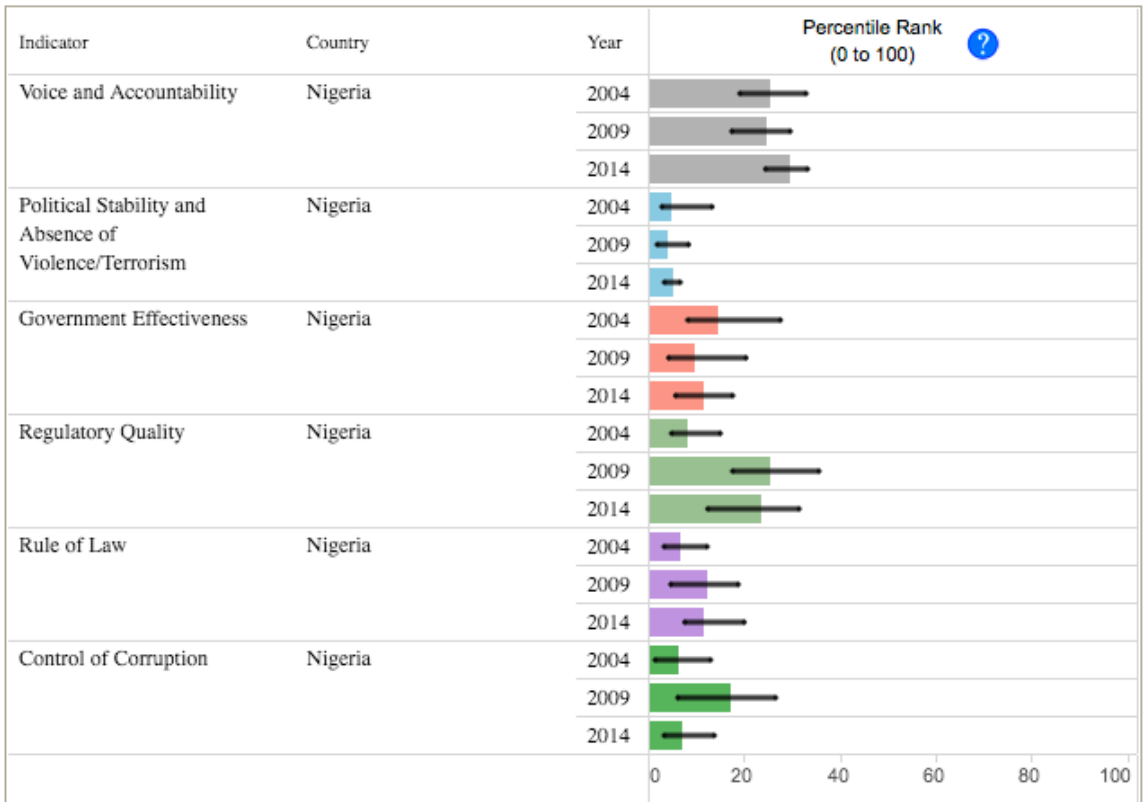
The Nigerian economy is facing substantial challenges. While the non-oil sector accounts for90 percent of GDP, the oil sector plays a central role in the economy. Lower oil prices have significantly affected the fiscal and external accounts, decimating government revenues to just 7.8 percent of GDP and resulting in the doubling of the general government deficit to about 3.7 percent of GDP in 2015. Exports dropped about 40 percent in 2015, pushing the current account from a surplus of 0.2 percent of GDP to a deficit projected at 2.4 percent of GDP. With foreign portfolio inflows slowing significantly, reserves fell to $28.3 billion at end-2015.

Exchange restrictions introduced by the Central Bank of Nigeria (CBN) to protect reserves have

> impacted significantly segments of the private sector that depend on an adequate supply of foreign currencies. Coupled with fuel shortages in the first half of the year and lower investor confidence, growth slowed sharply from 6.3 percent in 2014 to an estimated 2.7 percent in 2015, weakening corporate balance sheets, lowering the resilience of the banking system, and likely reversing progress in reducing unemployment and poverty. Inflation increased to 9.6 percent in January (up from 7.9 percent in December, 2014), above the CBN's medium-term target range of 6–9 percent.
>
> The recovery in economic activity is likely to be modest over the medium term, but with significant downside risks. Growth in 2016 is expected to decline further to 2.3 percent, with non-oil sector growth projected to slow from 3.6 percent in 2015 to 3.1 percent in 2016 before recovering to 3.5 percent in 2017, based on the results of policies under implementation—particularly in the oil sector—as well as an improvement in the terms of trade. The general government deficit is projected to widen somewhat in 2016 before improving in 2017, while the external current account deficit is likely to worsen further. Key risks to the outlook include lower oil prices, shortfalls in non-oil revenues, a further deterioration in finances of state and local Governments, deepening disruptions in private sector activity due to constraints on access to foreign exchange, and resurgence in security concerns.
>
> *Context.* The Nigerian economy is facing substantial challenges. Low oil prices, a lengthy period of policy uncertainty, and ongoing security concerns, have produced: a widening fiscal gap with salary arrears at state and local governments; a weaker external current account and the introduction of exchange restrictions as international reserves declined with lower financial sector resilience; and sharply slower growth. These shocks have compounded an already challenging development environment—inadequate infrastructure, high unemployment (9.9 percent) and a high poverty rate (above 50 percent in the northern states).
>
> *Outlook and Risks.* Growth is expected to slow further in 2016 before a modest recovery over the medium term, but with significant downside risks and reduced buffers. Some components of the policy package to adjust to the permanent terms of trade shock are now in place but with little improvement expected in external conditions and large policy distortions remaining, growth is likely to remain well below historical averages. There are significant risks to this outlook: uncertainty on the path of oil prices and oil production; the impact of reforms to raise non-oil revenues; late disbursement of external financing or less-than-desired access to international markets; a further deterioration in the fiscal position of state and local governments; and disruption to private sector activity due to exchange restrictions.
>
> Meeting fiscal slippages through additional domestic borrowing could raise the Federal government interest payment-to revenue ratio to an unsustainable level and crowd out lending to the private sector. The combination of wide fiscal deficits and accommodative monetary policy with an overvalued exchange rate could widen the current account deficit further, add pressure to the exchange rate and international reserves, and result in further delays in much needed foreign capital inflows and investment.
>
> *Policy recommendations*. In light of the significant macroeconomic adjustment needed, it will be important to initiate urgently a coherent package of policies anchored on: (i) safeguarding fiscal sustainability; (ii) reducing external imbalances (including real exchange rate realignment); (iii) enhancing resilience and further improving the efficiency of the banking sector; and (iv) implementing structural reforms for sustained and inclusive growth.

Nigeria also clearly suffered from the "OPEC disease well before the militant attacks. It still ha very poor overall levels of governance, and had become far too dependent on oil revenues to finance every aspect of its government activity. A World Bank summary of the limits to its levels of governance is provided in **Figure Thirty Five**.[134]

Figure Thirty-Five: World Bank Estimate of Governance in Nigeria



Nigeria ranks as follows in other areas affecting its overall stability and security:

- Transparency International ranks it as the 136th most corrupt of 168 countries in its 2015 ranking of its perceptions index of corruption.[135]
- The Fragile States Index ranks it in the High Alert category, with a ranking of 13 in a world where the most stable country is ranked at 177.[136]
- It has not created a climate that supports business development or outside investment. The World Bank ranked it 169th in overall ease of doing business out of 189 countries in 2016.[137] The World Economic Forum ranked it 124th out of 144 countries in global competitiveness in 2015/2016. [138]
- Population pressure is a key factor. The U.S. Census Bureau estimates that its population increased by 5.7 times from 31.79 million in 1950 to 181.56 million in 2015, and will increase by 116 percent more to 391.3 million in 2050.[139]
- Youth employment is a critical factor. The CIA World Factbook reports that the median age is 18.2 years, and that 43.01 percent of the population is 14 years of age or younger, and 19.38 percent is 15-24 years of age. [140]
- Urbanization has radically changed the character of the population and distribution of tribes, ethnic groups, and sects. It is now 47.8 percent, and growing at 4.66 percent per year. [141]

Nigeria is still very much an uncertain case. The U.S. Energy Information Agency summarized Nigeria's oil disruption problems in as June 2016 as follows,[142]

> In May, disruptions in Nigeria increased to an average of nearly 0.8 million b/d, up from an average of 0.5 million b/d in April and an average of 0.3 million b/d in 2015. With the increasing disruptions, Nigeria's crude oil production fell to 1.4 million b/din May, its lowest monthly average since the late 1980s . Disruptions in Nigeria increased as militants escalated attacks on

> oil and natural gas infrastructure in the Niger Delta. EIA expects Nigeria's disruptions to remain relatively high through 2017 compared with recent years.

In summary, Nigeria remains an extremely poor country with deep regional, ethnic, sectarian, and tribal divisions. It faces serious challenges from extremists and terrorists in the North, and from armed dissidents and tribal militants in the Niger delta area in south that have seriously reduced its petroleum exports, and cut them from a planned 2.2 MMBD to 1.65MMBD, the lowest level in two decades. Coupled to the "crash" in oil prices, this presents a critical economic burden, and Nigeria has been reported to be facing critical debt problems and be unable to pay government salaries in many areas.

Qatar

Qatar is so wealthy, and so limited in its native population, that it can easily ride out any currently foreseeable cut in petroleum prices and export revenues. It also has a relatively high standard of governance, economic planning and development. of t 25.2 billion barrels, the 9th largest reserves in OPEC and 13th largest in the world. Its crude oil and lease condensate production ranked 17th in the world, with most of the country's production sent abroad as exports.

Qatar also had the third-largest proved reserves of natural gas in the world at 872 trillion cubic feet (Tcf), which compares with 1,688 Tcf in Russia, 1,201 Tcf in Iran, 294 Tcf in Saudi Arabia, 215 Tcf in the UAE, 197 Tcf in Venezuela, 180 Tcf in Nigeria, and 338 Tcf in conventional natural gas reserves in the U.S. [143]

If the estimates in **Figure Nine** are used, Qatar's net export revenue dropped from $38 billion in 2014 to $20 billion in 2015, and was on a path that would drop to $14.4 billion in 2016. Using **Figure Ten**, its oil export revenues per capita dropped from $36,812 in 2014 to $18,656 in 2015, and were on a path the would drop to $13,032 in 2016.

The EIA summarized Qatar's overall energy developments as follows on October 20, 2015,[144]

> Qatar is the largest exporter of liquefied natural gas (LNG) in the world, and the country's exports of LNG, crude oil, and petroleum products provide a significant portion of government revenues.
>
> Like many of its neighbors, Qatar relies on its energy sector to support its economy. According to the Qatar National Bank (QNB), Qatar's earnings from its hydrocarbon sector accounted for 49% of the country's total government revenues in 2014, a figure that has declined over the past four years.[1] The U.S. Energy Information Administration (EIA) estimates that Qatar earned $38 billion from net oil exports in 2014.
>
> Qatar was the world's fourth-largest dry natural gas producer in 2013 (behind the United States, Russia, and Iran), and it has been the world's leading liquefied natural gas (LNG) exporter since 2006, with 31% of market share in 2014.[2] Qatar is also at the forefront of gas-to-liquids (GTL) production, and the country is home to the world's largest GTL facility. The growth in Qatar's natural gas production, particularly since 2000, has also increased Qatar's total liquids production, as lease condensates, natural gas plant liquids, and other petroleum liquids are a significant (and valuable) byproduct of natural gas production.
>
> Qatar produced 2.1 million barrels per day (b/d) of petroleum and other liquids in 2014, of which 1.5 million b/d was crude oil and the remainder was noncrude liquids. Although Qatar is a member of the Organization of the Petroleum Exporting Countries (OPEC), the country is the second-smallest crude oil producer among the 12-member group. Natural gas meets most of Qatar's domestic energy demand, so the country is able to export most of its liquid fuels

> production. Given its small population, Qatar's energy needs are met almost entirely by domestic sources.

A current IMF Article IV report and World Bank overview are not available for Qatar. An IMF report in March 2015 did note, however, than while Qatar's policies would deal with the present, it no longer could adequately fund its future needs, and it did face some problems:[145]

> Context. Qatar is implementing an ambitious diversification strategy through a large public investment program, while retaining its systemic role in the global natural gas market. The policy framework is being strengthened in a number of areas, including fiscal and financial policies. Growth is expected to remain strong this year, but will slow going forward. The recent large drop in oil prices will lead to a substantial deterioration of the fiscal and external balances.
>
> Focus. This year's consultation focused on these key issues:
>
> …Living with cheap oil. Qatar's public finances remain sustainable at expected oil prices, but in contrast to the recent past, projected budget balances no longer appear consistent with intergenerational equity. Measures to improve the budget balance by 5 percent of non-hydrocarbon GDP should be implemented gradually over the medium term. Policymakers should specify clear medium-term fiscal objectives, make the annual budgets binding, and further increase transparency of fiscal accounts. The prospects of persistently low oil prices and slowing medium-term growth also call for intensification of diversification efforts through further improvements in the business environment, higher education quality, and labor market reforms, which would also make growth more inclusive.
>
> *Risks from public investments*. The ongoing investment program is essential for economic development, but entails a risk of overheating the economy in the near term, while creating overcapacity over the medium term. Recent progress in improving public investment management to tackle these risks is welcome. Consideration should be given to raising the real estate transaction fees to deter speculators and further increasing land supply.
>
> *Financial sector*. Banks remain sound and the financial regulatory agenda is moving ahead, but emerging risks and vulnerabilities need to be carefully monitored. These include rapidly growing credit to selected sectors and across the border. Further enhancements to the early warning system, including improving availability of real estate statistics, are needed.
>
> … Qatar is implementing an ambitious diversification strategy, while retaining its systemic role in the global natural gas market. Qatar accounts for one-third of global LNG trade and has emerged as an important global financial investor, labor importer, and donor.[1] The authorities are executing a $200 billion infrastructure program to advance economic diversification and prepare for the FIFA 2022 World Cup. Qatar ranks favorably in social and governance indicators in the GCC region. The policy framework is being strengthened in the areas of fiscal policy and institutions, financial regulation, macroprudential policies, and debt market development, consistent with IMF advice.
>
> …The steep fall in oil prices provided a new context for this year's Article IV consultation. Having fluctuated in a narrow range of about $100-120 a barrel during the last several years, the Brent oil price benchmark unexpectedly fell to about $60 a barrel over the past six months. Futures markets suggest that a significant part of this decline is likely to persist over the medium term. Qatar is being affected since more than 90 percent of its budget revenues and exports are tied to activities of the hydrocarbon sector. Crucially, the price of Qatar's LNG is linked to the price of crude oil.
>
> …Qatar has maintained a strong growth momentum so far, with the recent oil price slump driving a stock market correction. Real GDP growth has been stable at about 6 percent over

> the past three years, mostly driven by a double-digit expansion of the non-hydrocarbon sector. This rapid growth rate has in turn reflected large public investments to diversify the economy and prepare for the FIFA 2022 World Cup…The strong growth performance notwithstanding, Qatar's financial markets have continued to be affected by spillovers from geopolitical events and, in particular, oil price volatility…The sharp drop in oil prices has triggered a stock market correction and a modest re-pricing in the Credit Default Swap (CDS) market. However, the yield on the long-term U.S. dollar-denominated Qatar sovereign bond has stayed broadly stable at around 3 percent.
>
> Rapid growth has been accompanied by substantial changes in relative prices. With rents constituting over 30 percent of the CPI basket, a strong inflow of expatriate workers amid a diminishing housing market slack pushed up inflation to 3 percent in summer 2014. Headline inflation has eased to 2 percent in December 2014, assisted by falling global food and other commodity prices and a stronger U.S. dollar to which the Qatar Riyal is pegged. Meanwhile, growth in real estate prices accelerated to 35 percent year-on-year in December as new housing supply is slow to accommodate demand from expatriates and the government continues purchases of land for infrastructure projects. Anecdotal evidence also points to some speculative activity in the real estate market in anticipation of public investments. Real estate evaluations appear on the upper end of a range consistent with fundamentals.
>
> The budget continues to post large surpluses…The central government budget surplus increased to 14 percent of GDP in fiscal year 2013/14 (the fiscal year ends March) due to strong revenues and expenditure restraint, especially on non-wage discretionary spending. The revenue strength partly reflected the transfer of all hydrocarbon profits from Qatar Petroleum—the key hydrocarbon company—to the budget, a welcome step toward greater transparency of fiscal accounts. Budget data for the first nine months of the current fiscal year point to continued restraint in current expenditures. Capital spending has slowed somewhat so far this year, but is expected to pick up again. Gross government debt fell to about 30 percent of GDP, with T-bills and T-bonds issued for financial market development and liquidity management purposes…A rough estimate of the net financial worth of the government incorporating Qatar's sovereign wealth fund (Qatar Investment Authority, QIA) is 100 percent of GDP.
>
> …The main external risk remains the possibility of lower-than-expected oil and natural gas prices given slow global growth, rising unconventional oil supplies and, over the long term, growing competition in the LNG market. Oil prices could also surprise on the upside if geopolitical risks escalate or if the effect of the recent oil price decline on unconventional producers exceeds expectations. Revenue losses from lower oil and natural gas exports would be the most significant spillover channel for Qatar. The non-hydrocarbon sector would be cushioned by the government's spending commitments. However, spillovers could be amplified by falling liquidity in the banking system if the government and hydrocarbon-exporting companies slow deposit growth, especially if this coincides with tighter U.S. monetary policy, mobilization of resources by participants in the infrastructure program, and the recently-introduced loan-to deposit ratio. Qatar's external borrowing costs could increase if low oil prices persist, and there is scope for adverse regional spillovers if investors fail to differentiate between Qatar and less resilient oil-exporting countries. The financial channel could also become important in other circumstances, given Qatar's sizeable foreign assets and the increasing interconnectedness of local banks and financial markets with the global economy.

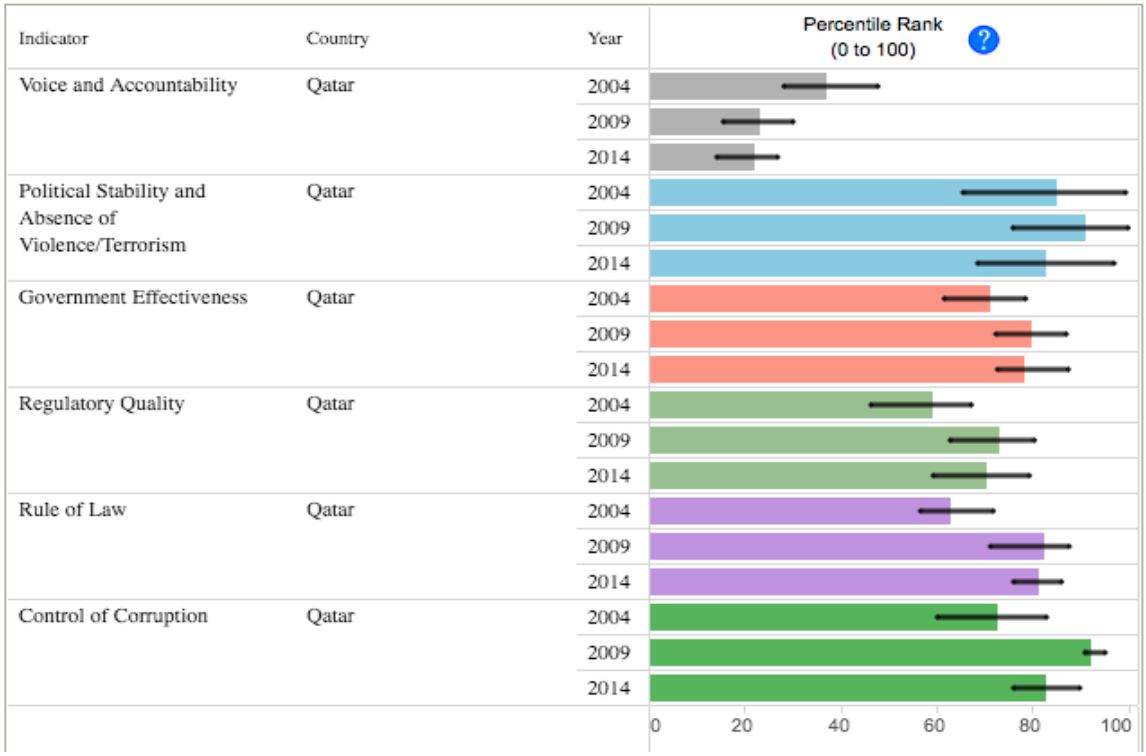
The CIA described its situation as follows in July 2016,[146]

> During the late 1980s and early 1990s, the Qatari economy was crippled by a continuous siphoning off of petroleum revenues by the amir, who had ruled the country since 1972. His son, HAMAD bin Khalifa Al Thani, overthrew the father in a bloodless coup in 1995. In short order, HAMAD oversaw the creation of the pan-Arab satellite news network Al-Jazeera and Qatar's

> pursuit of a leadership role in mediating regional conflicts. In the 2000s, Qatar resolved its longstanding border disputes with both Bahrain and Saudi Arabia. As of 2007, oil and natural gas revenues had enabled Qatar to attain the highest per capita income in the world.
>
> Qatar has not experienced domestic unrest or violence like that seen in other Near Eastern and North African countries in 2010-11, due in part to its immense wealth. Since the outbreak of regional unrest, however, Doha has prided itself on its support for many of these popular revolutions, particularly in Libya and Syria. In mid-2013, HAMAD transferred power to his 33 year-old son, the current Amir TAMIM bin Hamad - a peaceful abdication rare in the history of Arab Gulf states. TAMIM has prioritized improving the domestic welfare of Qataris, including establishing advanced healthcare and education systems and expanding the country's infrastructure in anticipation of Doha's hosting of the 2022 World Cup.
>
> Qatar has prospered in the last several years with continued high real GDP growth, but low oil prices have dampened the outlook. Qatar was the only Gulf Cooperation Council member that avoided a budget deficit in 2015, but it projects a $12.8 billion deficit, 6% of GDP in 2016.
>
> GDP is driven largely by the oil and gas sector; however, growth in manufacturing, construction, and financial services have lifted the non-oil sectors to just over half of Qatar's nominal GDP. Economic policy is focused on sustaining Qatar's non-associated natural gas reserves and increasing private and foreign investment in non-energy sectors, but oil and gas still account for roughly 92% of export earnings, and 56% of government revenues. Oil and gas have made Qatar the world's highest per-capita income country and the country with the lowest unemployment. Proved oil reserves in excess of 25 billion barrels should enable continued output at current levels for about 56 years. Qatar's proved reserves of natural gas exceed 25 trillion cubic meters, about 13% of the world total and third largest in the world.
>
> Qatar's successful 2022 World Cup bid is accelerating large-scale infrastructure projects such as it's metro system, light rail system, construction of a new port, roads, stadiums and related sporting infrastructure.

The World Bank's assessment of its governance is summarized in **Figure Thirty-Six.**[147] Its only major problems are in voice and accountability, a common problem in the governance of the Arab Gulf monarchies.

Figure Thirty-Six: World Bank Estimate of Governance in Qatar



Qatar ranks as follows in other areas affecting its overall stability and security:

- Transparency International ranks it as the 71st most corrupt of 168 countries in its 2015 ranking of its perceptions index of corruption.[148]
- The Fragile States Index ranks it in the More Stable category, with a ranking of 142 in a world where the most stable country is ranked at 177.[149]
- It has made efforts to create a better climate that supports business development or outside investment. The World Bank ranks it 68th in overall ease of doing business out of 189 countries in 2016.[150] The World Economic Forum, however, ranked it 14th out of 140 countries in global competitiveness in 2015/2016. [151]
- Population pressure is a key factor. The U.S. Census Bureau estimates that its population increased by 88 times from 25 thousand in 1950 to 2.2 million in 2015, and will increase by 16.4 percent more to 2.56 million in 2050.[152]
- Youth employment is a critical factor. The CIA World Factbook reports that the median age is 32.8 years, and that 12.52 percent of the population is 14 years of age or younger, and 12.96 is 15-24 years of age. [153]
- Urbanization has radically changed the character of the population and distribution of tribes, ethnic groups, and sects. It is now 99.2 percent, and growing at 6.02 percent per year. [154]

Qatar does not have major internal security problems. Like other Arab Gulf states, it faces a potential threat from Iran. Its security is guaranteed by the fact the US has a major air base on its territory, and it has relatively effective internal security services. It has had some problems with tribal dissidents and Islamist extremists, but these have been minor.

Qatar has also take some steps to reduce unnecessary spending in spite of its wealth, although it remains over-dependent on foreign labor. Its current economic reform plans

seem adequate if fully executed, but even the wealthiest OPEC state has some symptoms of the "OPEC disease."

Saudi Arabia

Saudi Arabia faces serious external security challenges from Iran, has internal security threats in dealing with terrorists and extremists, is over dependent on petroleum revenues and foreign workers, and needs internal reform.

Saudi Arabia's recent crude oil production is shown in **Figure Thirty-Seven**, using graphs developed by Ron Patterson for *Oil Price*.[155] If the estimates in **Figure Nine** are used, its net export revenue dropped from $247 billion in 2014 to $130 billion in 2015, and was on a path that would drop to $93.6 billion in 2016. Using **Figure Ten**, its oil export revenues per capita dropped from $7,926 in 2014 to $4,125 in 2015, and were on a path that would drop to $2,9351 in 2016.

Figure Thirty-Seven: Saudi Oil Production: January 2012-March 2106

Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***

The EIA provided the following summary of Saudi Arabia's role in world energy supply in September 2014,[156]

> Saudi Arabia has 16% of the world's proved oil reserves, is the largest exporter of total petroleum liquids in the world, and maintains the world's largest crude oil production capacity.[1]
>
> Saudi Arabia is the world's largest holder of crude oil proved reserves and was the largest exporter of total petroleum liquids in 2013. In 2013, Saudi Arabia was the world's second-largest petroleum liquids producer behind the United States and was the world's second-largest crude oil producer behind Russia. Saudi Arabia's economy remains heavily dependent on petroleum. Petroleum exports accounted for 85% of total Saudi export revenues in 2013, according to the Organization of the Petroleum Exporting Countries (OPEC)'s *Annual Statistical Bulletin 2014*.
>
> With the largest oil projects nearing completion, Saudi Arabia is expanding its natural gas, refining, petrochemicals, and electric power industries. Saudi Arabia's oil and natural gas operations are dominated by Saudi Aramco, the national oil and gas company and the world's largest oil company in terms of production. Saudi Arabia's Ministry of Petroleum and Mineral Resources and the Supreme Council for Petroleum and Minerals have oversight of the oil and

> natural gas sector and Saudi Aramco.\... According to the *Oil & Gas Journal* (OGJ), Saudi Arabia had approximately 266 billion barrels of proved oil reserves[3] (in addition to 2.5 billion barrels in the Saudi-Kuwaiti shared Neutral Zone, half of the total reserves in the Neutral Zone) as of January 1, 2014, amounting to 16% of proved world oil reserves. Although Saudi Arabia has about 100 major oil and gas fields, more than half of its oil reserves are contained in eight fields in the northeast portion of the country.[4] The giant Ghawar field is the world's largest oil field in terms of production and total remaining reserves. The Ghawar field has estimated remaining proved oil reserves of 75 billion barrels,[5] more than all but seven other countries.
>
> Saudi Arabia is the largest oil-consuming nation in the Middle East. Saudi Arabia consumed 2.9 million barrels per day (bbl/d) of oil in 2013, almost double the consumption in 2000, because of strong industrial growth and subsidized prices. Contributing to this growth is rising direct burn of crude oil for power generation, which has reached an average of 0.7 million bbl/d from 2009 to 2013 during the months of June to September, according to the Joint Oil Data Initiative (JODI), and the use of natural gas liquids (NGL) for petrochemical production. The current president and Chief Executive Officer of Saudi Aramco, Khalid al-Falih, said that domestic liquids demand was on pace to reach more than 8 million bbl/d of oil equivalent by 2030 if there were no improvements in energy efficiency.

This EIA analysis has long been over taken by events, however, and Saudi Arabia has dealt with crash in its petroleum revenues by creating a comprehensive set of goals for economic and social reform called Vision 2030 and a National Transformation Plan 2020 to implement them,

A CIA report provided a summary of Saudi Arabia's situation in July 2016,[157]

> Saudi Arabia has an oil-based economy with strong government controls over major economic activities. It possesses about 16% of the world's proven petroleum reserves, ranks as the largest exporter of petroleum, and plays a leading role in OPEC. The petroleum sector accounts for roughly 87% of budget revenues, 42% of GDP, and 90% of export earnings.
>
> Saudi Arabia is encouraging the growth of the private sector in order to diversify its economy and to employ more Saudi nationals. Over 6 million foreign workers play an important role in the Saudi economy, particularly in the oil and service sectors; at the same time, however, Riyadh is struggling to reduce unemployment among its own nationals. Saudi officials are particularly focused on employing its large youth population, which generally lacks the education and technical skills the private sector needs.
>
> In 2015, the Kingdom incurred a budget deficit estimated at 13% of GDP, and it faces a deficit of $87 billion in 2016, which will be financed by bond sales and drawing down reserves. Although the Kingdom can finance high deficits for several years by drawing down its considerable foreign assets or by borrowing, it has announced plans to cut capital spending in 2016. Some of these plans to cut deficits include introducing a value-added tax and reducing subsidies on electricity, water, and petroleum products.
>
> In January 2016, Crown Prince and Deputy Prime Minister Muhammad Bin Salman announced that Saudi Arabia intends to list shares of its state-owned petroleum company, ARAMCO - another move to increase revenue and outside investment. The government has also looked at privatization and diversification of the economy more closely in the wake of a diminished oil market. Historically, Saudi Arabia has focused diversification efforts on power generation, telecommunications, natural gas exploration, and petrochemical sectors. More recently, the government has approached investors about expanding the role of the private sector in the healthcare, education and tourism industries. While Saudi Arabia has emphasized their goals of diversification for some time, current low oil prices may force the government to make more drastic changes ahead of their long-run timeline.

The CIA report also described faces serious security challenges from Iran, ISIS, AQAP, and the Houthi in Yemen that have led it to make massive security expenditures that reached nearly 13% of its GDP in 2015: [158]

> King Salman bin Abd al-Aziz Al Saud ascended to the throne in 2015 and placed the first next-generation prince, Muhammad Bin Naif bin Abd al-Aziz Al Saud, in the line of succession as Crown Prince. He designated his son, Muhammad Bin Salman bin Abd al-Aziz Al Saud, as the Deputy Crown Prince. In March 2015, Saudi Arabia led a coalition of 10 countries in a military campaign to restore the government of Yemen, which had been ousted by Houthi forces allied with former president Ali Abdullah al-Salih.
>
> The war in Yemen has led to civilian casualties and shortages of basic supplies, which has drawn considerable international criticism. In December 2015, Deputy Crown Prince Muhammad Bin Salman announced Saudi Arabia would lead a 34-nation Islamic Coalition to fight terrorism. In January 2016, Saudi Arabia executed 47 people on charges of terrorism, including Shia Muslim cleric NIMR al-Nimr. Iranian protesters overran Saudi diplomatic facilities in Iran to protest al-Nimr's execution and the Saudi government responded by cutting off diplomatic ties with Iran.

A current World Bank overview is not available on Saudi Arabia. The IMF, however, described the challenges imposed by low oil export revenues and its lack of diversification, along with its reform programs, as follows in May 2016:[159]

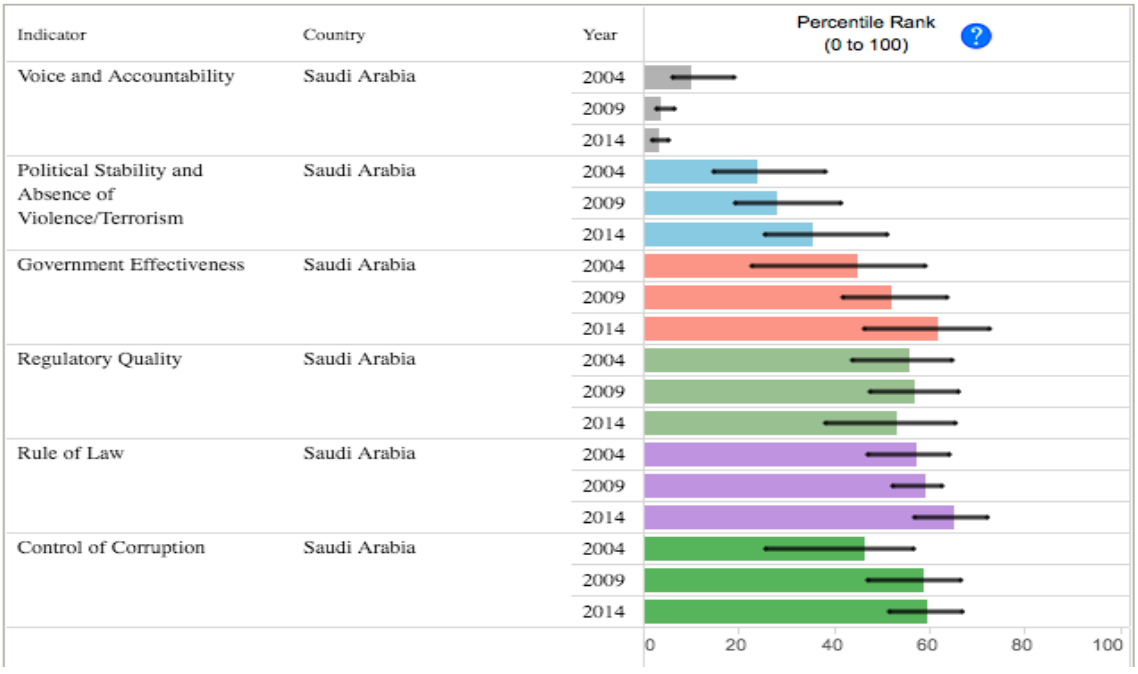
> "The decline in oil prices is affecting the Saudi Arabian economy. Real GDP growth is projected by IMF staff at 1.2 percent this year, down from 3.5 percent in 2015. Lower oil revenues have resulted in current account and fiscal deficits which are projected by IMF staff at around 9 and 14 percent of GDP, respectively, in 2016. Nevertheless, the financial assets held by the government remain high, providing a substantial cushion. The decline in bank deposits and the resulting tightening of liquidity conditions and rise in interbank interest rates have not yet impacted credit growth.
>
> "Since the 2015 Article IV consultation, there has been a significant acceleration in reforms in Saudi Arabia. Vision 2030 sets out the goal of an appropriately bold and far-reaching transformation of the Saudi Arabian economy to diversify growth, reduce the dependence on oil, increase the role of the private sector, and create more jobs for nationals. The supporting policies that will be announced in the coming months are expected to set out how these goals will be achieved. To ensure their success, the reforms will need to be properly prioritized and sequenced, and the appropriate pace of implementation carefully assessed.
>
> "To increase the role of the private sector in the economy, as envisaged in Vision 2030, privatization and PPPs and reforms to further strengthen the business environment, attract foreign investment, and encourage the development of the capital markets will be important. The recent measures announced by the Capital Market Authority and Tadawul are welcome. Reforms will also need to focus on increasing the attractiveness of private sector jobs and entrepreneurship for Saudis and the attractiveness of national workers to private sector employers.
>
> "Fiscal policy is appropriately adjusting to the drop in oil prices. IMF staff welcome the control of government spending that is underway and the energy price adjustments that have been implemented. Staff also welcome actions by the government to put in place mechanisms to strengthen accountability and improve the efficiency of its spending through the introduction of key performance indicators for ministries, the setting up of a National Projects Management Office, and increased scrutiny of new capital projects.
>
> "A gradual, but sizeable and sustained fiscal adjustment needs to continue with the aim of achieving a balanced budget over the medium-term. Such fiscal consolidation should include further adjustments in domestic energy prices, firm control of expenditures, and further increases in non-oil revenues. The planned introduction of a value-added tax and other tax measures are important.

> "The government policy of using a combination of deposit drawdowns and international and domestic debt issuance to finance the fiscal deficit is appropriate. The establishment of a Debt Management Office (DMO) is a positive step and should be accompanied by the introduction of an efficient and market-based process for debt issuance.
>
> "Further reforms to the fiscal framework that sets the annual budget in a medium-term framework and clearly establishes fiscal policy goals would support fiscal adjustment. Staff welcomes the establishment of the macro-fiscal unit (MFU). Given the plans for the sale of a stake in Aramco and for a greater role for the Public Investment Fund, it will be appropriate to enhance their transparency and integrate them into the fiscal framework.
>
> "The banking sector is strong and well-positioned to weather a slowing in the pace of growth. SAMA continues to strengthen its regulation and supervision, including by introducing D-SIB and countercyclical capital buffer charges. A deposit insurance scheme has also been introduced. A formal and transparent macroprudential framework should be introduced to further enhance coordination among the key financial regulators.

Saudi Arabia has a large population and is badly over dependent on foreign labors and government employment of its native work force. It has, however, developed strong reform plans and goals, has one of the most efficient national oil companies in the world, and has pursued counter-cyclical financing policies in an effort to reduce the risk posed by developments like the current oil crash.

It also has steadily improved its quality of governance, as is shown in **Figure Thirty-Eight**.[160]

Figure Thirty-Eight: World Bank Estimate of Governance in Saudi Arabia



Saudi Arabia ranks as follows in other areas affecting its overall stability and security:

- Transparency International ranks it as the 48th most corrupt of 168 countries in its 2015 ranking of its perceptions index of corruption.[161]

- The Fragile States Index ranks it in the Elevated Warning category, with a ranking of 97 in a world where the most stable country is ranked at 177.[162]
- It is taking steps to create a climate that supports business development or outside investment. The World Bank ranks it 82nd in overall ease of doing business out of 189 countries.[163] The World Economic Forum ranked it 25th out of 140 countries in global competitiveness in 2015/2016. [164]
- Population pressure is a key factor. The U.S. Census Bureau estimates that its population increased by 7.2 times from 3.86 million in 1950 to 27.75 million in 2015, and will increase by 45 percent more to 40.25 million in 2050.[165]
- Youth employment is a critical factor. The CIA World Factbook reports that the median age is 26.8 years, and that 27.07 percent of the population is 14 years of age or younger, and 19.11 is 15-24 years of age. [166]
- Urbanization has radically changed the character of the population and distribution of tribes, ethnic groups, and sects. It is now 83.1 percent, and growing at 2.1 percent per year. [167]

The Saudi government realizes that it is over-dependent on oil revenues, needs to sharply diversify its economy, reduce its dependence on foreign labor, create jobs for its young and rapidly growing population, and finance major security efforts to counter Iran and deal with the threat of terrorism and extremism posed by organizations like ISIS and AQAP.

Its present military and internal security efforts should give it growing security over time. It has also set clear goals for economic and social reform by 2030, and developed a National Transformation Plan to achieve these goals and substantial diversification, and employment of its native work force by 2020-2030. It is far from clear that it can achieve all these goals, but it is likely to make substantial progress and to ride out the current crash in petroleum revenues without a major crisis.

The UAE

The UAE is generally described as one of the most stable, diversified, and wealthy countries in OPEC, but still faces some challenges. The UAE's recent crude oil production is shown in **Figure Thirty-Nine**, using graphs developed by Ron Patterson for *Oil Price*.[168] If the estimates in **Figure Nine** are used, its net export revenue dropped from $53 billion in 2014 to $29 billion in 2015, and was on a path that would drop to $19.2 billion in 2016. Using **Figure Ten**, its oil export revenues per capita dropped from $9,434 in 2014 to $4,940 in 2015, and were on a path that would drop to $3,305 in 2016.

Figure Thirty-Nine: UAE Oil Production: January 2012-March 2106

Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***.

The EIA estimated that the UAE had 97.8 billion barrels worth of provided crude oil reserve, and provided the following summary of the UAE's energy status, and progress in diversification, in May 2015,[169]

> Since declaring independence from the United Kingdom and uniting in 1971, the UAE—a federation of the seven emirates of Abu Dhabi, Ajman, Al Fujairah, Dubai, Ras al Khaymah, Sharjah, and Umm al Qaywayn—has relied on its large oil and natural gas resources to support its economy. The UAE is currently the sixth-largest petroleum producer in the world. In 2013, hydrocarbon export revenues were $123 billion, up from approximately $75 billion in 2010, according to the International Monetary Fund (IMF).
>
> In addition to the growing hydrocarbon economy, the UAE is becoming one of the world's most important financial centers and a major trading center in the Middle East. Investments in nonenergy sectors, such as infrastructure and technology, along with a rapidly recovering real estate sector, continue to provide the UAE with insurance against oil price declines and global economic stagnation. IMF data indicate the UAE's real gross domestic product grew by 5.2% in 2013. However, a sustained decline in oil prices could lead to a reduction in spending in the near future.
>
> A member of the Organization of the Petroleum Exporting Countries (OPEC) since 1967—when Abu Dhabi joined—the UAE is one of the most significant oil producers in the world. The likelihood of further major oil discoveries is low, but the UAE uses enhanced oil recovery (EOR) techniques to increase the extraction rates of the country's mature oil fields.
>
> Natural gas use in the UAE is rising. Although the country is a member of the Gas Exporting Countries Forum (GECF), domestic demand is likely to draw heavily on the UAE's natural gas resources. Currently, the country both imports and exports liquefied natural gas (LNG) and shares international natural gas pipelines with Qatar and Oman. The UAE is also one of the world's leaders in the use of natural gas in enhanced oil recovery (EOR) techniques. With natural gas demand rising, the government plans to expand domestic production using EOR techniques to meet the demand for domestic consumption and exports.

> The UAE is making notable progress in diversifying its economy through tourism, trade, and manufacturing. However, in the near term, oil, natural gas, and associated industries will continue to account for most of the economic activity in the seven emirates.
>
> … The UAE is both a major exporter and consumer of petroleum liquids. The U.S. Energy Information Administration (EIA) estimates that the UAE exported more than 2.5 million bbl/d of crude oil in 2014, with most of it going to markets in Asia. In addition to being a major global petroleum exporter, the UAE domestic market relies heavily on petroleum product imports to meet energy demand. Most of the UAE's petroleum imports are of residual fuel oil, with limited imports of motor gasoline and diesel fuel.

The CIA described the UAE's situation as follows in July 2016,[170]

> The Trucial States of the Persian Gulf coast granted the UK control of their defense and foreign affairs in 19th century treaties. In 1971, six of these states - Abu Dhabi, 'Ajman, Al Fujayrah, Ash Shariqah, Dubayy, and Umm al Qaywayn - merged to form the United Arab Emirates (UAE). They were joined in 1972 by Ra's al Khaymah. The UAE's per capita GDP is on par with those of leading West European nations. Its high oil revenues and its moderate foreign policy stance have allowed the UAE to play a vital role in the affairs of the region. For more than three decades, oil and global finance drove the UAE's economy. However, in 2008-09, the confluence of falling oil prices, collapsing real estate prices, and the international banking crisis hit the UAE especially hard. The UAE has essentially avoided the "Arab Spring" unrest seen elsewhere in the Middle East, though in March 2011, political activists and intellectuals signed a petition calling for greater public participation in governance that was widely circulated on the Internet. In an effort to stem potential further unrest, the government announced a multi-year, $1.6-billion infrastructure investment plan for the poorer northern emirates and aggressively pursued advocates of political reform.
>
> …The UAE has an open economy with a high per capita income and a sizable annual trade surplus. Successful efforts at economic diversification have reduced the portion of GDP based on oil and gas output to 25%.
>
> Since the discovery of oil in the UAE more than 30 years ago, the country has undergone a profound transformation from an impoverished region of small desert principalities to a modern state with a high standard of living. The government has increased spending on job creation and infrastructure expansion and is opening up utilities to greater private sector involvement. The country's free trade zones - offering 100% foreign ownership and zero taxes - are helping to attract foreign investors.
>
> The global financial crisis of 2008-09, tight international credit, and deflated asset prices constricted the economy in 2009. UAE authorities tried to blunt the crisis by increasing spending and boosting liquidity in the banking sector. The crisis hit Dubai hardest, as it was heavily exposed to depressed real estate prices. Dubai lacked sufficient cash to meet its debt obligations, prompting global concern about its solvency and ultimately a $20 billion bailout from the UAE Central Bank and Abu Dhabi Government that was refinanced in March 2014.
>
> Dependence on oil, a large expatriate workforce, and growing inflation pressures are significant long-term challenges. Low oil prices have prompted the UAE to take steps to reduce its social spending, including eliminating fuel subsidies in August 2015, but the UAE has sufficient assets to cover its deficits with money from its sovereign investment funds. The UAE's strategic plan for the next few years focuses on economic diversification and creating more job opportunities for nationals through improved education and increased private sector employment.

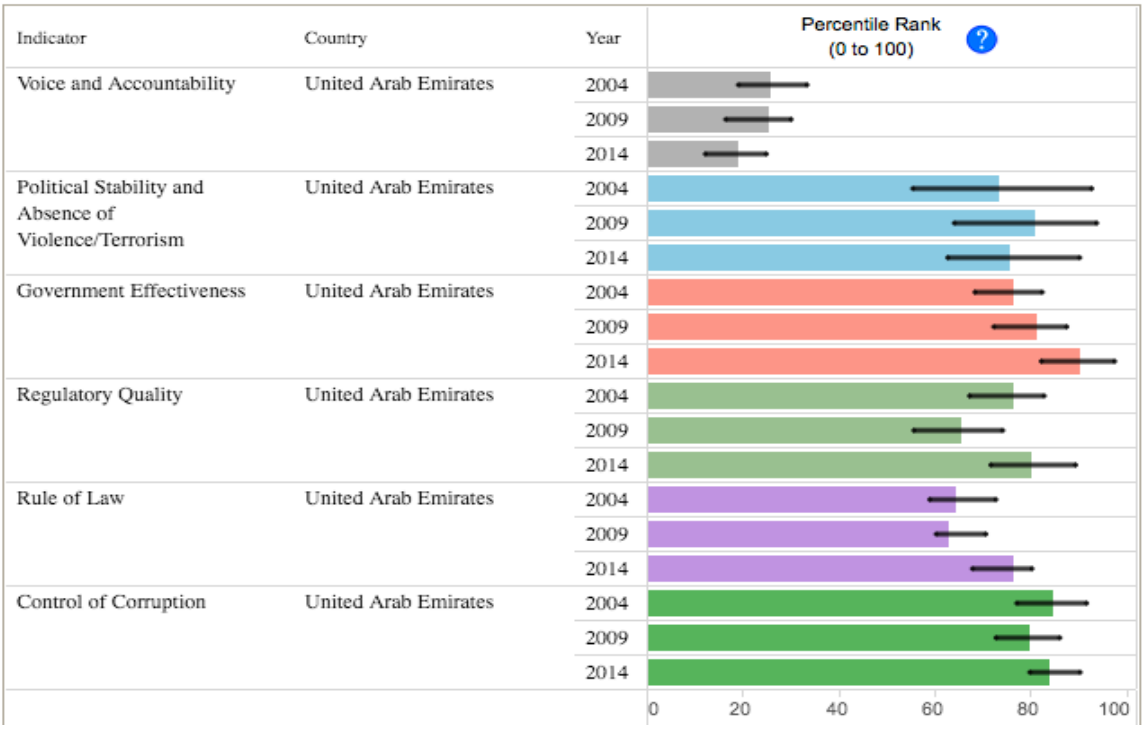
A current World Bank overview is not available on the UAE. The IMF described it as follows in May 2016:[171]

> The UAE is facing the oil price shock from a strong position as past prudent macroeconomic policies have helped build large fiscal and external buffers, its economy is more diversified, and it has continued to benefit from its safe haven status.

> The growth outlook is expected to moderate in 2016 amid low oil prices, with non-hydrocarbon growth projected at 2.4 percent due to sizeable fiscal consolidation, softer economic sentiment, and somewhat tighter monetary and financial conditions. With expected improvements in oil prices, growth is projected to pick up over the medium-term, also supported by increased investment ahead of the World Expo2020 hosted in Dubai, and more favorable external conditions. Average inflation is expected to decline to 3.2 percent in 2016 from 4.1 percent in 2015.
>
> Despite the strong policy response to adjust to the low oil prices, the fiscal deficit is projected to widen in 2016 to about 7.2 percent of GDP, before improving over the medium-term. The current account surplus is projected to decline to 0.3 percent of GDP in 2016. Private sector credit growth is expected to moderate due to the slowing economy and larger fiscal financing needs.
>
> Against this backdrop, the macroeconomic policy mix should focus on gradual fiscal consolidation, while maintaining the peg and supporting conditions for private sector credit growth. In view of the large buffers, the pace of fiscal consolidation could be somewhat more gradual in 2016 than presently envisaged, in order to minimize the impact on the economy as it is adjusting to the decline in oil prices over the past year. As the oil price related cyclical weakness dissipates, consolidation should accelerate over the medium-term to balance the budget and reduce the gap of the non-oil deficit to the level consistent with inter-generational equity. As regards the composition of fiscal consolidation, public investment should be preserved while enhancing its efficiency, plans to introduce VAT and increase excise taxes timely implemented, and remaining energy subsidies gradually phased out. The recent issuance by Abu Dhabi of Eurobonds is welcome, and the financing of its fiscal deficit should continue to tap into international markets and sovereign wealth funds rather than drawing down deposits so as to minimize the impact on domestic liquidity conditions. Efforts to strengthen public financial and debt management frameworks should also be pursued.
>
> The banking sector remains resilient and has enough liquidity and capital buffers to withstand severe shocks. The central bank actions to ensure adequate provisioning, phase in Basel III liquidity and capital requirements, and strengthen corporate governance are steps in the right direction and should be pursued. The new central bank and banking law should be swiftly approved to develop a fully-fledged macroprudential framework, accelerate progress toward compliance with Basel core principles for effective supervision, and beef up safety nets and resolution frameworks. Continued repair of government-related entities (GREs) balance sheets is important to contain systemic risks. Ongoing efforts to further strengthen the AML/CFT framework and address de-risking should also continue.
>
> The authorities' vision to further diversify the economy away from oil is commendable. Diversification requires stepping up structural reforms aimed at further developing the private sector, transitioning towards a knowledge-driven economy, and promoting export sectors. These could include: improving selected areas of business environment; developing adequate public-private partnerships frameworks; relaxing restrictions to foreign ownership; fostering competition, promoting innovation, including through appropriate financing tools as planned by the authorities, easing access to finance for startups and small and medium enterprises (SMEs), and creating the right incentives for

The UAE has already diversified much of its economy, and – like other Gulf monarchies – achieved a relatively high level of governance, as is shown in **Figure Forty:** [172]

Figure Forty: World Bank Estimate of Governance in the UAE



The UAE ranks as follows in other areas affecting its overall stability and security:

- Transparency International ranks it as the 23rd most corrupt of 168 countries in its 2015 ranking of its perceptions index of corruption.[173]
- The Fragile States Index ranks it in the More Stable category, with a ranking of 145 in a world where the most stable country is ranked at 177.[174]
- It has created a climate that supports business development or outside investment. The World Bank ranked it 31st in overall ease of doing business out of 189 countries in 2016.[175] The World economic Forum ranked it 17th out of 140 countries in global competitiveness in 2015/2016. [176]
- Population pressure is a factor, largely driven by foreign residents. The U.S. Census Bureau estimates that its population increased by 80.3 times from 72 thousand in 1950 to 5.78 million in 2015, and will increase by 38.8 percent more to 8.02 million in 2050.[177]
- Youth employment is also a factor. The CIA World Factbook reports that the median age is 30.3 years, and that 20.85 percent of the population is 14 years of age or younger, and 13.57 percent is 15-24 years of age. [178]
- Urbanization has radically changed the character of the population and distribution of tribes, ethnic groups, and sects. It is now 88.5 percent, and growing at 2.87 percent per year. [179]

Like Qatar and Saudi Arabia, the UAE has already begun to take steps to reduce spending, and its diversification, high levels of per capita income, and limited native population ease the strain imposed by the oil crash. The UAE has also developed effective security forces and has a high degree of internal security.

Venezuela

Venezuela has massive reserves of heavy crude oil and natural gas, but has long mismanaged both its petroleum sector and overall economy. The "oil crash" already has

been a key factor in undercutting the stability of Venezuela, which has plunged into a massive national crisis. Venezuela already has one of the least competent governments in the world, and has become grossly over-dependent on high oil revenues for the basic functioning of its economy.

Venezuela's recent crude oil production is shown in **Figure Forty One**, using graphs developed by Ron Patterson for *Oil Price*.[180] If the estimates in **Figure Nine** are used, its net export revenue dropped from $58 billion in 2014 to $32 billion in 2015, and was on a path that would drop to $192 billion in 2016 – if it could finally manage an effective import and export program for oil. Using **Figure Ten**, its oil export revenues per capita dropped from $2.016 in 2014 to $1,0882 in 2015, and was on a path that would drop to $432 in 2016 if it could make the same deal.

Figure Forty-One: Venezuela's Oil Production: January 2012-March 2106

Source: Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***.

The EIA summarized its status and problems as follows in November 15, 2015, using data based on 2014– before its mismanagement of its imports and exports reached a point where oil exports became difficult,

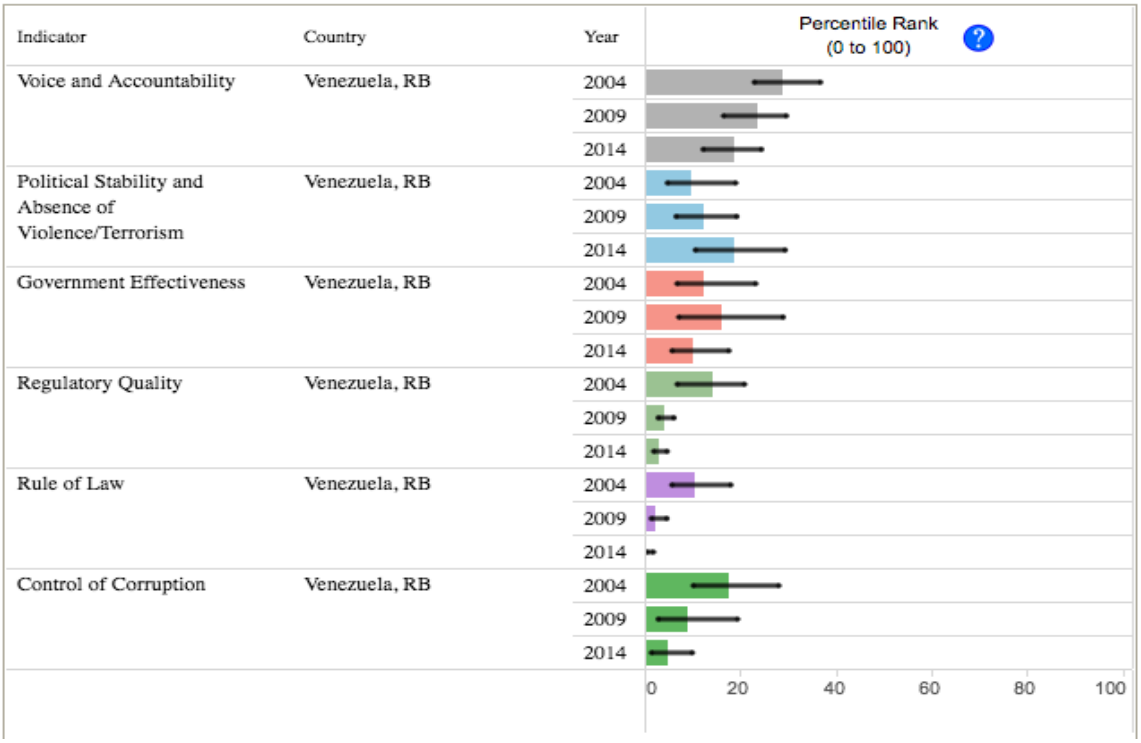
> While Venezuela is important to the global oil market, the government's reinvestment of oil revenues into social programs instead of reinvestment into exploration, production, and refining has led to declines in output.
>
> In 2014, Venezuela had 298 billion barrels of proved oil reserves, the largest in the world. The next largest proved oil reserves are in Saudi Arabia (268 billion barrels) and in Canada (173 billion barrels). Most of Venezuela's proved oil reserves are located in its Orinoco heavy oil belt, which has 220.5 billion barrels in proved oil reserves.
>
> Venezuela nationalized its oil industry in the 1970s, creating Petroleos de Venezuela S.A. (PDVSA), the country's state-run oil and natural gas company. In addition to being Venezuela's largest employer, PDVSA accounts for a significant share of the country's gross domestic product (GDP), government revenue, and export earnings. During the 1990s, Venezuela took steps to liberalize the petroleum sector. However, since the election of Hugo Chavez in 1999, Venezuela has increased public participation in the oil industry. The Chavez government initially raised tax and royalty rates on new and existing projects and mandated majority PDVSA ownership of all oil projects.

> In 2002, conflicts between PDVSA's employees and the government led to a strike in protest against the rule of then-President Chavez, largely bringing the company's operations to a halt. In the wake of the strike, PDVSA overhauled the internal organization to solidify government control. There was a loss of technical capabilities that affected PDVSA's overall energy production. In 2006, Chavez implemented the nationalization of oil exploration and production in Venezuela, mandating joint ventures with PDVSA with a renegotiation of a 60% minimum PDVSA share in projects. Sixteen firms, including Chevron, ExxonMobil, and Royal Dutch Shell, complied with new agreements, and Total and Eni were forcibly taken over. After Chavez's death in 2013, President Maduro continued Chavez's policies. Venezuela is soliciting investment from foreign operators in joint ventures to offset recent production declines.
>
> … Venezuela's conventional crude oil is heavy and sour by international standards. As a result, much of Venezuela's oil production must go to specialized domestic and international refineries. The country's most prolific production area is the Maracaibo basin, which contains slightly less than half of Venezuela's oil production. Many of Venezuela's fields are mature, requiring large investments to maintain current capacity.
>
> … Although U.S. imports of primarily crude oil from Venezuela have been on the decline, U.S. exports of petroleum products to Venezuela have increased largely because of Venezuela's tight finances that leave it unable to invest and maintain its own domestic refineries. A decade ago, the United States exported 14,000 b/d of crude oil and petroleum products to Venezuela. In 2014, the United States sent Venezuela 76,000 b/d of petroleum products. More than 40% of which was unfinished oils, which is used to blend into heavy crude oils for processing. Before 2012, Venezuela imported primarily methyl tertiary butyl ether (MTBE), intended for blending in gasoline, motor gasoline, and distillate fuel oil, but it now imports increasing volumes of motor gasoline and distillate.
>
> Although the United States receives about 40% of Venezuela's crude oil exports, other important destinations of Venezuelan crude oil exports include the Caribbean, Asia, and Europe. The second and third-largest destinations and the fastest-growing destinations of Venezuelan crude oil exports have been India and China. EIA estimates that Venezuela sent more than 300,000 b/d of crude oil to India and 218,000 b/d of crude oil to China in 2014. Exports to China have risen substantially after China signed a loan-for-oil agreement with Venezuela. According to IHS Energy, China's loans aggregate to USD $56 billion since 2007.5 Venezuela is a significant net exporter of crude oil, also imports approximately 3,000 b/d to 5,000 b/d annually in the last decade. These imports have come primarily from Ecuador and Algeria in 2014. Although Venezuela has stopped purchases of light oil from Algeria, it is seeking another seller of lighter oils to blend into its heavier crude stream from the Orinoco oil belt.
>
> Venezuela provides a sizable amount of crude oil and refined products to its regional neighbors. Under the Petrocaribe initiative established in 2005, Venezuela provides crude oil and refined products to 19 countries in the Caribbean and in Central America, offering favorable financing and long repayment terms that often feature barter arrangements instead of cash transactions.

Since the period covered in this report, Venezuela has been unable to import much of the sweeter crude in must blend with its heavy oil to export it. It now faces an export and trade crisis that has led to food shortages and major unrest.

The World Bank estimate of Venezuela's past decline in the quality of governance is shown in **Figure Forty-Two,** and it has declined to the point of near paralysis in 2015 and 2016: [181]

Figure Forty-Two: World Bank Estimate of Governance in Venezuela



Venezuela ranks as follows in other areas affecting its overall stability and security:

- Transparency International ranks it as the 158th most corrupt of 168 countries in its 2015 ranking of its perceptions index of corruption.[182]
- The Fragile States Index ranks it in the High Warning category, with a ranking of 63 in a world where the most stable country is ranked at 177.[183]
- It has totally failed to create a climate that supports business development or outside investment. The World Bank ranked it 186th in overall ease of doing business out of 189 countries in 2016.[184] The World Economic Forum ranked it only 132nd out of 140 countries in global competitiveness in 2015/2016. [185]
- Population pressure is a key factor. The U.S. Census Bureau estimates that its population increased by 5.8 times from 5 million in 1950 to 29.3 million in 2015, and will increase by 37.4 percent more to 40.26 million in 2050.[186]
- Youth employment is a critical factor. The CIA World Factbook reports that the median age is 27.2 years, and that 27.76 percent of the population is 14 years of age or younger, and 18.71 is 15-24 years of age. [187]
- Urbanization has radically changed the character of the population and distribution of tribes, ethnic groups, and sects. It is now 89 percent, and still growing at 1.54 percent per year. [188]

Venezuela has delayed its annual consultations with the IMF. A CIA report provided the following summary of its situation in early 2016,[189]

> Venezuela remains highly dependent on oil revenues, which account for almost all export earnings and nearly half of the government's revenue. The country ended 2015 with an estimated 10% contraction in its GDP, 275% inflation, widespread shortages of consumer goods, and declining central bank international reserves. The IMF forecasts that the GDP will shrink another 8% in 2016 and inflation may reach 720%.

> Falling oil prices since 2014 have aggravated Venezuela's economic crisis. Insufficient access to dollars, price controls, and rigid labor regulations have led some US and multinational firms to reduce or shut down their Venezuelan operations. Market uncertainty and state oil company PDVSA's poor cash flow have slowed investment in the petroleum sector, resulting in a decline in oil production.
>
> Under President Nicolas Maduro, the Venezuelan Government's response to the economic crisis has been to increase state control over the economy and blame the private sector for the shortages. The Venezuelan government has maintained strict currency controls since 2003. On 17 February 2016, the Venezuelan government announced a change from three official currency exchange mechanisms to only two official rates for the sale of dollars to private sector firms and individuals, with rates based on the government's import priorities. The official exchange rate used for food and medicine imports was devalued to 10 bolivars per dollar from 6.3 bolivars per dollar. The second rate moved to a managed float. These currency controls present significant obstacles to trade with Venezuela because importers cannot obtain sufficient dollars to purchase goods needed to maintain their operations. Maduro has used decree powers to enact legislation to deepen the state's role as the primary buyer and distributor of imports, further tighten currency controls, cap business profits, and extend price controls.

A current IMF report is not available on Venezuela. The World Bank described the crisis in Venezuela as follows in April 2016, [190]

> falling international oil prices, along with inadequate macro and microeconomic policies, have significantly affected Venezuela's economic performance. The country relies heavily on the hydrocarbon sector (oil accounts for 96 percent of its exports). During the economic boom, Venezuela did not accumulate savings to mitigate a reversal in the terms of trade or to cushion the necessary macroeconomic adjustments.
>
> In the short and medium term, Venezuela faces major financing needs, with a fiscal deficit estimated at 20 percent of GDP at the end of 2015, and external financing needs estimated at between US$25 billion and US$35 billion. Access to external financing is restricted and the public deficit has been largely monetized. This type of financing, together with price controls and limitations on access to foreign currency and the participation of the private sector in terms of providing some basic goods, have led to one of the world's highest inflation rates. The official rate at the end of 2015 was 180.9 percent, although unofficial estimates are much higher.
>
> These imbalances have generated pressure on the exchange rate, even before international oil prices collapsed in late 2014. The government has worked to contain these pressures by implementing a multiple exchange rate system and additional exchange rate controls. These measures have contributed to a strong external adjustment through a contraction of imports. However, they have been unable to stem the outflow of foreign currency. At the same time, exchange measures and regulations on private sector participation in the production and distribution of some basic goods have triggered shortages of basic goods, inflationary pressures and supply problems in a productive structure that is heavily dependent on imports. In early 2016, the government switched to a dual exchange rate system, at the same time devaluing the lowest official rate by 37 percent, from 6.3 BsF per US$ to 10 BsF per US$ and ordering that the other exchange rate would be a floating rate. The government also announced an increase in fuel prices, although the new prices are still heavily subsidized.
>
> As a result, Venezuela faces major stagflation (official statistics demonstrate that GDP contracted by 5.7 percent in 2015 after contracting 4 percent in 2014, in a context of high inflation). On the demand side, it is presumed that economic activity is being maintained by public sector activity, particularly public sector consumption. Private consumption and investment have declined sharply, compromising long-term growth.
>
> Falling global oil prices have deepened macroeconomic imbalances. The current account recorded a significant deficit in 2015, after a small surplus in 2014, with a sharp decline in the surplus of trade given that the price of Venezuelan oil fell 50 percent in 2015, in line with international crude prices and despite a marked decline in imports.

> Consequently, Venezuela faces major challenges. The most pressing is to contain the major macroeconomic imbalances that could easily reverse the social advances made. As a complementary measure, Venezuela needs to reestablish private sector confidence by improving the investment climate in an effort to strengthen its long-term growth perspectives and to diversify its exports to reduce its extreme vulnerability to oil price fluctuations. Finally, these adjustments should be accompanied by an active, well-designed policy to protect the population living in poverty.

Venezuela has since reached the point where it cannot even finance the oil imports necessary to blend with its heavy crude and continue to export its oil. Its currency is virtually worthless, and it also cannot afford vital imports like food. The opposition is seeking a referendum to remove the President and present government, but he may by able to stall until less than two years remain before the normal election. If so, the referendum would not produce a new government even it succeeded. The present Vice President would become the President and could even appoint the former President as his new Vice President.

Looking Beyond the Current Oil "Crash" and OPEC

These capsule assessments of the impact of structural over-dependence on petroleum revenues and the "oil crash," on given OPEC states can only illustrate part of the challenges these states face, and the interactions between their oil revenues and their politics, development, stability and security. They also do not cover other energy exporters as diverse as Russia, Canada, Mexico, and Oman.

What is clear, however, is that cuts in oil revenues are only part of the issues involved. A sudden "crash" in revenues does have a serious immediate impact in some areas, but the broader problem in case after case is the overall impact of petroleum export revenues on the overall national effort to move toward development, stability and security.

It is obviously an exaggeration to refer to such revenues as a "disease" for all OPEC countries and other exporters. The four Gulf monarchies in OPEC have, in general, clearly benefited from their access to petroleum revenues, as have their peoples.

Only about half of the 13 OPEC states suffer from truly critical structural economic dependence on petroleum revenues. Only three OPEC states – Iraq, Libya, and Venezuela qualify as "failed states, and only Venezuela has failed almost solely because of overdependence on petroleum revenues. At the same time, many of the other OPEC states have clearly suffered from the misuse of—and overdependence on—such revenues. With or without episodic oil crashes, the money is often being used to buy time while the overall situation grows worse.

It is all too true that many OPEC states have also suffered from outside threats and interventions, but it is equally true that most of these interventions came because of their actions, failures, and decisions that made them vulnerable. It virtually every case, better politics, better governance, and better economic development policies would have protected them at least as much as security forces.

It is also a grim reality that there is no outside power, international organization, or source of aid that any nation can count on if it does not act effectively to help itself. The leaders and peoples of OPEC and other energy exporting states must ultimately take

responsibility for themselves in curing their problems with the OPEC disease or suffer the consequences of their self-inflicted wounds.

Appendix A: Projecting Estimated Crude Oil Revenues and Per Capita Income for 2016 – Part One

Total Export Revenues

	EIA Estimate of 2016 net oil export revenues (Nominal prices in billions of $)	IMF Estimate of 2016 GDP (Nominal Prices in billions of US$)	Petroleum Rev % of GDP	World Bank Data for Merchandise Exports in 2014 (billions of current US$)	Petro Rev as % of Total Exports (2014)	CIA Data for Exports in 2015 (billions of current US$)	Petro Rev as % of Total Exports (2015)	CIA Data for Total National Budget (revenues in billions of US$)	Petro Rev as % of Nat'l Budget
Algeria	16.8	181.7	9.2%	63.0	26.7%	36.3	46.3%	49.38	34.0%
Angola	9.6	98.8	9.7%	62.4	15.4%	37.38	25.7%	35.43	27.1%
Ecuador	4.8	101.7	4.7%	25.7	18.7%	18.36	26.1%	35.1	13.7%
Indonesia	-9.6	875.8	-1.1%	176.3	-5.4%	152.5	-6.3%	123.3	-7.8%
Iran	26.4	416.2	6.3%	88.8	29.7%	78.99	33.4%	56.11	47.1%
Iraq	45.6	176.4	25.8%	84.6	53.9%	54.65	83.4%	61.09	74.6%
Kuwait	26.4	128.5	20.5%	104.3	25.3%	57.13	46.2%	61.08	43.2%
Libya	2.4	32.4	7.4%	21.0	11.4%	10.51	22.8%	10.19	23.6%
Nigeria	24	484.9	4.9%	97.0	24.7%	50.74	47.3%	14.37	167.0%
Qatar	14.4	192.2	7.5%	131.7	10.9%	77.74	18.5%	77.22	18.6%
Saudi Arabia	93.6	643.2	14.6%	353.8	26.5%	224.6	41.7%	193	48.5%
UAE	19.2	356.2	5.4%	360.0	5.3%	323.8	5.9%	110.1	17.4%
Venezuela	21.6	133.5	16.2%	80.5	26.8%	47.53	45.4%	203.4	10.6%
OPEC	290.4	3821.6	7.6%	1649.1	17.6%	1170.23	24.8%	1029.77	28.2%

Source: Adapted by Max Markusen from EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8.

Note: Indonesia is a net importer of oil.

Appendix A: Projecting Estimated Crude Oil Revenues and Per Capita Income for 2016 – Part Two

Total Export Revenues Per Capita

	EIA Estimate of 2016 per capita net oil export revenues (Nominal prices in billions of $)	IMF Estimate of 2016 GDP per capita (Nominal prices in US$)	Petroleum Revenue as a % of GDP per Capita
Algeria	441.6	4345.425	10.2%
Angola	631.2	--	--
Ecuador	247.2	6076.927	4.1%
Indonesia	-40.8	3415.834	-1.2%
Iran	367.2	5047.835	7.3%
Iraq	1312.8	4694.262	28.0%
Kuwait	7984.8	29982.632	26.6%
Libya	201.6	4753.599	4.2%
Nigeria	148.8	2758.414	5.4%
Qatar	13032	78829.237	16.5%
Saudi Arabia	2935.2	20138.832	14.6%
UAE	3304.8	35392.171	9.3%
Venezuela	736.8	4262.541	17.3%
OPEC	432	--	--

Source: Adapted by Max Markusen from EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8.

Note: Indonesia is a net importer of oil.

[1] EIA, "Qatar," October 20, 2015, https://www.eia.gov/beta/international/country.cfm?iso=QAT.

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[6] IMF, Economic Diversification in Oil-Exporting Countries, April 2016, http://www.imf.org/external/np/pp/eng/2016/042916.pdf, pp. 10-11.

[7] IMF, Economic Diversification in Oil-Exporting Countries, April 2016, http://www.imf.org/external/np/pp/eng/2016/042916.pdf, pp. 10-11. Also see Henn, C., C. Papageorgiou, and N. Spatafora, 2013, "Export Quality in Developing Countries" IMF Working Paper 13/108.

[8] NASDAQ, http://www.nasdaq.com/markets/crude-oil-brent.aspx?timeframe=10y, accessed July 10, 2016.

[8] IMF, Economic Diversification in Oil-Exporting Countries, April 2016, http://www.imf.org/external/np/pp/eng/2016/042916.pdf, p. 19.

[10] Available at https://www.eia.gov/beta/international/regions-topics.cfm?RegionTopicID=OPEC

[11] These data can be accessed by using the Internet references in EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8.

[12] EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8.

[13] EIA, *OPEC Revenues Fact Sheet*, June 14, 2016, https://www.google.com/search?q=eia+opec+revenues+fact+sheet&ie=utf-8&oe=utf-8.

[14] Indonesia is excluded because it now a net importer of oil.

[15] OPEC Monthly Oil Report, June 2016, p. 57, http://www.opec.org/opec_web/static_files_project/media/downloads/publications/MOMR%20June%202016.pdf.

[16] Ron Patterson, "Comparing The EIA And OPEC Production Numbers," *Oil Price*, Jun 16, 2016, 10:55 AM CDT, http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html.

[17] All OPEC production data are taken from the 2015 data for secondary sources in OPEC Monthly Oil Report, June 2016, p. 57, http://www.opec.org/opec_web/static_files_project/media/downloads/publications/MOMR%20June%202016.pdf.

[18] Ron Patterson, "Comparing The EIA And OPEC Production Numbers," Oil Price, Jun 16, 2016, 10:55 AM CDT, ***http://oilprice.com/Energy/Energy-General/Comparing-The-EIA-And-OPEC-Production-Numbers.html***.

[19] EIA, Algeria Country Analysis, March 11, 2016, https://www.eia.gov/beta/international/analysis.cfm?iso=DZA.

[20] World Bank, *Overview*, March 31, 2016, http://www.worldbank.org/en/country/algeria/overview.

[21] IMF, Algeria Seeks to Diversify, Reshape Economy as Oil Revenues Decline, IMF Survey, May 19, 2016, http://www.imf.org/external/pubs/ft/survey/so/2016/new052016a.htm.

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[29] CIA, World Factbook, https://www.cia.gov/library/publications/the-world-factbook/geos/ag.html, accessed July 29, 2016.

[30] CIA, World Factbook, https://www.cia.gov/library/publications/the-world-factbook/geos/ag.html, accessed July 29, 2016.

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