

Attack on the Bayji Refinery

Summary

- The Bayji refinery produces approximately one-third of all refined products consumed in Iraq (200 kbbl/d of 600 kbbl/d). One third is produced by other Iraqi refineries and the final third is imported. Minor quantities are exported.
- In the short run, Bayji's closure may well require the doubling of Iraq's current refined product imports, at least until some of the repairs can take place, at the earliest, in about 6 weeks.
- The main impact of the attack is on the disruption to Iraqis lives due to energy shortages for activities such as cooking, transport and electricity.
- Higher energy costs, with possible inflationary pressures, are likely.
- Iraq must do everything to increase its imports of refined products to minimize the energy shortages faced by households. In addition, it should increase emergency imports of electricity from neighbours.
- There will be a modest financial impact. The oil that would have been processed at the refinery, and consumed locally, will instead be exported as crude for about 80% of the value of refined products. The direct initial loss caused by the need to export crude oil and import refined products amounts to approximately \$4-5 million per day.

Costs and damage caused by attack

Total consumption of refined products in Iraq is estimated at about 600 kbbl/d, of which about 150 kbbl/d are imported.¹ Losing the output of both Bayji units, means a supply reduction of about 150 kbbl/day.

Cooking (kerosene and LPG), road transport (gasoline), electric power generation, and air and ship bunkering (refueling) are most affected by the attack. There will be disruptions and shortages to energy supply until alternative arrangements can be found.

The economic/financial impact is not of a macroeconomic order of magnitude, but energy will become more expensive to the Iraqi economy. Depending on the monetary policy response, higher energy prices could also lead to more generalized price increases. In the past, periods of high inflation have been associated with lack of domestic production of fuels and difficulty in importing them. The inevitable shortages may also strengthen secondary markets in fuels, given that some fuels sell at different prices for different uses/users.²

Importing more expensive kerosene will mean that the government will have to pay higher subsidies to ensure the price remains the same to consumers. Highly-subsidized electric power may also impact the budget because larger volumes of higher-cost imported diesel will have to be supplied to the power plants, at a loss to the state.

¹ Most recent annual data available, 2009

² Fuel supply for lower priced users (e.g. agriculture, water pumping) may disappear to be sold at higher prices for other users (e.g. private cars).

The oil that used to be refined will instead be exported. A barrel of crude is worth approximately 80% to 90% of a barrel of refined products. As a result, the total loss will include this direct initial loss³ (estimated at \$4-5 million per day) in addition to the costs imposed by supply disruptions and freight charges for the additional products that will need to be imported. There should be no problem for Iraq to place this additional quantity of crude oil in the market because the fall in Libyan production is creating a temporary situation whereby some new production is needed (and so far, only Saudi Arabia has agreed to expand its output). Failing that, Iraq could sell to traders, at a small discount from its usual prices.

Response options

The Refinery itself can pursue a number of technical options to recover capacity quickly. Except for kerosene, significant output (perhaps 70% of previous level) can be expected within 4 to 6 weeks. However, the measures below could be considered by authorities as they seek to palliate the impact of the shortages.

Importing fuel: Replacing the refinery's output with imports would require roughly a doubling of Iraq's import volume. In the very short term, there is no alternative.⁴ Immediate higher imports are needed for gasoline and diesel. Ordinary kerosene and Jet-kerosene also needs to be imported, for household and aviation use. Additional diesel should also be imported for power generation, switching some heavy fuel oil (HFO)-fired power plants to diesel.

Substituting fuels in electric power generation: In the short-term, electric power generation will also suffer until other available fuels (such as crude oil and natural gas) can be used, and more diesel can be imported. There are opportunities for fuel substitutions, requiring modifications to fuel supply and burners. Some power plants could switch to crude oil while others in the south, could switch to natural gas. The feasibility and time required for each of these options will need to be explored. At present, crude oil and HFO provide over 60% of fuels for power generation, with natural gas providing 26%, and diesel 13%.

Importing more electric power: The option of emergency electric power imports could also be raised with neighboring countries, possibly with the support of the UN.

Accelerating ongoing projects: In a few weeks to a few months, Iraq can accelerate construction on several refining units, possibly adding some new capacity.

³ The direct loss of exporting crude oil and importing refined products stood recently at about US \$25-30 per barrel. Putting the import necessity at the maximum, say, 150 kbb/d would imply a net loss to Iraq of about \$4 million/day. However, adjustments are possible, so this loss represents a ceiling, and it will not last long.

⁴ Iraq has the expertise to import. It can also count on the help of International Oil majors which are all present in Iraq and could therefore give a hand in this momentary crunch.

Background:

Iraq's Downstream Oil Industry

Iraq's downstream (processing and distribution) oil industry has been on the mend for the past few years as a result of several projects to repair and add to existing refining capacity. Nominal refining capacity is listed at about 800 kbb/d (824 kbb/d, OPEC) although operations are at much lower capacity. In December 2008, refinery throughput averaged 472 kbb/d, in December 2009, 448 kbb/d, and in December 2010, 542 kbb/d.⁵

Capacity in Iraq's three major refinery complexes

The Bayji Refinery lacks sufficient electric power to operate at its full 300 kbb/d capacity⁶. With one major unit under repair, the group's throughput had been hovering at 200 kbb/d for some time. An addition of 70 kbb/d is under construction. Without catalytic cracking, it is also a technologically obsolete refinery, but which is being modernized (the new unit will have cracking).

The Daura Refinery (Midlands Refining Co) is also operating below its full capacity of 160 kbb/d, including an additional 70 kbb/d, which is now operational.⁷ It has been running at about 120 kbb/d. Daura faces constraints in supply of crude. It was at times supplied from the South by pipeline, at times from the North (Kirkuk). At present, it would appear that it is supplied with crude oil from Kirkuk by trucks, the old southern pipelines having decayed or been damaged during hostilities.

The Basra Refinery, (Southern Refining Co., including the smaller plants at Dhi Qar and Maysan), has a capacity of about 80 kbb/d. It is the one best supplied with crude, being located close to producing fields.

IAU / UNDP, 1 March 2011

⁵ Crude oil is also used directly to fuel power plants. In December 2010, 72 kbb/d were supplied to power plants, a trend that is on the rise (increase by 20% over the past three years).

⁶ Bayji proper has a capacity of only 150 kbb/d. With the addition of several other small refineries, it reaches a total of about 300kbb/d which is the capacity of the Northern Oil Refining Co (or Bayji Oil Refining Co).

⁷ Another unit of same size under construction