



## Iran oil post-sanctions: market and MENA impacts

Iran has put regaining its oil export market share at the heart of economic planning as the country emerges from years of international sanctions. The government has declared bold targets for the restart of shut-in production, a boost to oil investment and development, and a sharp increase in gas development, implying a new wave of condensate production and exports. Although some of these targets look overtly political and will be difficult to deliver, the trajectory of Iran's full re-entry to the global oil market will be closely watched for its impact on oil prices and neighbouring MENA oil producers.

Iran's July 2015 agreement with international powers to curtail its nuclear activities in return for sanctions relief has raised the prospect of a recovery in its oil production from the present 2.8m barrels per day (b/d) to pre-sanctions levels of 3.7m b/d. The deal should also herald new IOC investment in the country's oil sector, yielding longer-term output gains for crude oil, condensates and natural gas. Once sanctions have been lifted, Iran is also likely to wind down its large inventory of stored liquids afloat and onshore, to allow greater operational and shipping flexibility as it seeks to rebuild its European customer.

In a market where supply and demand imbalances have resulted in a large global stock-build, Iran presents a fresh layer of uncertainty. If Iran fails to deliver fully on its restart targets, the impact on the oil price is likely to be muted. But if it achieves its ambitious targets, OPEC will have to decide how the extra barrels are integrated into a well-supplied market. With the call on OPEC projected to increase in 2016 by 1.2m b/d and oil demand expectations for the year ahead revised up sharply in the past few months, there is room for some additional Iranian production. But if Iranian supply growth surprises on the upside, it will exacerbate the global storage glut, putting a cap on any price recovery.

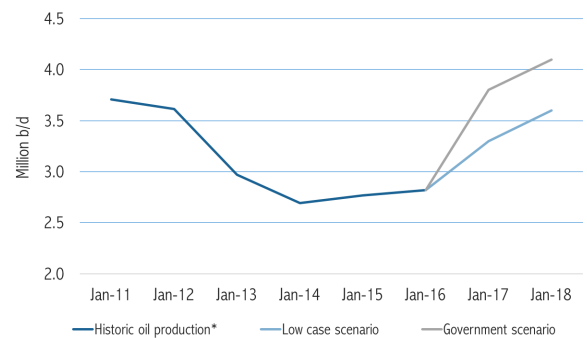
### Iran bullish on restart

Projecting an accurate trajectory for the Iranian oil restart is critical to understanding the potential price impact. Tehran has unsurprisingly been on the bullish side of projections, claiming it will deliver an additional 500k b/d of exports within six months and 1m b/d of within a year of sanctions relief, taking total production to 3.8m b/d as the country's prolific but ageing major oil fields ramp up. Under the nuclear deal framework, implementation of relief is set to occur in December or early 2016.

The Iranian government projection assumes that the sanctions-related shutdowns have not damaged production capacity at major fields and also assumes that development work, potentially with new IOC partners, could be fast-tracked on the major new oil fields close to the Iraqi border in the southwest. The major new oil fields under development, including Azadegan and Yadavaran, would allow production to rise well above 4m b/d within three years, according to petroleum ministry plans.

There are reasons to lend Iran's plans some credibility. The ministry has been preparing for a post-sanctions recovery since mid-2013. That programme has involved the optimization of onshore oil field surface facilities and well workovers and some new production drilling. The lifting of restrictions on the import of drilling equipment banned under the sanctions regime may also allow optimization of existing production in a way that is difficult to foresee. The National Iranian Oil Company (NIOC) carried out a major refurbishment and de-bottlenecking programme on its surface facilities in 2012-14. This may have improved capacity at key pinch points, but is also unlikely to have been comprehensive given the sanctions restrictions.

Iran oil recovery scenarios



\*OPEC secondary sources

Despite likely hold-ups, Tehran is demonstrating a political desire to match the pace of upstream development to Iran's huge resource base. Boasting the fourth-largest oil reserves in the world at 158bn barrels, Iran has 10% of global proven reserves, most of which are concentrated in the southwest of the country. Gas reserves, mainly focused on the giant offshore South Pars field, are the largest globally at 34tn cubic metres, according to BP's 2015 Statistical Review of World Energy.

### Hurdles to growth

Factors that could potentially slow the impact of an upstream recovery include the condition of surface infrastructure, field production units and flow lines as well as the main export system itself with its terminal infrastructure in the Gulf. Sanctions have hindered access to spare parts for pumps,

compressors and valves. Iran's attempt to retrofit domestically manufactured spares has not always delivered the performance of the originally installed equipment. The state of the well stock will also affect efforts to raise production volumes: if new parts can be imported and installed quickly, some supply gains could be seen swiftly. But hold-ups here could be costly in supply terms.

Iran is also betting on the swift re-entry of IOCs to manage new EOR projects across the mature oil fields – a top priority for the government. While preparation for this has been considerable, technical and commercial holdups are likely to mean the fruits of IOC involvement will not be significant until the end of the decade. The history of downstream investment is instructive: while Iran has boosted gasoline capacity in recent years, new downstream investments have also been delayed, mainly due to financing problems.

## Emptying storage

In order to start pumping higher volumes at the well-head and into the export system, Iran will first need to empty a large proportion of its onshore and floating storage. With limited onshore storage, Iran has used part of its VLCC fleet to store oil but these state-owned tankers will be needed for the marketing effort once exports restart at higher levels. Total floating storage hit a peak above 40m barrels in mid-2015, equivalent to 220k b/d if released over six months. However, this assumes that all of the liquid on storage is crude and could be easily marketed in

Asia. Anecdotal reports however suggest that the bulk of floating storage is less-easily marketed condensate – hence the immediate impact on the market of the storage release is likely to be less than anticipated.

## Restoring production in old fields

As storage is emptied, NIOC can be expected to ramp up its prolific, mature onshore oil fields operated by National Iran South Oil Company (NISOC), which account for 75% of Iran's pre-sanctions capacity. The natural decline rate for these onshore fields is estimated variously at 6-12% and whether the fields can be restored to pre-crisis levels is debatable.

The major planks of the restart will focus on Ahwaz, Iran's largest producing field and traditionally a 'swing' field that has been ratcheted up and down to give Iran production flexibility (see table below). The field produces from the Asmari, Bangestan and Mansouri layers, and is expected to be able to recover to pre-sanctions output of 800k b/d 18 months after restrictions are lifted. Long-term plans for the field include EOR and secondary lift using higher levels of gas injection.

Like Ahwaz, the mature Agha Jari field has been in decline for decades but it is expected that increased levels of gas injection using South Pars gas will extend recovery factors and bring a slight increase in production over two years from pre-sanctions levels. But other mature fields in the onshore are unlikely to see a recovery in output until EOR can be applied, most likely through the involvement of IOCs.

## Major Iran oil fields - impact of sanctions

Field	Gravity (API)	Oil in Place (Billion bbls)	Pre-sanctions production capacity (k b/d)	Production mid-2015 (k b/d)
<b>Onshore</b>				
Ahwaz	24-32	65.5	800	560
Gachsaran	31	53.0	530	300
Marun	32	46.7	510	380
Karanj	34	11.2	240	100
Rag-e-Safid	29	18.7	180	120
Mansuri	26	22.3	150	100
Agha Jari	34	30.2	120	30
Bibi Hakimeh	30	17.0	120	80
Parsi	34	12.7	90	50
Shadegan	36		60	40
Kupal	32	10.2	60	40
Pazanan	35	7.6	40	30
Ab Teymour	33	9.0	40	30
<b>Sub total</b>		<b>304.1</b>	<b>2940</b>	<b>1860</b>
<b>Offshore</b>				
Abuzar	26	3.3	180	100
Doroud	34	10.8	145	120
Soroush	18	13.2	110	35
Sirri	32	9.0	90	60
Nowruz	19	3.5	60	20
Salman	35	4.0	55	45
Foroozan	29	3.1	40	25
<b>Sub total</b>		<b>46.9</b>	<b>680</b>	<b>405</b>

Source: Arab Oil and Gas Journal, PPI, APICORP Energy Research

## Bringing new fields on stream

The greatest potential comes from new onshore West Karun oil fields like Azadegan, west of Ahwaz and close to the Iraqi border. These projects are only producing 75k b/d now but are scheduled to add another 500k b/d over the next two to three years if development is on schedule. Azadegan South is already in early production but other phases could take this field to 280k b/d. Early production from a separate development of the northern extension is delayed but targets 75k b/d, with subsequent phases bringing output to 300k b/d by 2020. The Yadavaran field is another candidate for IOC investment and is programmed to hit a plateau of 300k b/d, but only by 2020, while Darquain is targeting a three-phase development with plateau at 230k b/d. Overall, we expect new upstream projects to bring some additions in 2016-18 but given that many of the projects have been facing delays and some contracts cancelled, the additions are likely to be only in the 200k-250k b/d range. This underpins our low case scenario.

Counterbalancing the onshore potential, Iran's offshore oil fields have struggled with high natural decline rates and stabilization will be the main objective. The increase in output from South Pars will partially compensate for decline rates in offshore fields, but this increase is mainly concentrated in condensates, in turn increasing the proportion of condensates to total output.

The big push in Iranian productive capacity will only come

### Iran's major new upstream projects (West Karun)

Field	Operator	Recoverable reserves (Billion bbls)	Production 2015 (k b/d)	Initial development target (k b/d)	Notes
Yadavaran	Sinopec	3.2	20	185	Phase one targets 85k b/d by end-2015, phase two 185 k b/d.
Yaran (N&S)	Pedco	1	5	90	Early production of 30k b/d seen in 2016.
Azadegan (N)	CNPC	5.6	0	150	Early production of 50k b/d delayed to 2016.
Azadegan (S)	Pedco	5.2	50	170	Long term plateau target of 280k b/d.

Source: Arab Oil and Gas Journal, PPI, APICORP Energy Research

following the return of IOCs. This could prove to be a lengthy process and significant challenges face the IOCs. The shape of the new upstream contract, now expected to be presented in early 2016, will be critical. It will replace the unpopular buy-back contracts and is expected to be more competitive than those offered to IOCs in Iraq in the past decade. The contract is likely to extend for longer than the previous model, with fewer restrictions on cost recovery. It may also allow booking of reserves. But upstream investment will be challenged by Iran's general weak business environment. New entrants will have to tolerate headwinds around regulation and dispute arbitration, both of which suffer from a lack of transparency, if they want to succeed.

## Targeting market share

The immediate post-sanctions outlook is for storage releases, with major mature fields led by Ahwaz bringing back an additional 300k b/d in the 12 months after. This should deliver an aggregate 400k b/d of new supply by the end of 2016. NIOC will seek to rebuild its European market share with additional

exports, as well as increasing Asian sales beyond pre-sanctions levels. The timing of increments at the newer West Karun fields will be critical to improving on this figure and building the recovery back to and potentially beyond pre-sanctions output. We expect these new fields to add around 150k b/d by the end of 2016 taking the aggregate to 555k b/d. But this doesn't account for onshore and offshore decline rates; so the net increase is likely to be less, at around 400k b/d by the end-2016. As some new projects start ramping up, output in 2017 will further increase, adding another 300k b/d, according to our low case scenario.

Beyond the end of 2017, across-the-board improvement of NIOC's access to equipment, technology and capital post sanctions will also be a driver, as will fresh involvement of IOCs under the new upstream contract.

## Oil market impact: fresh uncertainty

Iran's plans to regain its place as OPEC's second-largest producer to Saudi Arabia will, in APICORP's view, take years not months. While Iran has a significant subsurface resource and a new, more pragmatic leadership in the petroleum ministry, risks remain. Iran will need to maintain its commitments to the letter under the nuclear agreement to avoid the 'snap-back' of sanctions. Iran's internal political rivalries will need to be kept in check if the oil sector is to flourish.

In the short term, the timing of the return of Iranian barrels will be critical: a swift resumption will keep downwards pressure on

prices as producers jostle for position in a well-supplied market. If supply pressures result in sustained stock-building above present historic high levels, OPEC may be forced to consider reintroducing some supply management. This may not be straightforward, as Iran has repeatedly signalled its desire to recapture market share and that other OPEC players should create the necessary space. The perception of a price war between OPEC's key producers can be bearish on the market. However, in APICORP's view, such a scenario may not play out. Due to multiple hurdles, a slower trajectory and Iran's full re-entry to the oil market should help smooth the loss of new oil supply from non-OPEC producers after 2017. A rebalancing away from non-OPEC oil to MENA's low-cost reserve base, combined with resurgent price-driven demand growth, will, APICORP believes, help make room for at least some of Iran's additional barrels.