



THE WORLD BANK

IBRD • IDA | WORLD BANK GROUP

Egypt Energy Sector and the Economy

An Integrated Assessment

Ahmed Kouchouk
Senior Economist

January-22, 2015

1. Key Messages

2. Egypt Energy Sector: facts, macro inter-linkages, and challenges

- **The Energy Sector in figures**
 - *Production, Consumption, and Energy Mix;*
- **The Energy Sector and the Economy (Inter-linkages)**
 - *Real sector, fiscal sector & subsidies, trade, and external accounts;*
- **Key challenges and distortions**
 - *Accumulation of arrears lead to decline in production, energy intensity and excessive consumption, distorted investments decision;*

3. Macroeconomic Implications of Government Priorities, Plans, and Actions

- *Recent measures and reforms and macroeconomic implications;*
- *Reforms in the pipeline;*

4. The Decline of Oil prices: Economic & Financial Implications on Egypt

5. Discussion and Q & A

1- Egypt Energy Sector and the Economy: Key Messages

Three Key Messages

1

Egypt's energy sector performance and macroeconomic contribution deteriorated since 2011 mainly due to prevailing instability & uncertainty, emergence of structural problems, and accumulated arrears to IOCs.

2

GOE is keen to formulate a new energy strategy that ensure energy security and sustainability. The GOE initiated the process by reforming subsidies/tariffs, followed by measures in place and in the making that encourage private investments in Oil, Gas and Power Generation.

3

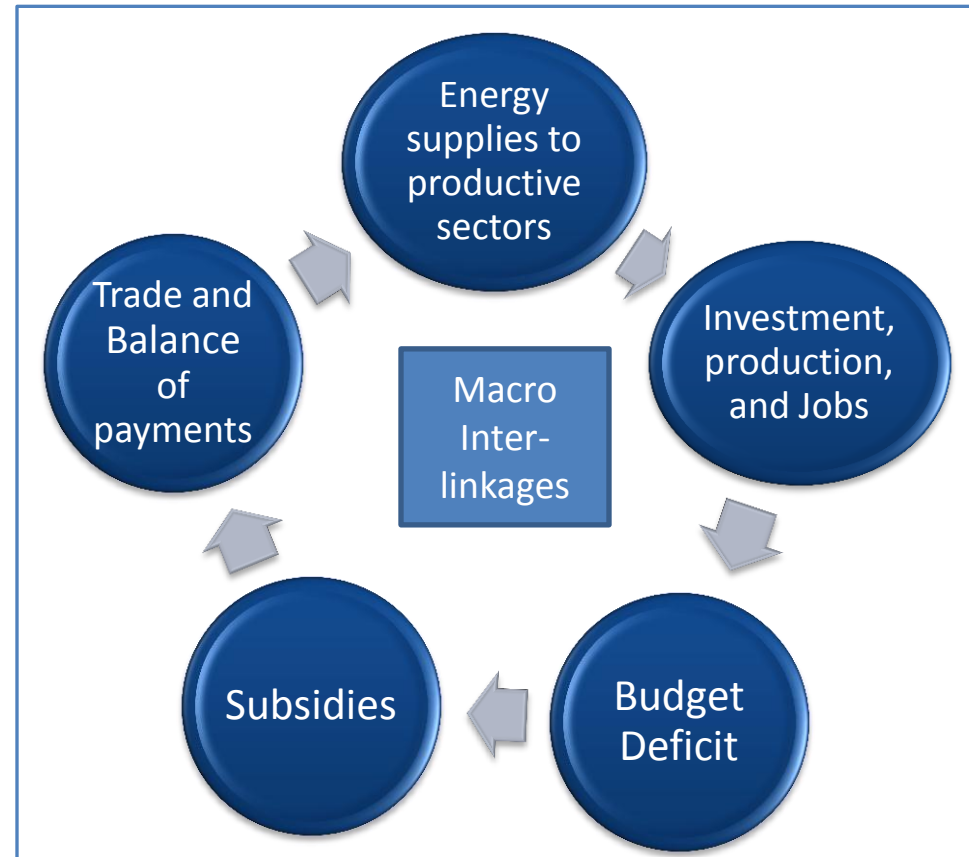
Lower international oil prices would benefit the Egyptian economy beyond the slightly improved macroeconomic indicators by availing energy supplies, improving profitability and entrenching stability. Would free additional resources that can be finance structural reforms.

2- Egypt Energy Sector : Key facts, inter-linkages and challenges

Oil

Gas

Electricity

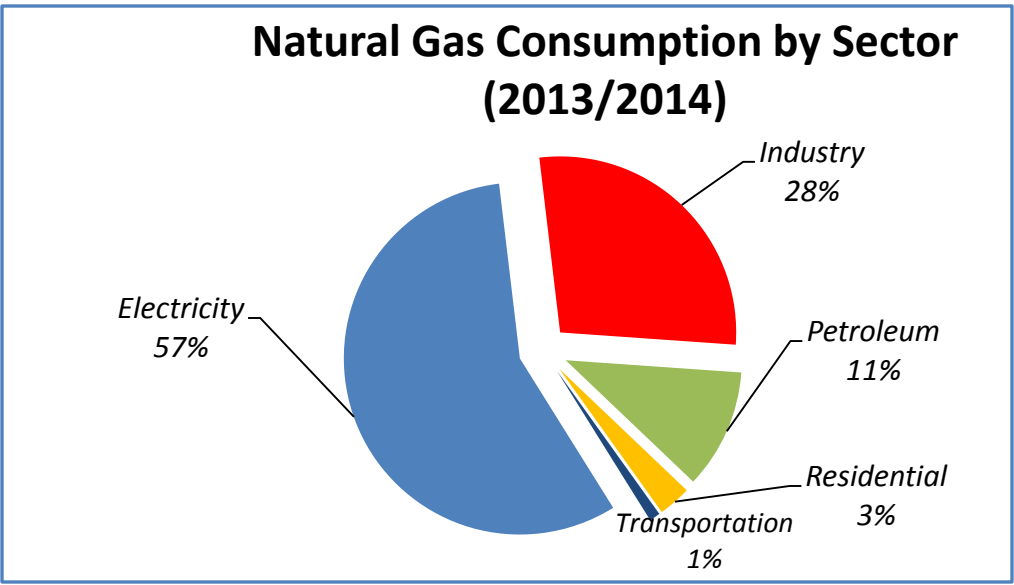
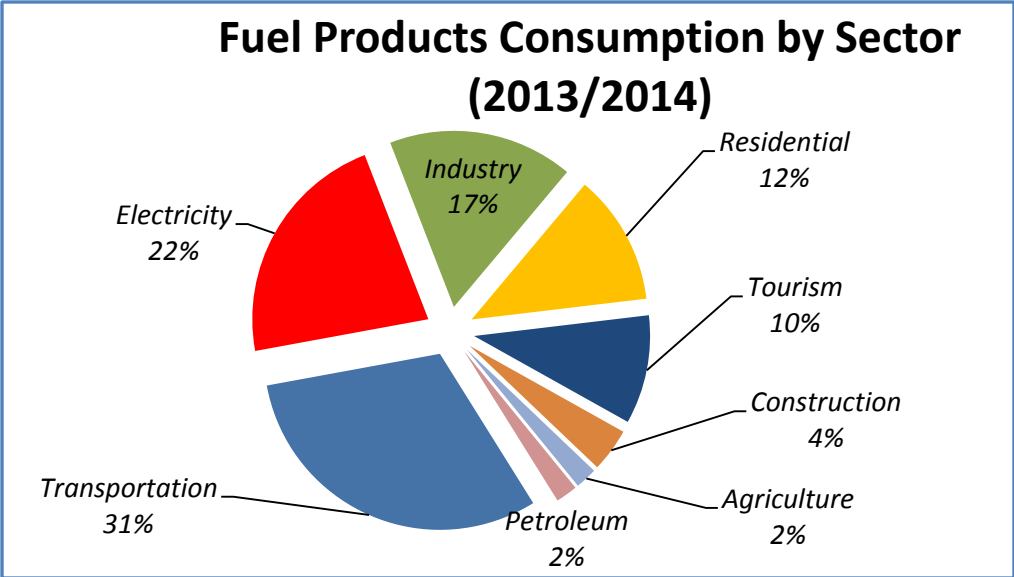


2-A: Energy Sector Key Facts and Figures – Oil and Gas

| Key Indicators (Million Tons) | 2012/13 |
|--|------------|
| Total Oil and Gas <u>Production</u> * | 78.7 |
| Oil and Condensate production ** | 33 |
| Gas Production | 45.7 |
| Total Oil and Gas <u>Demand</u> *** | 73.2 |
| Processes <u>looses + Exports</u> of Oil & Gas | 14.6 |
| Supply-Demand Gap | 9.1 |

| Key Indicators (continued) | 2013/14 |
|---------------------------------------|---------|
| Crude Oil imports (Million Tons) | 2.3 |
| Petroleum Products Imports (M. Tons) | 12.7 |
| Number of HH connected to NG grid | 5.7 M |
| Employment in Energy Sector (Million) | 0.2-0.3 |

Source: Ministry of Petroleum.
 *Grew on average by 1% over the past 5-years.
 ** around 30% of oil production are heavy or extra heavy
 ***Grew on average by 5.3% over the past 5-years.

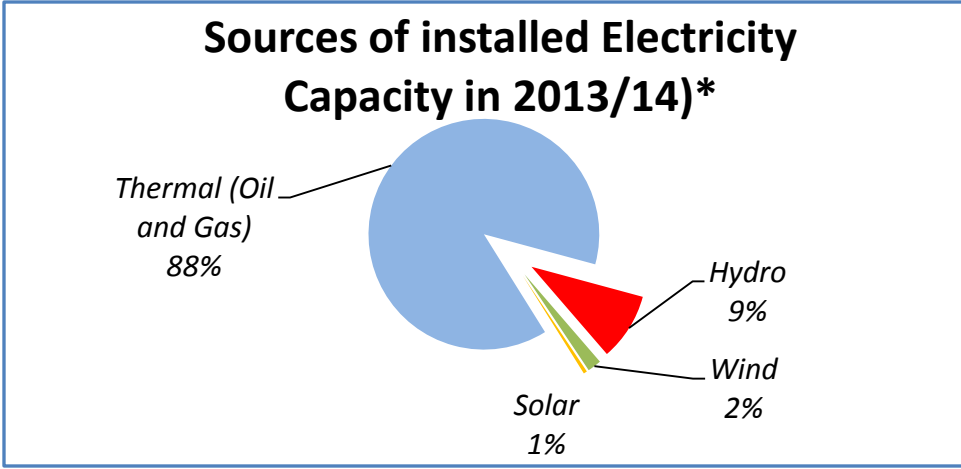
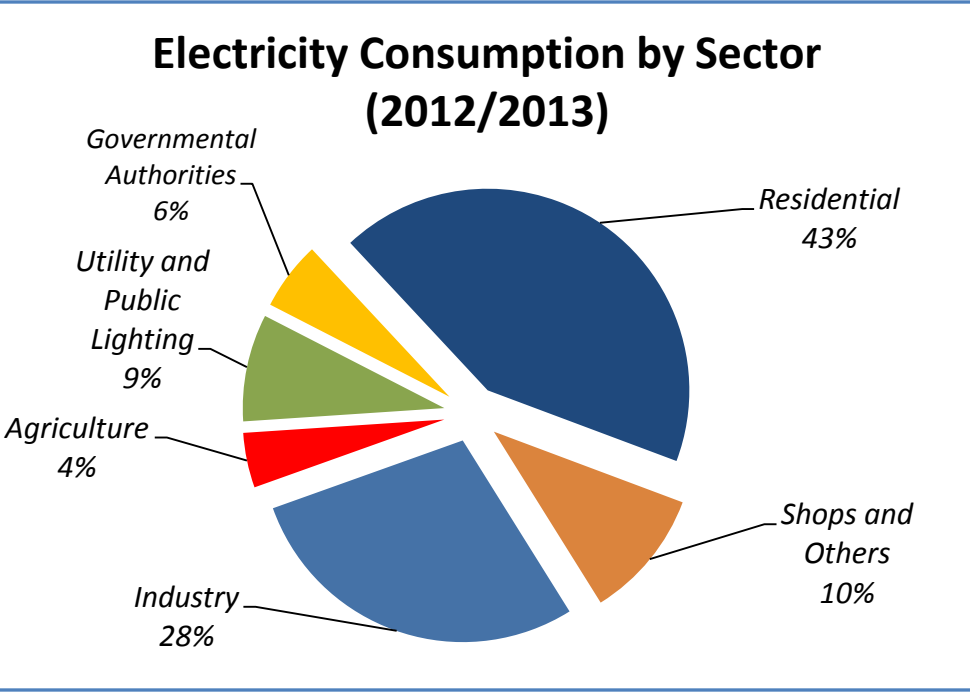


Source: Ministry of Petroleum.

2-A: Energy Sector Key Facts and Figures – Electricity Sector

| Key Indicators | 2014 |
|--|--------|
| Installed Capacity (MW) | 32,250 |
| Max load (MW) * | 28,015 |
| Current gap at peak (MW) | 4,500 |
| Electricity consumption Annual growth rate | 6% |
| Fuel Consumption (Million Ton) | 28.8 |
| Private sector share | 9% |
| No. of Consumers (Millions) | 30.9 |

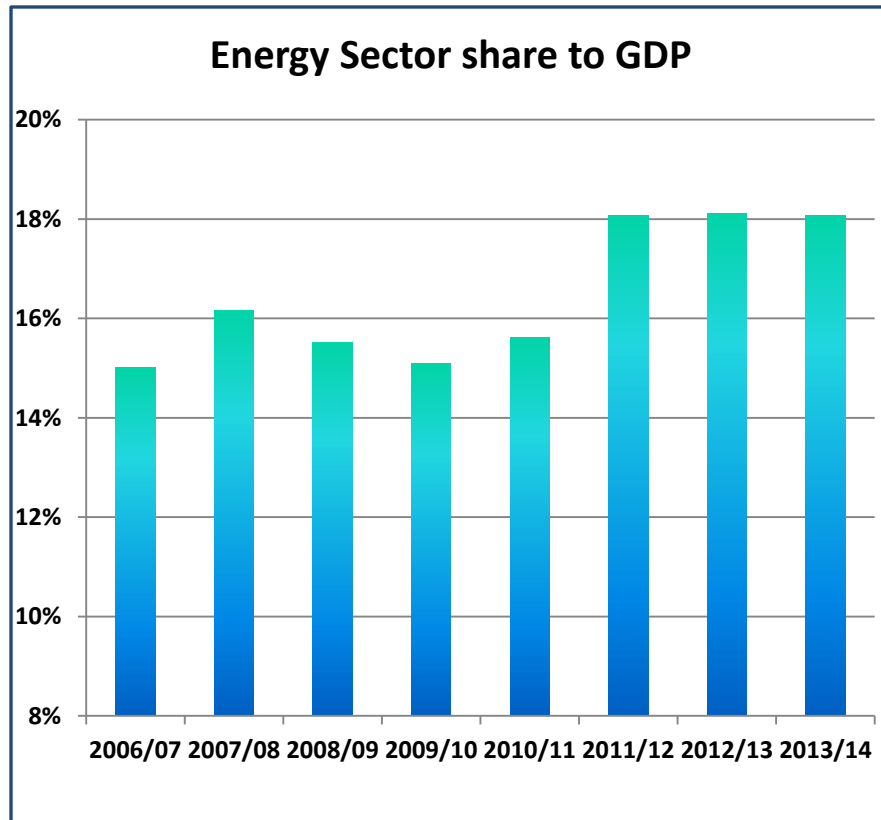
Source: Ministry of Electricity and Renewable Energy.
 * Potential to increase electricity generation by 21% through leveraging higher efficiency and better use of current assets.



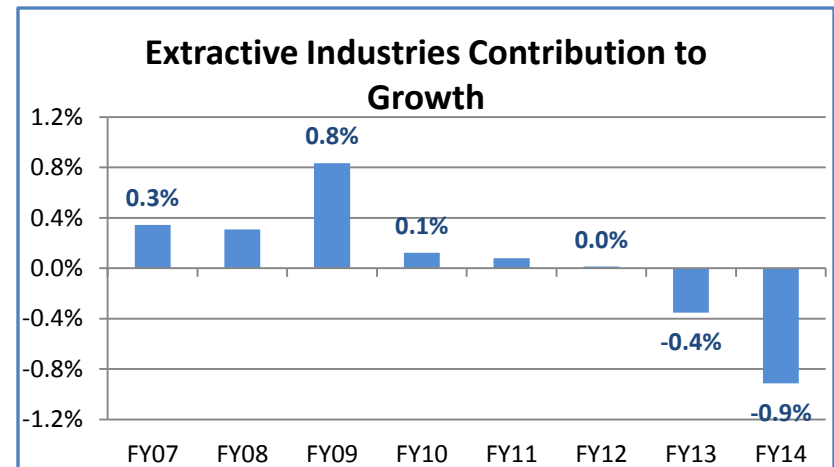
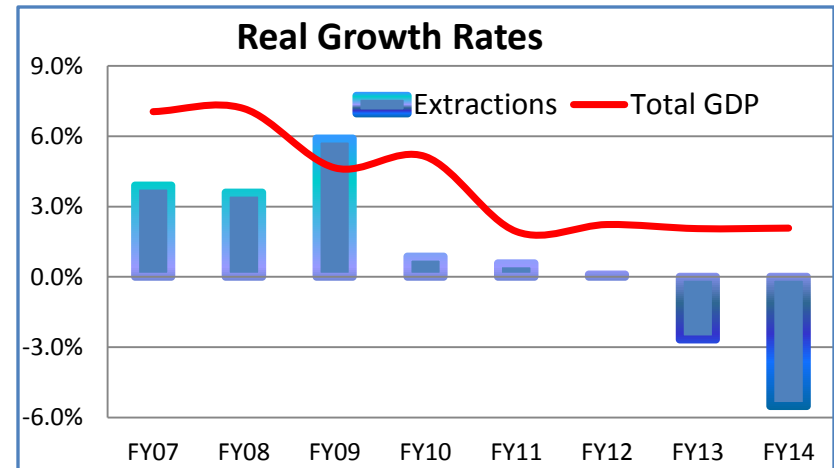
Source: Ministry of Electricity and Renewable Energy.
 * One third of thermal power plants are more than 20 years old.

2-B: Energy Sector Macroeconomic inter-linkages

- Egypt's Energy sector is the biggest contributor to GDP (18% of GDP in FY14), yet makes up only around 1% of total employment.
- The Extractive Industries contracted in real terms over the last 2-years as new upstream investments and explorations halted. The sector has been recording sluggish performance since the financial crisis.



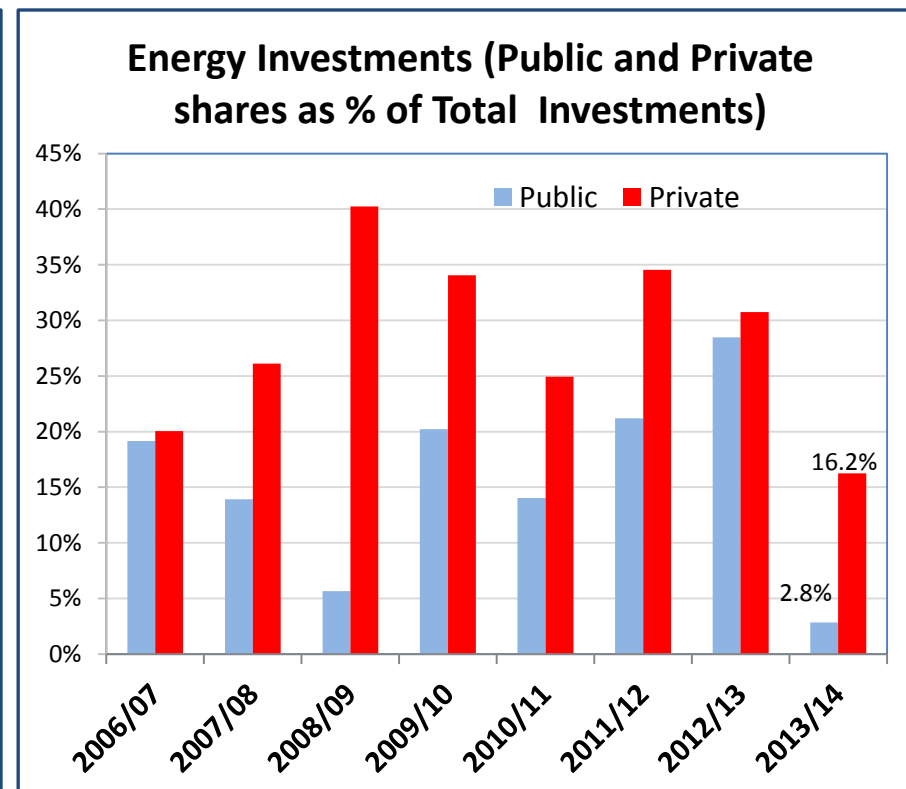
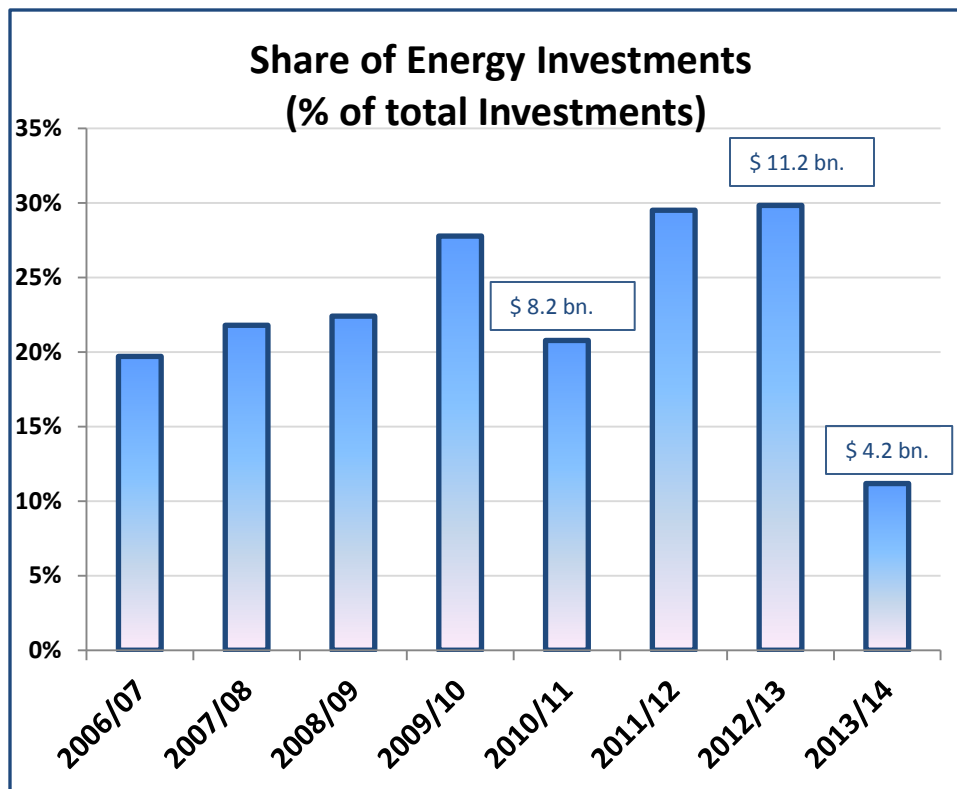
Source: Ministry of Petroleum.



Source: Ministry of Planning, Follow up and Administrative reform.

2-B: Energy Sector Macroeconomic inter-linkages

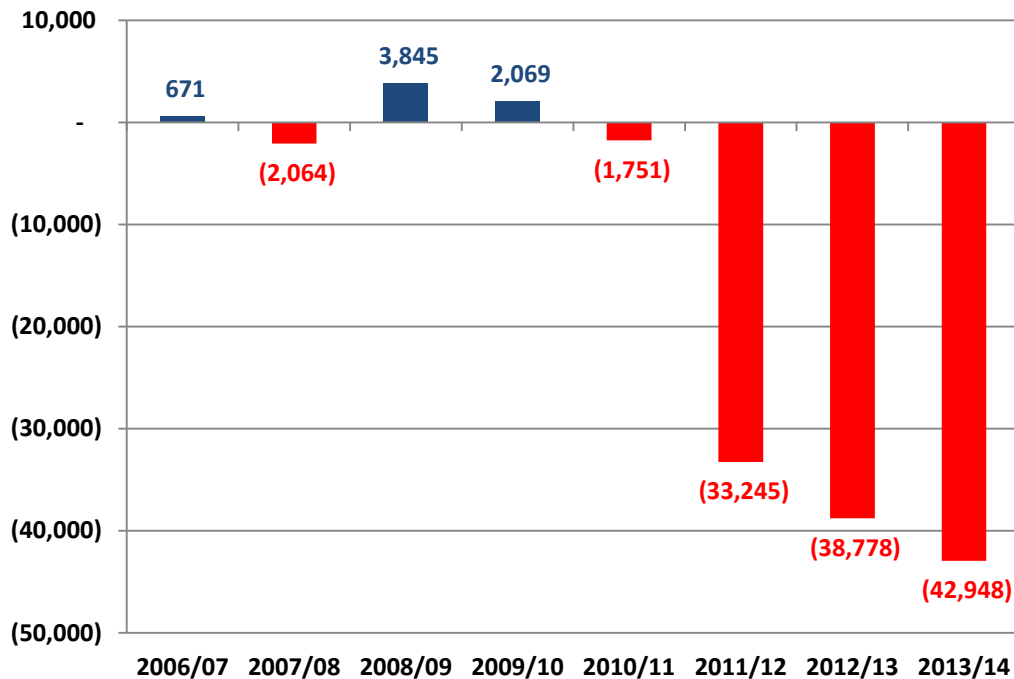
- ❑ *The Energy sector captured 20-30% of total investments during 2006/07-2012/13; before reaching a record low of 11% in FY 2013/14.*
- ❑ The energy sector represent 18% of total public investments during 2006/07-2012/13, yet declined to 2.8% in FY 2013/2014.
- ❑ The energy sector represent 30% of total private investments (including FDIs) during 2006/07-2012/13, yet declined to 16% in FY 2013/2014.



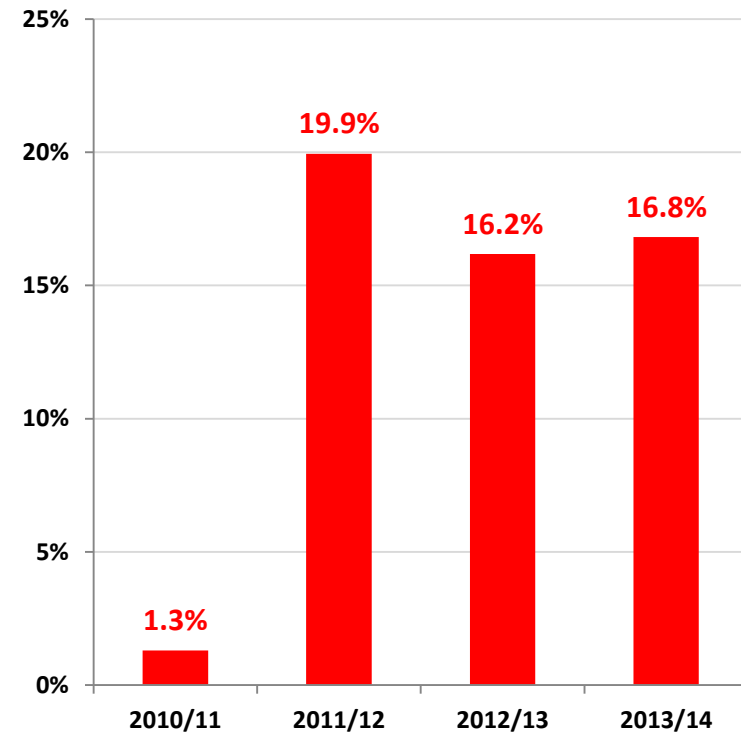
2-B: Energy Sector Macroeconomic inter-linkages

- ❑ Since 2011/12, the Petroleum Sector started to record a net deficit relation with the Budget (Treasury).
- ❑ EGPC became a key contributor to Egypt's ballooning fiscal deficit. This reflects primarily high international prices, notable decline in production levels, excessive consumption and importations, and financial difficulties facing EGPC.

Petroleum sector contribution to Fiscal Balance (EGP Millions)

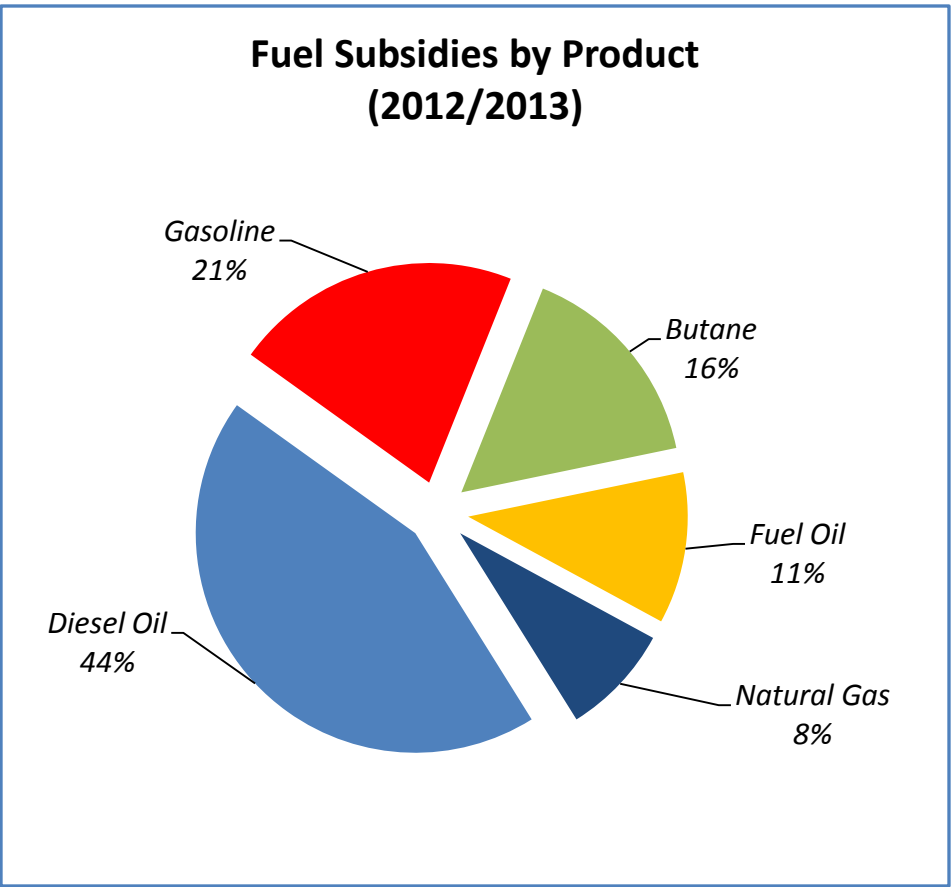
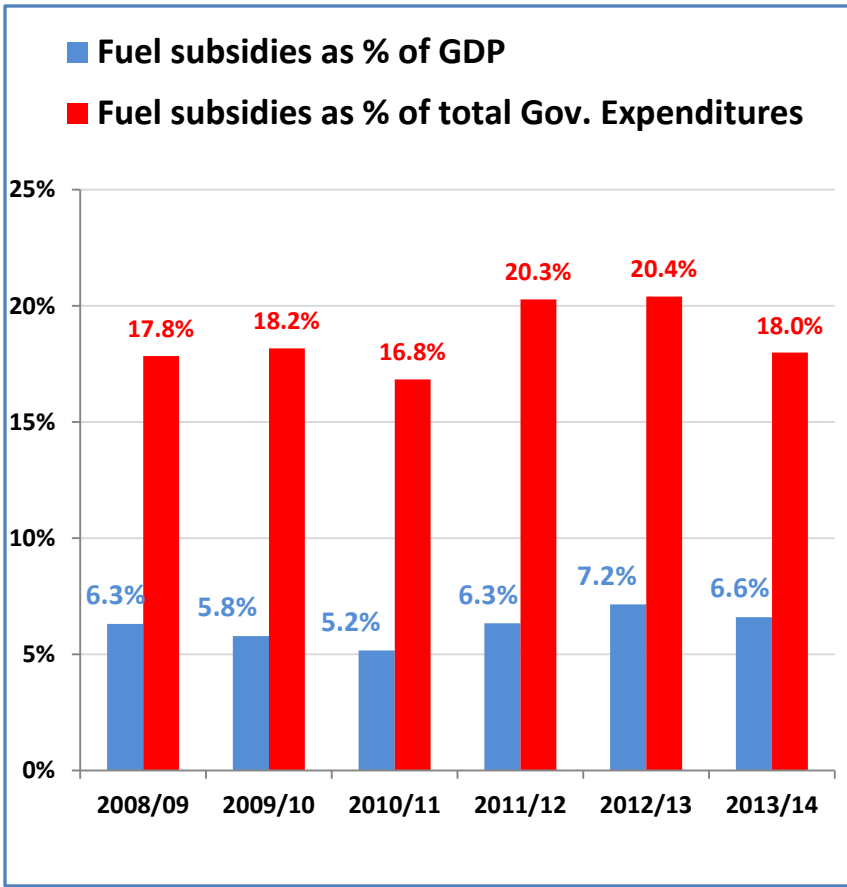


Contribution to Fiscal Deficit



2-B: Energy Sector Macroeconomic inter-linkages

- ❑ The Fuel Subsidies bill in Egypt is gigantic: represents, on average, close to 30% of Gov. Revenues, 20% of Gov. expenditures, and around 7% of GDP in 2013/14.
- ❑ Fuel subsidies grew at an annual rate of 28% between 2000-2013 (fastest growing item).
- ❑ Fuel subsidies are regressive, with the richest 20% of Egyptian households capturing 60% of energy subsidies; 3 times as much as the poorest quintile.

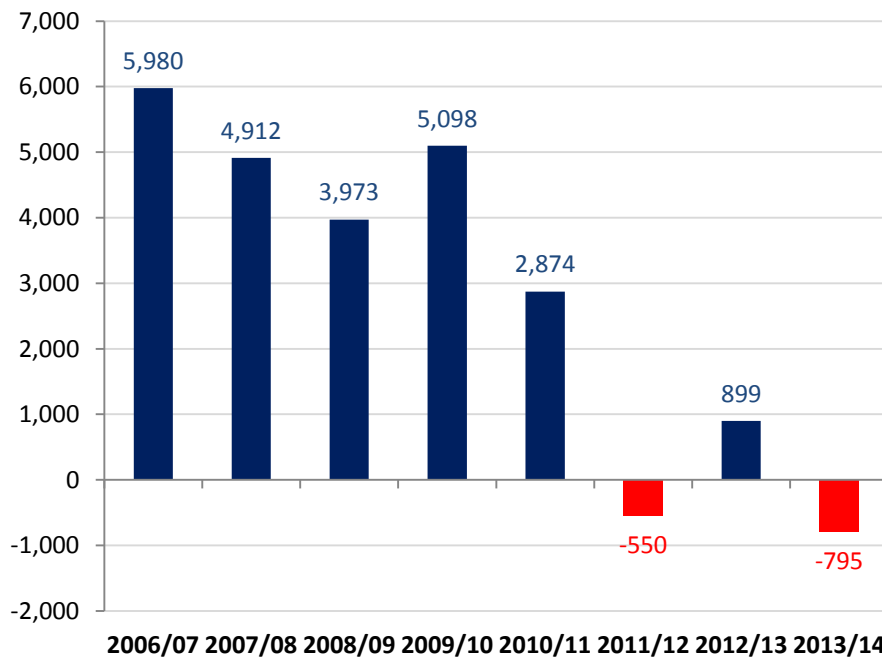


Source: Ministry of Finance.

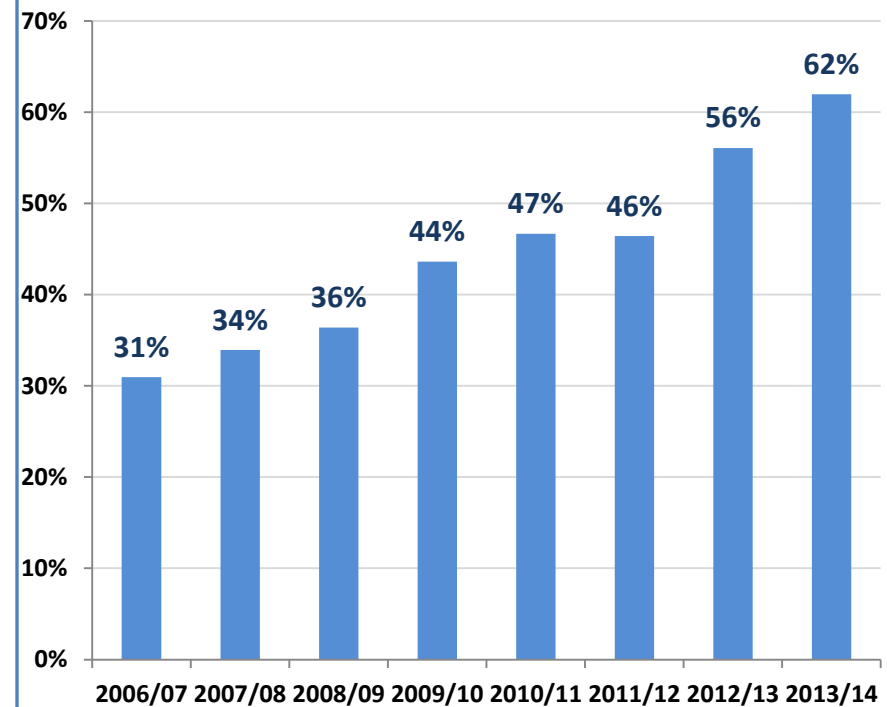
2-B: Energy Sector Macroeconomic inter-linkages

- ❑ *Egypt recently switched to become a slightly net oil importing country; it is likely to remain so over the medium term* (importation of NG is expected soon).
- ❑ *Petroleum exports have a low valued added component that is accelerating (missing opportunity).*

Net Petroleum Trade Balance (USD Millions)



Share of Crude oil in Fuel Exports

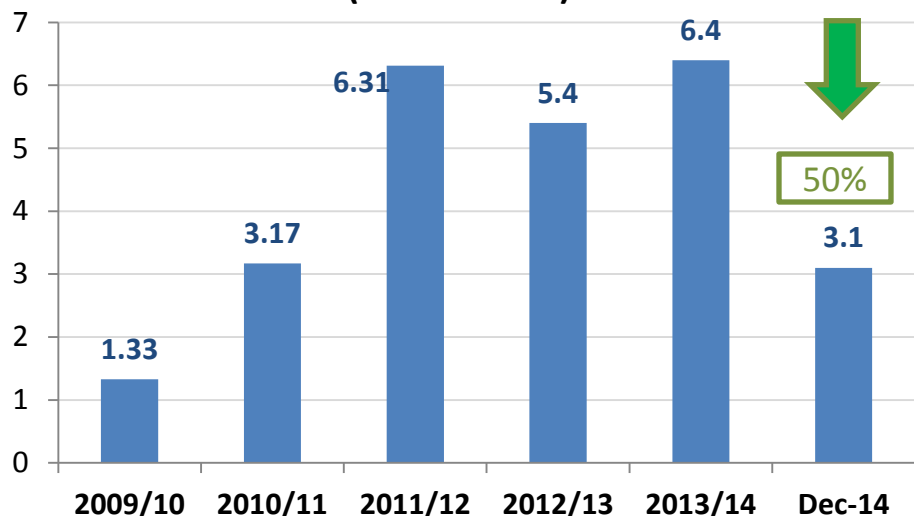


Source: Central Bank of Egypt.

2-C: Energy Sector Main Challenges and Distortions

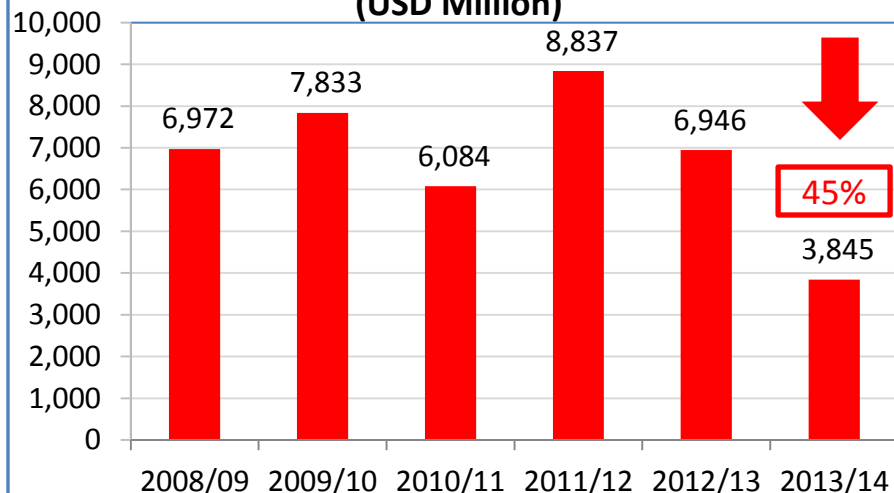
- ❑ **Arrears to foreign oil companies operating in Egypt started to pick up in 2011** due to political and economic instability that halted new exploration agreements.
- ❑ **Performance of private investments mimic/ can be explained by the accumulation of areas.** As companies are not paid, they stop their new upstream investments (exploration and development), **leading production to decline.**
- ❑ **However, domestic consumption continued to grow**, especially due to informal and smuggling activities. This led to an estimated gap of 9.1 million tons of oil and gas in 2013.

**Arrears to Foreign Oil Companies
(USD Billions)**



Source: Ministry of Petroleum.

**Private Energy Investments
(USD Million)**

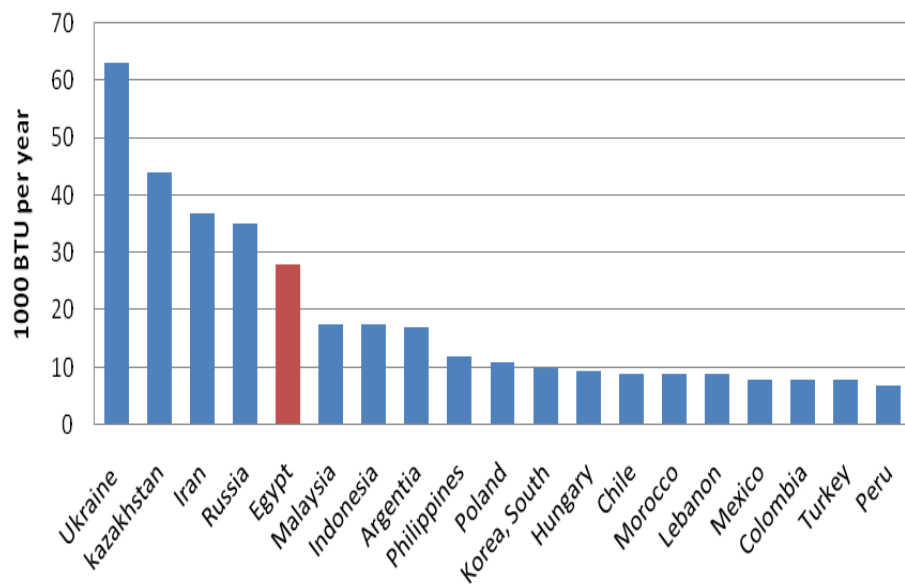


Source: Ministry of Planning, Follow up and Administrative reform.

2-C: Energy Sector Key Challenges and Distortions

- ❑ Because of fuel products under pricing, ***Egypt's economy is very energy intensive*** - especially in comparison with economies that are net oil importers or have balanced oil trade accounts.
- ❑ ***Excessive consumption contributed to Egypt experiencing*** for the first time in decades, ***frequent electricity supply interruptions and cuts over the past 3-years***. Current electricity Supply-demand gap is estimated at 4GW.
- ❑ Egypt ranks 107th for the quality of electricity supply. Firms wait on average 77 days to secure new access to electricity supply (4 times the time required in Latin America, East Asia and the Pacific).

Egypt's economy is energy intensive



Global Competitiveness Rankings

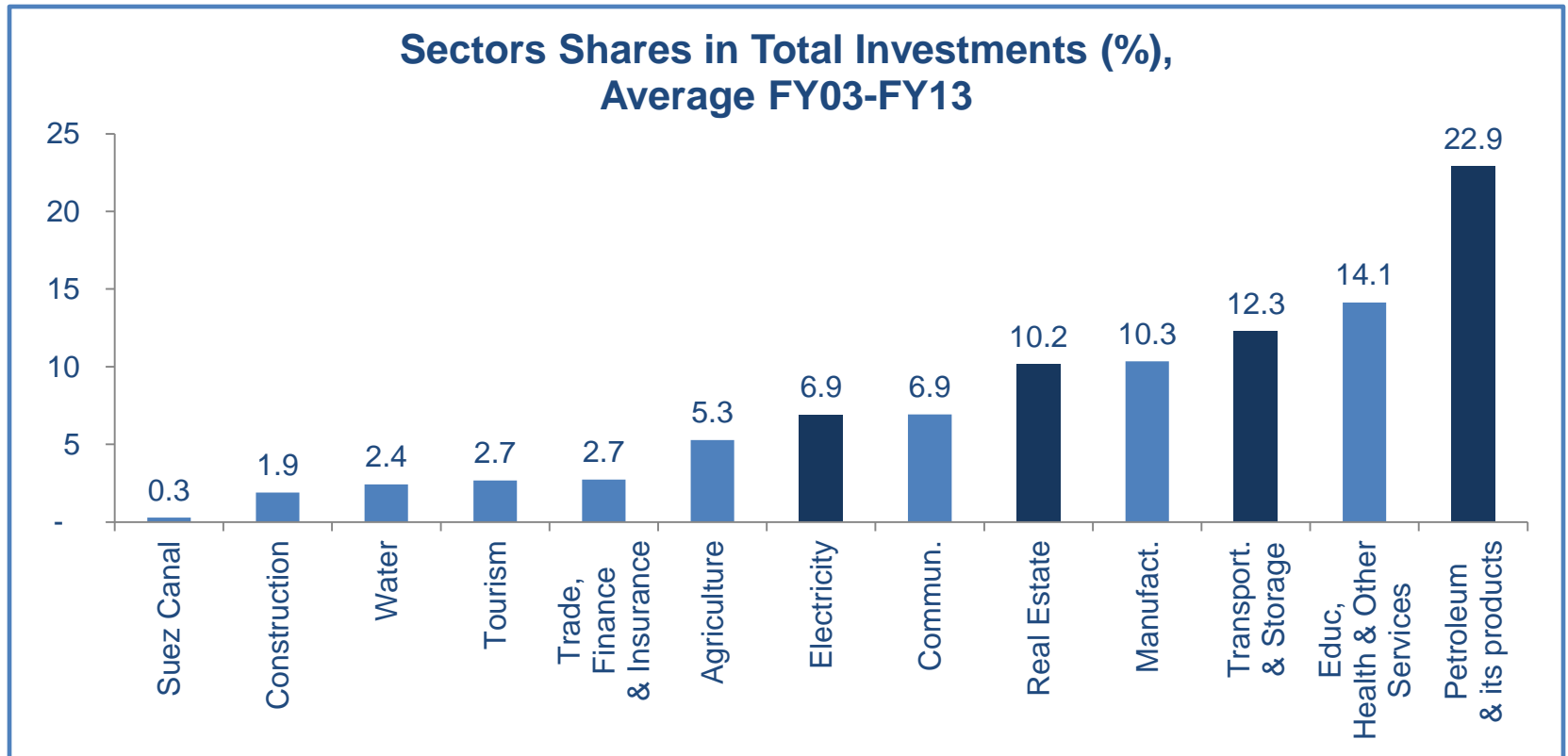
| Country | Overall Infrastructure | Quality of Electricity Supply |
|---------------------|------------------------|-------------------------------|
| <i>Egypt</i> | <i>118</i> | <i>107</i> |
| Chile | 45 | 65 |
| Jordan | 38 | 38 |
| Malaysia | 25 | 37 |
| Morocco | 48 | 47 |
| Romania | 106 | 88 |
| Tunisia | 80 | 56 |
| Turkey | 41 | 77 |

Note: ranks are out of 148 countries.

Source: WEF, Global Competitiveness Report, 2013-14 and World Bank WDI

2-C: Energy Sector Key Challenges and Distortions

- ❑ *Investment decisions have been distorted by non-market prices (underpriced fuel and energy supplies).*
- ❑ *More than 50 percent of investments were channeled towards energy supply (to meet increasing demand) and to energy intensive consuming sectors such as transportation and real estate sectors (because of 'cheap' energy inputs) at the expense of social sectors (education, health and construction), internal trade and agriculture. **This lead to supply bottlenecks, higher prices, and limited job creation.***



2-C: Energy Sector Key Challenges and Distortions

Supply

- Unsustainable energy mix
- Mature fields and aging refineries
- Higher and increasing filed development costs
- Highest untapped wind potential in MENA
- High untapped solar potential

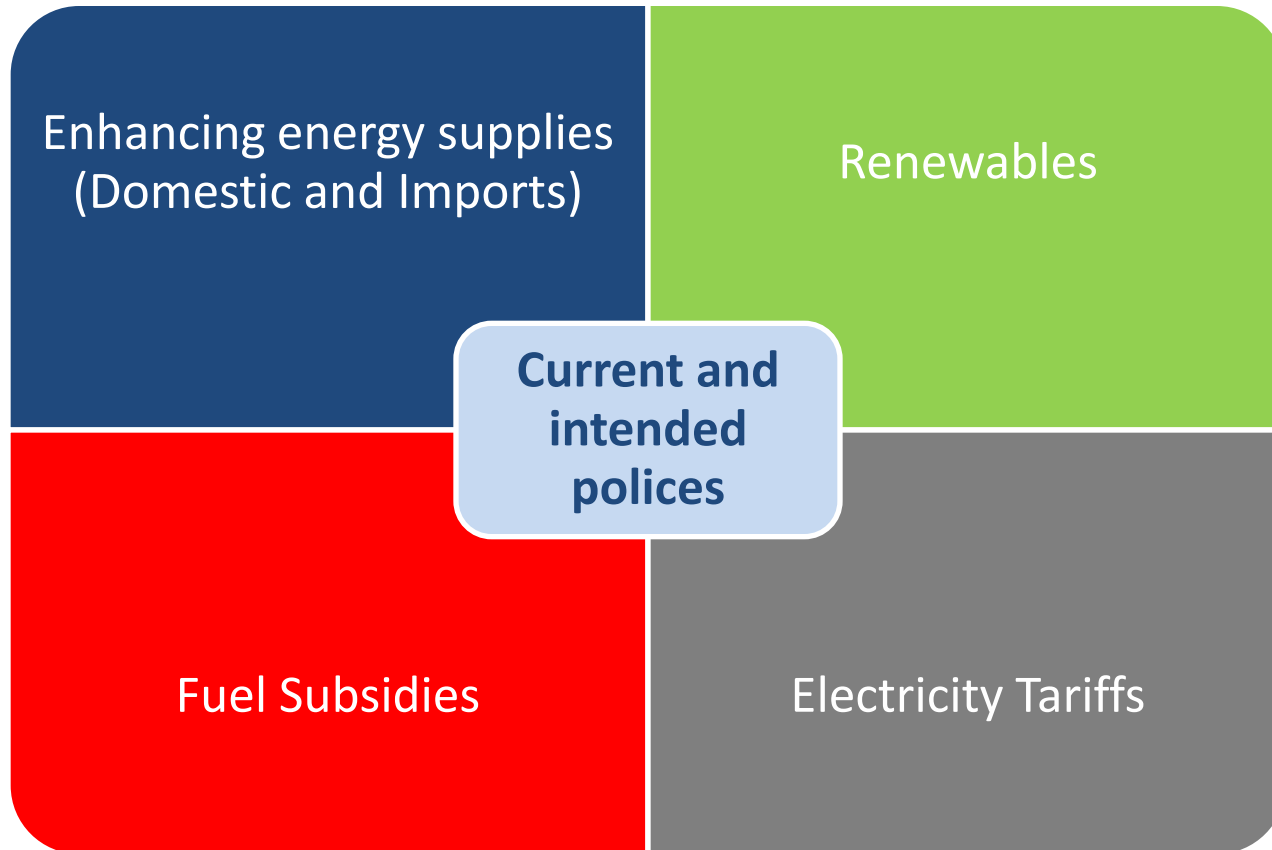
Demand

- 15% of consumption is illegal
- Aging thermal Power plants
- Over dependence on road transportation
- Generating electricity inefficiencies

Institutional

- Enhance institutional capacity of public sector entities
- Resolve cross debts issues

3- Government Current and Intended Police and Reforms



3- Government Measures/Policies and their Macroeconomic Implications

Reforms/Measures to bridge Demand-Supply Gap:

❑ Encouraging Upstream Investments:

1. Bring down arrears to IOCs by over 50% to reach USD 3.1 bn. by end Dec. 2014 compared to USD 6.4 bn. in June 2014.
2. Resume issuance/signing of new exploration agreements (around 38 signed in 2014) after a freezing 3-years period. 20 new agreement are being finalized.

❑ Importing Gas:

1. Contracted 6 LNG shipments from Algeria (delivery schedule is summer of 2015) and addressed the infrastructure needs to import LNG (leased FRSV).

❑ Renewables and Optimization of fuel Mix:

1. Introduced a feed-in tariff (FiT) scheme for private sector and HHs production of electricity from wind and solar with capacity of 50 MW or less. GOE announced necessary sovereign guarantees and interest subsidy loans depending on production capacity.
2. Tender 4,300 MW from RE (2,000 MW solar, 300 MW residential solar, 2,000 MW wind). 187 bids were received, 136 pre-qualified (60% foreign investors, \$6 bn. Investments). Over coverage for solar, 75% coverage for wind. NARE got approvals for permits/licenses (11) for all RE projects.
3. Issued law 203 for 2014 (on Dec. 21) that define FiT regulatory framework: tendering process and regulations including issuance of licenses, fit value and payment process, terms of allocating and using land.

Macroeconomic Implications (Multiple dividends)

- (A) Pick up in FDI inflows and resumption of private investments inflows into the energy sector. This should lead to higher production levels with a lag.
- (B) Encourage private investments into green power generation to help meet Egypt's soaring energy demand and needs. Generous FiT would crowd in private investments.
- (C) Improve and diversify the energy mix used in generating electricity by permitting the use of coal and enhancing wind and solar contribution.
- (D) Secure higher energy needs compared to previous years, imply higher production rates.

3- Government Measures/Polices and their Macroeconomic Implications

Reforms/Measures to bridge Demand-Supply Gap:

❑ Streamlining Fuel Subsidies:

1. Across the board increase in prices of fuel products used by HHs, firms, and industries.
2. Maintaining social dimension: prices of LPG (residential and commercial), natural gas for bakeries, and fuel oil for electricity generation remained intact.
3. GOE announced its commitment to eliminate fuel subsidies in 5-6 years.
4. Extend NG grid to lagging regions to connect additional 1.1 million HH (WBG lending project).

❑ Electricity Tariffs and Subsidies:

1. Increase tariffs for residents (except lowest consumption bracket) and commercial users by 25% in July 2014.
2. Simplify tariff structure (consolidate brackets) and allow prices to adjust to peak consumption hours.
3. Issued a decree on July 17th 2014 to detail annual electricity tariffs for all users and blocks over the coming 5-years (up to FY19). Cross subsidies by end of FY19 would stand at EGP 9 bn. (May be underestimated).
4. Issued a tender for supplying 10 million LED lamp (80% more efficient) and is currently being evaluated. Save the equivalent of 300 to 400 MW of capacity.

Macroeconomic Implications (Multiple dividends)

- (A) Improve Egypt's fiscal position by yielding net fiscal savings of around EGP 50 bn. in FY15 (2.2% of GDP).
- (B) Rationalize excessive energy consumptions/imports. Should have positive impact on growth.
- (C) Incentivize labor-intensive sectors and reduce insider privileges that used to go to rich consumers and large firms. This can also enhance employment creation.
- (D) Enhance transparency and forward looking planning by announcing future electricity prices.
- (E) Encourage the use of RE.

3- Government Measures/Policies and their Macroeconomic Implications

Petroleum prices as of July 5 2014

| Product | Unit | Sector | New Price | % Increase |
|--------------------|------------|---|-----------|------------|
| Natural Gas | \$/mmbtu | Iron - Copper - Aluminium - Glass – Ceramics | 7 | 75% |
| | | Fertilizer - Petrochemicals | 4.5 | 13% |
| | | Cement | 8 | 33% |
| | | Brick - Engineering - Chemicals - Food - Medicines – Fabric | 5 | 25% |
| | | Electricity – BOOT | 3 | 173% |
| | LE / M3 | Cars | 1.1 | 144% |
| | | Residential | 0.4-1.5 | 0% |
| | | Bakeries | 0.14 | 0% |
| Gasoline | LE / Liter | 80 | 1.6 | 78% |
| | | 92 | 2.6 | 41% |
| | | 95 | 6.25 | 9% |
| Fuel Oil | LE / Ton | Food Industry | 1400 | 40% |
| | | Cement | 2250 | 41% |
| | | Electricity | 2300 | 0% |
| | | Others | 1950 | 30% |
| Diesel | LE / Liter | All Sectors | 1.8 | 64% |
| | | 66% of Tourism Sector | 1.8 | 64% |
| LPG | LE / C | Residential 1 | 8 | 0% |
| | | Commercial | 16 | 0% |

3- Government Intended Reforms/Policies and their Macroeconomic Implications

Reforms/Measures to bridge Demand-Supply Gap (opportunities for investors):

Oil and gas:

1. The government reiterated its commitment to eliminate fuel subsidies in 5-6 years.
2. Negotiate additional LNG import shipments to meet energy demand for summer 2015 and over MT (2016-2020).
3. North Alex NG field to start production in 2017 instead of 2021. Provide 20% of total NG production.
4. Extend NG grid to lagging regions and governorates.
5. Negotiate and agree new upstream prices with companies.
6. Issue a new Gas law and establish an independent regulator.

Electricity:

1. Issue a new electricity law that ensure regulators independence and support/enhance private sector role (expected in Q1 2015).
2. Issue a tender for supplying 40 million LED lamp (80% more efficient). Save equivalent of 1200-1600 MW per year.
3. Accelerate the installation of smart meters and smart grid.
4. Convert simple cycle power plants to combined cycle.
5. Regional connection of the grid with (SA ,Sudan and Libya)

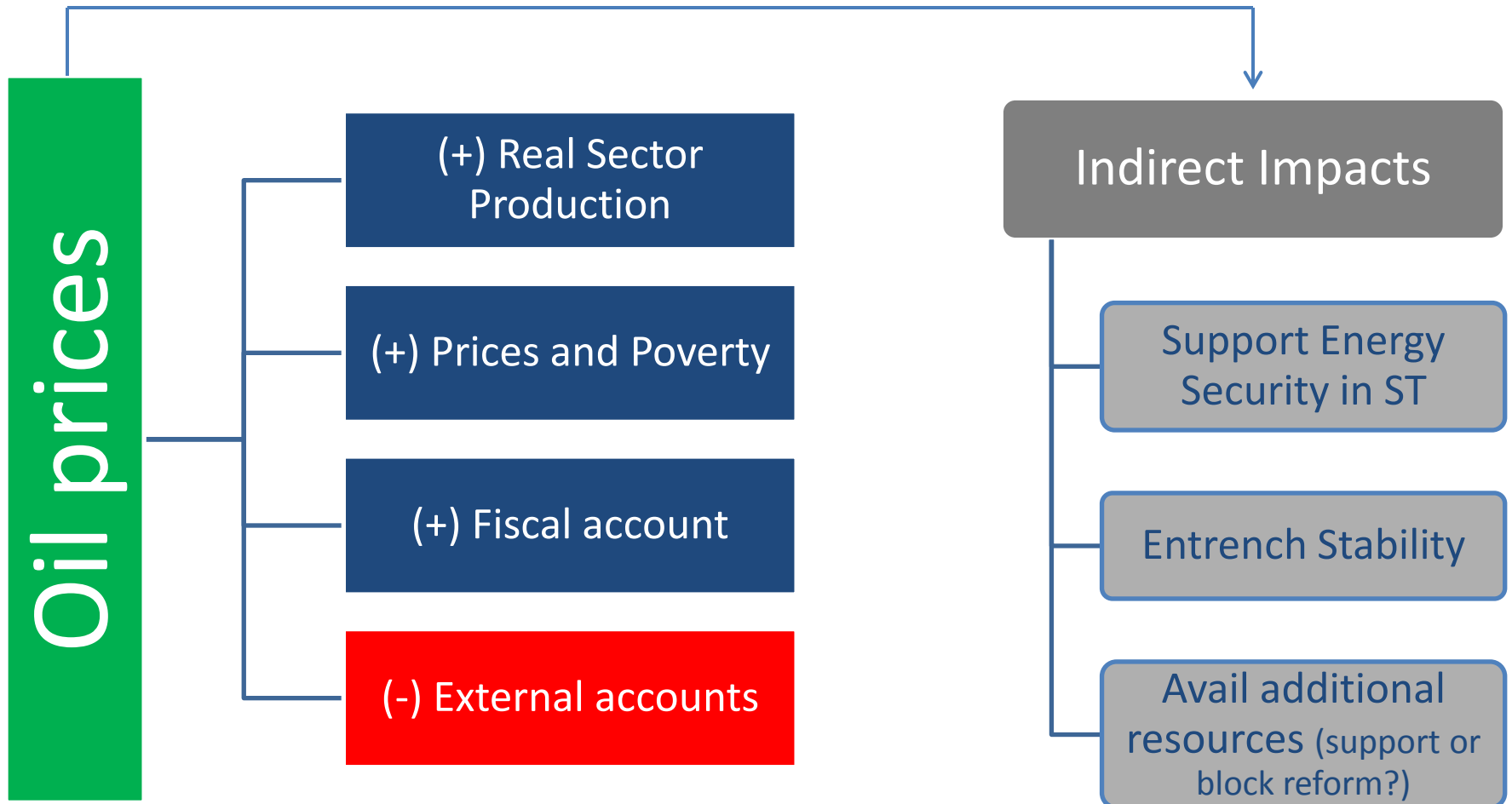
RE and Other Sources:

1. Ministry of Electricity is working on setting a new FiT scheme for coal and waste management. A coal environmental specs has been issued by Ministry of Environment.
2. More issuance of RE projects.

Macroeconomic Implications

- (A) Enhance ability to secure adequate energy supplies. This would enable a high economic growth path.
- (B) Crowding in private investments and attracting new players can enhance the sector capabilities, transfer knowledge, and create opportunities for related industries.
- (C) New enhanced opportunities for the private sector.

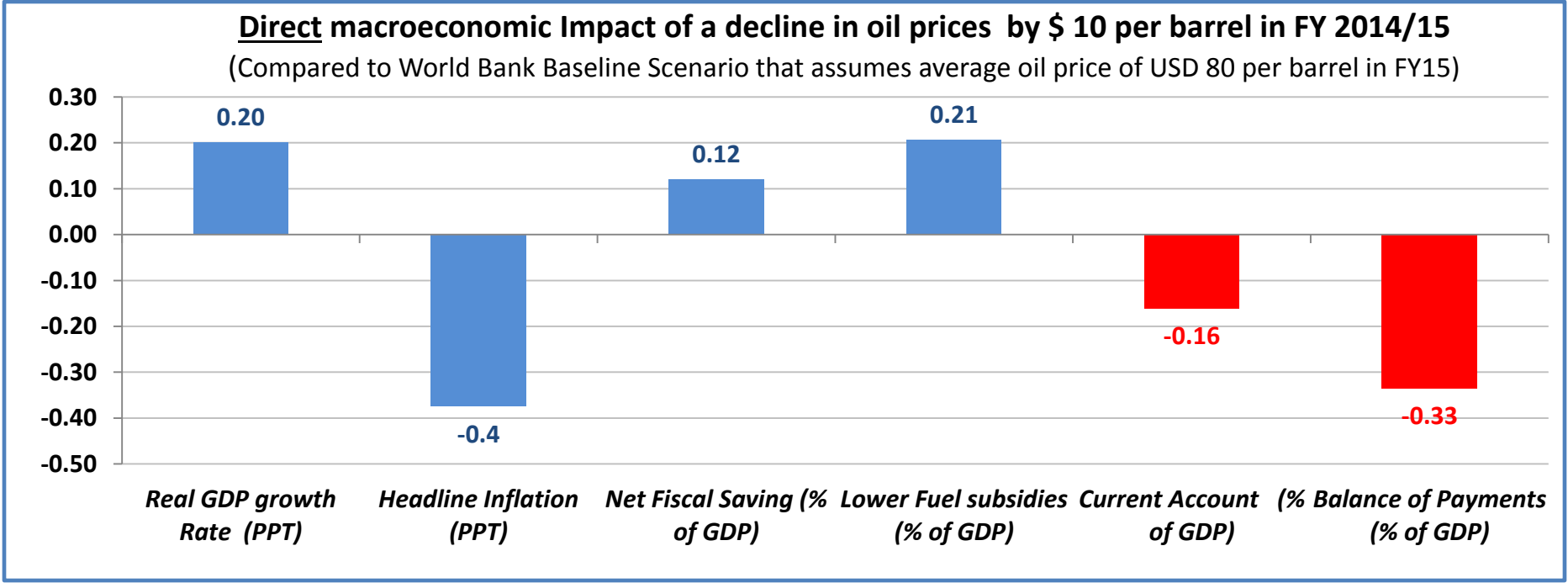
4- The Decline in Oil Prices and ST macro-financial implications



4- The Decline in Oil prices: Economic/Financial implications on Egypt

Overall Macroeconomic Assessment:

- ✓ *Everything else held constant (?), it is likely that a decline in international oil prices would yield net positive gains to the Egyptian economy in FY 2014/15.*
- ✓ *The projected direct gain ranges from small to very small depending on assumptions made. The poor would benefit especially if market forces drive food prices down (large import component).*
- ✓ *The medium term effect is more uncertain.*



Source: Authors Calculations.

4- The Decline in Oil prices: Economic/Financial implications on Egypt

□ Real sector and Production levels:

1. Channels:

- ✓ Lower cost of importing fuel products and imports in general due to lower transportation cost.
- ✓ Enhanced ability/affordability of securing adequate energy supplies especially during summer of 2015.
- ✓ Higher utilization/production rates by firms (especially large firms and those operating in energy intensive sectors).
- ✓ Potentially higher investments by firms operating in growing sectors.
- ✓ Better economic prospects in Egypt's main trade partners (Europe and US).
- ✓ Possible (not likely in the ST) lower investments/financial inflows from Gulf countries especially by sovereign entities.

2. Implications:

- ✓ Higher domestic production and income levels that stimulate domestic demand.
- ✓ Higher profits given Egypt high energy intensity rates.
- ✓ Higher non-oil exports.
- ✓ Higher imports (partially contain income gains).
- ✓ Lower deflator that partially limits nominal GDP.
- ✓ Less blackout and electricity outages in the summer.
- ✓ Improved perception of political and social stability.

| Key Indicators | 2014/15 |
|-----------------------|---------|
| Nominal GDP (EGP Bn.) | + 4.4 |
| Real GDP growth rate | + 0.2% |
| Deflator | -0.4% |

4- The Decline in Oil prices: Economic/Financial implications on Egypt

□ Price Levels and Poverty:

1. **Channels:**

- ✓ Lower fuel imports and international shipping/transportation cost.
- ✓ Lower food imports (constitute 40 percent of consumer spending).
- ✓ Higher capacity utilization, higher AS, and less supply bottlenecks and shortages.
- ✓ Fuel prices are administratively set, so lower international oil prices should have no impact on transportation cost and prices of administratively set goods and services.
- ✓ Higher domestic demand and investments can exert inflationary pressures (towards end of FY: April-June 2015).

2. **Implications:**

- ✓ Domestic inflation would decline by 0.4 PPT in FY 2014/15 compared to baseline scenario (\$80 per barrel).
- ✓ The decline in headline inflation rate reflects primarily lower food prices.
- ✓ The lower cost of production is not expected to lower market prices of goods and services but would improve firms/merchants profitability.
- ✓ ***Lower inflation, slightly higher production, and improved earnings/incomes can have positive impact on poverty indicators.***

4- The Decline in Oil prices: Economic/Financial implications on Egypt

□ **Fiscal Accounts:**

1. Assumptions:

- ✓ Egypt budgeted EGP 100.4 billion for energy subsidies in FY2014/15 assuming average oil price of \$105 per barrel and factoring in energy reforms implemented in July 2014.
- ✓ *July-Dec. 2014 preliminary estimates of fuel subsidies are EGP 45 billion.* Minister of Petroleum said that if oil prices prevail below \$60 per barrel, the subsidy bill can reach around 70 bn. in FY15.

2. Channels:

- ✓ Lower cost of importing fuel products would lower subsidy cost of imported fuel products (share is assumed to be on average around 50%).
- ✓ Lower prices would also affect negatively EGPC non subsidized and commercial activities and hence due taxes and dividends transferred to the government.

3. Implications for \$10 decline in oil prices:

- ✓ Lower fuel subsidy bill (EGP 5 billion, 0.2% of projected GDP).
- ✓ Lower revenues of around EGP 2 billion (partially containing lower subsidies).
- ✓ Net fiscal gains of around EGP 2.7-3 billion (0.12% of projected GDP) in FY 2014/15.
- ✓ Improved expenditure structure and enhanced fiscal flexibility.

4- The Decline in Oil prices: Economic/Financial implications on Egypt

□ External Accounts:

1. **Channels:**

- ✓ Lower shipping/transportation cost.
- ✓ Lower petroleum exports receipts.
- ✓ Higher non oil exports due to better economic prospects in EU, US and China.
- ✓ Same fuel import bill despite higher quantity imported (P & Q effects wash out).
- ✓ Pick up in volume of non-oil imports, yet cost per unit would slightly decline.
- ✓ Slightly lower remittances from GCC countries (contained in ST as wages/employment decisions adjust with a lag especially with GCC governments announcing continuation of ambitious spending policies).
- ✓ Lower portfolio investments from GCC countries.
- ✓ Neutral impact on tourism (lower Russian/Gulf tourist matched by higher European tourists).

2. **Short-term Implications:**

- ✓ Slightly deteriorated petroleum deficit (higher imports)
- ✓ Slightly improved non-oil trade deficit.
- ✓ Slight decline in remittance inflows.
- ✓ Decline in portfolio inflows from GCC countries.

| Key Indicators | 2014/15 |
|---------------------------|---------|
| Current Account (USD Bn.) | - 0.5 |
| Capital Account (USD Bn.) | -0.56 |
| BOP Balance (USD Bn.) | -1.1 |
| BOP Balance (% of GDP) | -0. 3% |