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Gas Gathering Picks Up Pace

Abadan Refinery Throughput up 210 kb/d

Record Oil Export Projection under sanctions

Ali Forouzandeh
Director General of Public Relations

Last calendar year, Iran exported 83 million barrels more crude oil year-on-year. The figure was also 190 million barrels more than exported two years before. Iran is expected to set a new record in oil exports in the current calendar year as Minister of Petroleum Javad Owji has said.

Last calendar year marked a record in oil exports against the backdrop of tough sanctions targeting Iran's petroleum industry. Significantly high crude oil exports and subsequently receiving petrodollars ever since the 13th administration took office indicated the active energy diplomacy pursued by Ministry of Petroleum towards success. Last year, Iran's oil production hit 3 mb/d.

Official data show Iran's revenue from crude oil, condensate, natural gas and petrochemical exports was up 40% year-on-year. Meantime, Iran's natural gas exports showed a 22% growth year-on-year. That was while the government moved towards energy diplomacy overture with neighboring countries in line with national interests.

Minister Owji said recently that Iran's oil sales were much more than forecast last February despite sanctions.

Iran's Central Bank also announced in a report in February that Iran's crude exports during the first half of last calendar year had grown 60% year-on-year, indicating the success of the 13th administration in overcoming oil sanctions.

Bloomberg reported that Iran's oil sales had reached four-year highs with China being the main buyer. Reuters also confirmed that Iran's oil exports hit its all-time highs in late 2022. The 13th administration is determined to develop oil and gas fields across the country with a view to increasing oil exports. That was based on such plans that Minister Owji predicted record exports.

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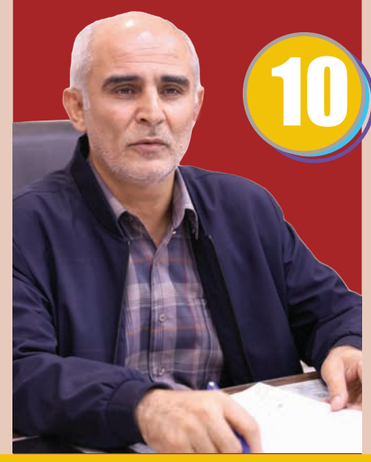

Abadan Refinery Throughput up 210 kb/d

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Abadan Refinery Throughput up 210 kb/d

In coincidence with the anniversary of nationalization of Iran's petroleum industry, President Ebrahim Raeesi and Minister of Petroleum Javad Owji oversaw the inauguration of the first section of a project aimed at enhancing output from the Abadan oil refinery. Noting that the second phase development of the Abadan refinery was aimed at ending crude oil sales. "With the operation of Phase 2 of this refinery, 210 tb/d would be added to the refining capacity of the country," said Raeesi, adding that Iran's petroleum industry had made this breakthrough despite tough sanctions imposed on the country.

100% Iranian

Raeesi said the US and Britain wrongly imagined they were the only ones capable of performing tough and complicated work. He added that the Abadan refinery project showcased a valuable manifestation of "we want, we know and we can". He said that the second phase development of the Abadan refinery had been handled "100 percent" by Iranian technicians and service workers.

Raeesi said the Abadan refinery's second phase development was harmonious with the state policy of preventing crude oil sales. He added: "With the implementation of this project, Iran will see its gasoline and gasoil production capacity grow respectively 4 ml/d and 3 ml/d." He said 36% of the project, which was the most difficult part of it, had been carried out over the past one year alone. Raeesi also touched on Iran's plan to build refineries overseas, adding: "Iranian specialized forces were sent to Venezuela to salvage its petroleum industry. It shows the high capability of Iran's oil industry in exporting technical services and dispatching efficient and effective manpower to petro-states across the globe."

Self-Sufficiency

Minister Owji said Iran was currently producing 3 mb/d of oil, adding the country's production capacity stood at 3.85 mb/d. He added that 31 incomplete projects, worth $112 billion, had come online last calendar year. Owji said that the Abadan development project was about 64% complete when the 13th administration took office. Referring to the $1.1 billion investment made in this phase, the minister said: "With the implementation of the second phase development of the Abadan refinery, gasoline production increases from 10 ml/d to 14 ml/d and gasoil production from 15 ml/d to 18 ml/d." According to Owji, processing every single barrel of oil at this refinery would give a $12 margin, let alone supply feedstock to downstream industries and petrochemical plants. He said 75% of equipment is Iranian. More than 100 contractors and 7,000 service workers were involved in this project, he said, adding that the most complicated part of the project was carried out over the past one and half years. "That was against the backdrop of toughened unjust sanctions and decline in oil exports." "According to Central Bank of Iran (CBI) figures, the petroleum industry experienced a record 15.1% growth during the third quarter of last calendar year," he added. Noting that Iran had become self-sufficient in oil and gas refinery construction, Owji said two more refineries would become operational in the current calendar year.

$5bn Foreign Investment

Owji said the 13th administration had a desirable record in the energy diplomacy, adding: "We have so far attracted $5 billion in foreign investment to develop oil and gas fields. Meantime, gas exchanges between Iran and Turkmenistan have doubled. The two countries' gas ties had been strained for five years, but they were resumed under the current administration." Touching on the construction of a refinery in Venezuela, he said: "So far, 2.8 million items of Iranian equipment have been sent to Venezuela. Within months, the oil processing capacity of the refinery in Venezuela would increase from 100 tb/d to 140 tb/d. Iran would also supply oil as feedstock to that refinery, which would be a win-win deal."

Refined Products Export

The Abadan refinery is the first in the Middle East. Built in 1912, it is currently processing 400 tb/d of oil and supplies 25% of national fuel needs. The Abadan refinery development project is defined in three phases. Phase 1 and Phase 3 have already become operational. In Phase 1, the distillation unit's capacity increased from 130 tb/d to 180 tb/d. The vacuum distillation unit came online in 2005 with a capacity of 70 kb/d and the viscosity reduction unit with a capacity of 25 tb/d to reduce fuel oil production and feed CAT cracker. Phase 3, which came on-stream in 2011, aimed to increase gasoline production while cutting fuel oil output.

Phase 2 has two sections. Work on the first section started in 2017 following an agreement signed with a consortium comprising Oil Design and Construction Company (ODCC) and a Chinese firm. Phase 2 requires €2.6 billion in investment, €1 billion of which has already been financed while €1.6 billion would be financed for the second part. The idea is to make the Abadan refinery more profitable, bring products to Euro-5 standards, reduce environmental pollution, increase kerosene and premium gasoline production by upgrading the production technology, reduce fuel oil output and stabilize the refinery's capacity. The new products now include LPG (1.5%), kerosene and jet fuel (22%), gasoline (21%) and gasoil (24%). The operation of this new unit paves the way for the Directorate of Planning of National Iranian Oil Refining and Distribution Company (NIORDC) and Ministry of Petroleum to raise the capacity of tis refinery to above 500 tb/d if there is a need for fuel consumption management in the country. Therefore, the second phase development of the Abadan refinery would offer a chance for exporting more refined products due to increasing the output capacity and improving the quality of products. The Abadan refinery receives crude oil from the Omidieh and Ahvaz oil fields located in Khuzestan Province. The second phase development would empower the facility to refine a wider range of crude oil grades to produce high-quality products. The refinery is currently supplying 11 products.

Gas Gathering Picks Up Pace

Iran plans to gather 8.2 mcm/d of flare gas as of next calendar year (starting on 21 March 2023), which would increase 18.2 mcm/d during next year. Therefore, Iran would have gathered 50% of its flare gas by March 2024. In the calendar year to March 2025, Iran would be gathering 17 mcm/d of flare gas and during the following year, gas gathering would be at 7 mcm/d. Therefore, Iran would have gathered all its flare gas by 2025. Over 150 bcm of flare gas is turned into air pollutants at oil wells every year across the world. According to the World Bank (WB), that is equal to one-third of Europe's total gas consumption. According to WB data, until 2018, Iran was the third largest producer of flare gas, behind Russia and Iraq. Flaring in Iran was down from 17 bcm in 2018 to 13.78 bcm in 2019. Iran is currently recovering about 1 bcm/d of sour gas, of which 850 mcm/d is sweetened for consumption. Houshang Falahatian, deputy minister of petroleum for planning, said comparing flare gas data with sour gas recovery and sweet gas injection into national network indicates that the figure announced for flaring was not correct. "It is not necessarily possible to bring flaring down to zero because refining and petrochemical processes are such that flares function as safety valve. If no flare gas is exited, an explosion will follow. Therefore, some processes are naturally with flare gas," he said. Of course, it is noteworthy that some processes with regular flare gas need to be managed. Associated petroleum gas (APG) and gas refinery gas constitute the two categories of flare gas. As far as APG is concerned, good steps have been taken over the past 1 ½ years, leading to a reduction of about 1.5 mcm/d of flare gas by March 2022.

NISOC Flare Gas Gathering

National Iranian South Oil Company (NISOC) has expressed its full readiness to implement the development project of 16 Khami reservoirs with a view to supplying feedstock to petrochemical plants. Development of these reservoirs with an initial estimated production of 1.3 mcf/d would partly resolve the problem of feeding petrochemical plants for long years. With the implementation of this project and construction of five or six NGL units, 1.2 bcf/d of dry gas and 200 kb/d of condensate would be produced.

More than 80% of flare gas produced in fields run by NISOC has been gathered. The 13th administration is making efforts to gather the remaining flare gas to fulfil its international environmental obligations, not to mention economic benefits.

Win-Win Deal

The 13th administration has finalized 28 agreements worth more than $1 billion for flare gas gathering mainly with private companies. Furthermore, it has committed itself to closing the case of most flare gas gathering projects before bowing out.

This issue is such serious that Minister of Petroleum Javad Owji has said the ministry was ready to award full development of oil and gas fields to petrochemical plants in the country. In his view, such agreement between the Ministry of Petroleum and petrochemical plants would be a win-win deal because petrochemical plants would develop oil fields in less than three years to guarantee at least 30 years of feedstock supply. Iran's Petroleum Ministry has reconsidered its financing policies in order to make further use of such methods as engaging industrial holdings for investment in the upstream sector like gathering and selling APG with a view to preventing gas flaring. The decision has been warmly welcomed by petrochemical plants as it would guarantee feedstock supply. Recently, a $500 million agreement was signed with the Persian Gulf Petrochemical Industries Company (PGPIC) for gathering flare gas in East and West Karun. That would help turn off more flares in four provinces. It is also be noteworthy that gathering APG is very important from a global perspective due to the necessity of reduction of pollutants caused by hydrocarbon resources. Iran's petroleum industry, based on our Nationally Determined Contributions (NDC), we are committed to reduce greenhouse gas emissions un-provisionally by 4% and provisionally by 8% by 2030. The Petroleum Ministry has now taken serious steps in gathering associated gas to prevent environmental pollution and fulfill its commitments.

9 NGL Projects

Over recent years, some steps have been taken in this regard. Some of them are simultaneous implementation of nine NLG projects with a total gathering capacity of 5.1 bcf/d of flare gas, including the Persian Gulf Bid Boland gas refinery (four NGL projects), Persian Gulf Yadavaran gas refinery (NGL 3200), Hengam gas refinery (Qeshm Island gas flare), Dehloran and NGL 3200 of the Maroun field and the NGL project of Kharg Island. According to data provided by National Iranian Oil Company (NIOC)'s Directorate of Corporate Planning, there was nearly 43 mcm/d of flare gas (more than 100 million barrels of oil equivalent a year) to be gathered in 2016.

Amak Project

The Amak gas gathering project at the Ahvaz, Ab Teimour, Mansouri, Kupal and Maroun oil reservoirs is one of the major projects of NIOC in gas gathering that has been implemented in two phases. Prior to implementation of the Amak project, the polluting sour gas associated with the Bangestan layer's oil added up to 241 mcf/d, whose burning emitted about 9,000 tonnes a day of pollutants. During the implementation of the first phase of this environmental project, four compressor stations and a sweetening refinery were launched in 2005, to be followed by two more compressor stations in 2007 and another one in 2009. Following the commissioning of the last compressor station in 2009, a sweetening plant for acid gas was launched in 2021. Now, 28 tb/d is worth $1.68 million while 182 mcf/d of sweet gas, worth $780,000, is delivered to National Iranian Gas Company (NIGC). Therefore, the gas and condensate recovered from this project would worth more than $2.46 million. In the second phase of the Amak project, 14 mcf/d of acid gas was saved and up to 18 mcf/d of gas was directly pumped to the Razi Petrochemical Plant. With the implementation of the Amak project, about 86% of associated gas is gathered in NISOC-run areas to be used for domestic purposes or injected into oil reservoirs for maximum efficient recovery. NISOC is also eying more partnership deals with petrochemical plants to save the remaining associated gas from flaring. Meantime, through attracting investment, a project for gathering 593 mcf/d of associated gas from Aghajari and Gachsaran and another project for gathering 249 mcf/d of associated gas in Karoun and Maroun have been defined. Furthermore, the private sector is gathering 3.5 mcf/d of flare gas from Parsi Cluster, 22 mcf/d from Maroun 6, 12 mcf/d from Maroun 3 and 10 mcf/d from Mansouri.

Assaluyeh Pollution Down

The permission for the signing of agreement and financing of a project to cut gas flaring by 20% in ten refineries of South Pars has been given for the purpose of stopping the annual flaring of 2.3 bcm in order to let a major environmental project start up in the petroleum industry.

The Comprehensive Sustainable Development Plan is aimed at the integrated management of all refineries and facilities of South Pars and refining all pollutants, including oil, gas and petrochemicals. Backed by NIGC and NPC, the project has taken the preliminary steps with regards to management of refining and consumption of polluting gases, management of polluting liquids (including DSO) and management of pollutant solids (particularly sulfur). NIGC has categorized its plans under three groups: lowering flaring, lowering sulfur oxide emissions and complementary treatment of wastes. The tasks related to NIGC are mainly focused on reducing flaring and the emission of sulfur oxides. The total sulfur dioxide emitted from the refineries is supposed to be reduced by 488,500 tonnes per year in a total of 12 refineries in South Pars. Operational problems, process optimization and installation of additional systems in the operational units of the refinery and especially its sulfur production unit will be obtained. By doing this, the amount of burning of acid gases will be reduced, which will increase the sulfur production and significantly improve the air quality of the region. Also, flaring at the twelve refineries in South Pars will be reduced to 2,344 mcm per year, which, in addition to significantly improving the air quality of the region, will prevent gas emissions and prevent the wastage of valuable hydrocarbon resources.

South Pars Flaring Down 17%

On the other hand, in order to achieve the expected goals, several projects regarding the reduction of flaring and the emission of sulfur oxides in refineries have been implemented and some of them have also been completed. As a result of these measures, the amount of flaring in South Pars refineries last calendar year was reduced to 498 mcm (about 17.6%) and the release of 27,775 tonnes of sulfur compounds in South Pars site 2 refineries was also prevented, which is equivalent to a reduction of about 24% at these refineries.

The amount of flaring at the eight refineries of South Pars in 2018 was about 1,373 mcm, and 739 mcm should be legally recovered and reduced to 634 million cubic meters by the end of 1405 (20 March 2027). Based on the studies and planning carried out in line with the reduction of flare gas burning, this amount is expected to reach 307 mcm per year in the eight refineries by March 2025, which is higher than expected. Therefore, pursuant to measures taken over the past two years, flaring at the eight refineries was down to 1,250 mcm by March 2022, indicating a 9% decline.

Gas Renaissance after Oil Reservoirs Depletion

By development of Khami reservoir and using associated gas extracted from fields run byNational Iranian South Oil Company (NISOC), the companywill commence its second step toward development in the oil-rich regions so that by taking this measure we will witness taking primary measures in line with reaching gas renaissance in an area ofover70, 000 square kilometers stretching from Bushehr province to Khuzestan province.

Mahnaz Mohammad-Qli

"Iran Petroleum" has interviewed Ali Reza Pakdaman, NISOC director of engineering and construction, to learn about various development projects by the company supplying 80% of Iran's crude oil.

We plan to develop Khami reservoir in upcoming years. Desalinating projects are becoming active. Over the past years we have had no permit to build facilities, but this ban has been lifted and new projects are undergoing the approvalprocess. For instance, gas gathering projects are under way and such equipment as pumps and compressors are being manufactured with the help of knowledge-based companies. In fact, it could be argued that sanctions have lost their deterrent impact and we are currently seeking to benefit from the opportunities created by sanctions. Of course, it does not mean that we would not need foreign knowhow and technology. But we have to acknowledge that sanctions are no longer paralyzing and we have not been stopped. With the renovation and reconstruction of installations, oil production continues for local refineries and for exports.

Is there any chance for attracting investor in NISOC?

Yes, as the petroleum industry grows older, more investment would be needed. Therefore, there are good opportunities for domestic and foreign investment in this sector because the number of wells, desalting plants, gas gathering facilities and gas injection plants is increasing. Therefore, we regularly need to attract new investment. For instance, we are currently using petrochemical plants, which are consuming NISOC gas liquids, as investor and implement development projects associated with the gas industry and petrochemical feedstock. The investment and investor's proceeds are recouped through feedstock.

Which projects?

Construction of flare gas gathering installations is under way by the Persian Gulf Bid Boland Gas Refining Company with a view to capturing 2 bcf/d of flare gas. The investor in this project is Persian Gulf Petrochemical Industries Company (PGPIC) that has been chosen as the project operator in order to supply its own feedstock. It comprises 28 projects classified under three groups; gas pre-compression and injection, flare gas gathering and

we don't have any installations to be unusable. The installations are old, but they are overhauled, maintained, renovated and optimized and we are continuing production with the same installations

Construction of flare gas gathering installations is under way by the Persian Gulf Bid Boland Gas Refining Company with a view to capturing 2 bcf/d of flare gas

NISOC installations are decrepit. How do you plan to renovate them and the pipelines?

Although NISOC installations are old, in the past, except for a short period of time, maintenance and optimization of the installations has been taken into account in parallel with production. Currently, NISOC is producing oil using the same installations and equipment. Every year, alongside production plans, renovation, reconstruction and maintenance projects are defined, which would be assigned after going through administrative procedures to the Division of Engineering and Construction of NISOC. These projects would be awarded to successful bidders for operation. This process is under way regularly. It would be not true to say we have decrepit installations because renovation and reconstruction projects are regularly under way in NISOC.

Are there any decrepit installations at NISOC facilities?

Generally speaking, we can say we have no decrepit installations within NISOC. In other words, we don't have any installations to be unusable. The installations are old, but they are overhauled, maintained, renovated and optimized and we are continuing production with the same installations. In parallel with production, we also take measures for renovation and reconstruction of these installations. It is not that we refrain from overhaul and renovation of installations and equipment in a specific period of time to finally phase them out. We define and operate good projects for the renovation, reconstruction and maintenance of installations including operation, desalinating, gas injection and LNG facilities, which are scattered across zones, in order to meet our production targets. For the current calendar year, when we presented our production plan to National Iranian Oil Company (NIOC) we continued our production with existing installations. We can even launch projects, make new drillings and proceed with overhaul to return to pre-sanctions production levels. Based on calculations, we may be able to raise production to levels higher than that of the pre-sanctions period. It also deserves to mention that good financial lifeline has been released for the implementation of projects, most of which are in the phase of licensing round. We hope to implement more and larger-scale projects next calendar year.

Which projects are under way?

Currently there are more than 200 active medium and large-sized projects and major projects like waste injection into wells and overhaul and renovation of pipes.

We have nearly 100 small and large-sized projects in the process of bidding, most of which pertaining to oil and gas output hike. These projects are aimed at overhaul, reconstruction of plants, building new units and optimization of installations and equipment.

turbine and pipeline optimization. The initial investment is estimated at $1.1 billion for the projects scattered in the four provinces of Khuzestan, Bushehr, Kohguiluyeh and Boyer Ahmad, and Fars. The projects are funded by banks, National Development Fund of Iran and investors. Finally, after the projects are implemented, the capital and benefits are recouped through feedstock delivery.

How many projects do you have in the phase of bidding?

We have nearly 100 small and large-sized projects in the process of bidding, most of which pertaining to oil and gas output hike. These projects are aimed at overhaul, reconstruction of plants, building new units and optimization of installations and equipment.

How many desalting plants do you have under construction?

Currently, our desalting plants are prioritized for construction. They include Gachsaran 4 with capacity of 110 kb/d, Maroun 3 Bangestan with capacity of 50 kb/d, Mansouri Asmari and Lali Bangestan. Furthermore, completion and launch of the second phase of the Ahvaz desalter is under way with capacity of 100 tb/d. These projects are in the stage of completion of estimates and procedures for the start of licensing round.

Would you please tell us about NISOC Khami fields' development?

Development of Khami gas fields is on the agenda with an initial estimate of €5.9 billion. We are currently introducing these projects to petrochemical plants in order to attract investment for the continuation of work. The conceptual studies phase has been defined for these projects. Subsequent to the basic engineering phase, the project would be awarded to contractors through EPD and EPC.

How many fields are involved and how much would be the gas output?

We have plans for developing 16 fields and based on initial forecasts, about 3.1 bcf/d of gas would be recovered.

What measures do you have under way for the construction, repair and maintenance of pipelines?

Currently inspection of pipelines is under way in NISOC-run areas by using smart pigging as well as overhaul and maintenance of main oil pipelines. In parallel, there are plans to build 42 and 48-inch pipelines from Ahvaz to Goreh and Genaveh. This 250-km-long pipeline would be a major project to carry oil to export terminals. We are currently in the process of bidding for the purchase of pipes. Moreover, a 60-km-long pipeline is planned from the Maroun 1 production unit to the Omidiyeh pumping station to deliver feedstock to refineries.

Will no action be taken for the renovation and reconstruction of pumping stations?

Some plans have been adopted for the renovation and reconstruction of pumping stations, based on which in parallel with the overhaul and reconstruction of pipes and old pumping stations, the pumping station systems will be also renovated. A project has been approved for the combined electropump-turbopump pumping station to replace older pumping stations in Ahvaz. Once feasibility studies are completed, the project would be awarded on an EPC basis.

What arrangements have been made for the supply of turbines required by pumping stations?

We are close to signing agreements with local manufacturers and knowledge-based companies. Domestic manufacturing of this equipment is expected to start next calendar year after agreement has been signed with manufacturers. When domestic manufacturing comes true, spare parts for the turbines would be supplied. Domestic companies have built proper capacity in this sector and they have manufactured the bulk of components. If a full turbine package is manufactured, new turbines will substitute for older turbines. Apart from that, the technological knowhow for the manufacturing of turbines will be localized.

Would you please explain about the comprehensive plan to renovate and reconstruct installations at NISOC?

Recently, studies have been started for the renovation and reconstruction of NISOC installations with a final objective of sustainable production at 300 production, NGL, desalting, pressure compression and gas injection units and pumping stations. The first edition of services is being finalized within the Directorate of Engineering and Construction, which would be assigned to consulting service companies in the future.

There was recently word on recovery from the gas cap of NISOC fields. Would you please tell us more?

NISOC oil production goes on as long as oil reservoirs have not been depleted, after which, recovery from gas caps will normally start. Concurrently, with recovery from gas caps, the second industrial phase of gas sector would start in Khuzestan and southern provinces. Of course, some injection projects are under way for compression now and it could be said that gas injection into gas caps will be some sort of undergroundgas storage for future generations.

We have nearly 100 small and large-sized projects in the process of bidding, most of which pertaining to oil and gas output hike. These projects are aimed at overhaul, reconstruction of plants, building new units and optimization of installations and equipment.

SPGC Processes 221bcm Gas in 1 Year

CEO of South Pars Gas Complex (SPGC) Ahmad Bahoush said the plant treated about 221,171 mcm of gas last calendar year.

"Last calendar year, more than 221,171 mcm of gas was processed at this complex and we hope that in the current calendar year, under the aegis of necessary measures and regular overhaul, we would provide necessary conditions for supplying gas to the household and industrial sectors," he said.

Bahoush said production growth was the main objective of SPGC's 13 refineries in the current calendar year. "As the roadshow is clear for the current calendar year, we will move to enhance production of gas and other products."

He said the 13 refineries were supplying more than 570 mcm/d of gas, accounting for 75% of national energy mix.

"During last calendar year, more than 190,509 mcm of gas was fed into the national trunkline, up 3% y-o-y," he added.

Bahoush also said that SPGC's LPG production last calendar year was 42% higher than the preceding year. "Highly important and strategic permissions were issued for these refineries to realize their objectives, which would facilitate sustainable gas supply and open a bright horizon for coming years," he added.

Petchem Catalysts Homegrown at 84% Now

CEO of Petrochemical Research and Technology Company (PRTC) Majid Daftari has said that 84% of catalysts used in the petrochemical industry could be manufactured domestically.

Noting that 99 catalysts were being used in Iran's petrochemical industry, he added that under the 13th administration, the remaining catalyst would be also developed locally.

He said research and technology would keep all other sectors running, adding that PRTC had three active centers in Tehran, Mahshahr and Arak while one was being equipped in Assaluyeh.

"PRTC has long operated numerous projects with universities since 20 years ago and this cooperation is still under way," he added.

Daftari said using Iranian license would cut cost prices 30-45%, let alone save hard currency.

West Karoun Gas Gathering Plant Completed

CEO of Arvandan Oil and Gas Production Company (AOGPC) AbdollahOzariAhvazi has said a plant aimed at gathering associated petroleum gas in West Karoun had been completed. "Completion of the incomplete plant for capturing and processing associated gas from West Karoun oil fields, known as NLG 3022, indicates fulfilment of pledges made by the 13th administration in the petroleum industry," he said. Noting that this project would have positive environmental impacts, he said: "The NGL 3200's first phase would become operational soon with capacity of 250 mcm/d." He said NGL 3200 would process associated gas from West Karoun fields (South Azadegan, North Azadegan, Yadavaran, Darquain, North Yaran, South Yaran, Sohrab, Sepehr, Jofair, Sousangerd and Band Karkheh) in two 250 mcf/d trains. Salari said the first train of the NGL plant would process 110 mcf/d of gas from North Azadegan, Yadavaran and Yaran. It would also produce 70 mcf/d of sweet light gas and about 1,200 tonnes of gas condensate. "Currently, more than 20 mcf/d of flare gas is transferred from North Azadegan to NGL 3200, which would gradually rise to 30 mcf/d. With zero-flaring, the West Karoun area would experience a green petroleum industry," he said.

10 Petchem Projects Planned This Year

CEO of National Petrochemical Company (NPC)Morteza Shah-Mirzaei, saidmore than 10 petrochemical projects will be put into operation in the current Iranian calendar year. "Furthermore, we will go ahead with numerous plans that started last calendar year in the knowledge-based sector, steered by NPC," he said."The petroleum industry in general and the petrochemical industry in particular is progressing in such away that nobody can stop it," he said, adding that petrochemical exports would not be halted. "Iran's petrochemical output has reached 92 million tonnes per annum, which is a cause of honor as this figure has materialized in spite of tough sanctions," said Shah-Mirzaei. "Currently, more than 550 grades of products are manufactured in the petrochemical and polymer industry," the official said. "Under the 13th administration, we are trying to reach full self-sufficiency in catalyst production. Notwithstanding the intensity of sanctions, we will try our best to become self-sufficient," said Shah-Mirzaei. He said Iran had already become self-reliant in turbine and compressor manufacturing, adding: "We have defined new hubs in Makran and Jask in order to meet daily growing demand for petrochemical products and we have invested in this sector."

$2.5bn Petchem Market for Knowledge-Based Companies

The director of planning and development of National Petrochemical Company (NPC), Hassan Abbaszadeh, said $2.5 billion worth of commodities and chemicals had been imported for the petrochemical sector in the calendar year to March 2022."There is a good chance for knowledge-based companies to step in and prevent the outflow of hard currency," he said. He said that of the $2.5 billion spent on imports, $400 million had been for petrochemical projects and $1.5 billion for petrochemical plants.

Abbaszadeh said: "We have to insert knowledge-based policy into the body of the petrochemical industry to be focused upon for long years."

He said that the macro-strategy of completion of the petrochemical industry value chain would lay emphasis on the knowledge-based issue in processes and commodities.

Abbaszadeh also said that good cooperation was under way with the Research Institute of Petroleum Industry (RIPI), adding that RIPI would be engaged in 21 projects.

Iran Eyes Africa, LatAm Markets

Iran's Deputy Minister of Petroleum for International Affairs and Trade Ahmad Assadzadeh said the Ministry of Petroleum was planning to win foothold in Latin American and African markets.

Referring to the African market, he said: "Africa is spending $100 billion a year on purchasing 8 items. If only 10% of this market is gripped by Iran, it would be equivalent to $10 billion."

"African nations enjoy great potential for cooperation in the energy sector," he said.

"Africa's refining capacity is 3-4 million barrels, half of which is idle. There is a chance for Iran to revive this capacity by exporting technical and engineering services," he added.

"The Africa with a population of 1 million, half of whom being Muslim, represents a big opportunity for development of cooperation with the Islamic Republic of Iran. Iran's share in the Africa's $1.2-trillion trade is only 0.1%. Iran's exports level to Africa have not exceeded $800 million a year and have normally hovered around $600 million. But now the volume of our trade with this continent has hit $1 billion a year," said the official.

Touching on Iran's ties with Latin America, Assadzadeh said Iran had delivered 3 million items of commodities and equipment to a refinery in Venezuela. "It would no longer be described as overhaul; it is rather renovation."

He said the refinery renovation project cleared the way for Iran to export technical and engineering services to Venezuela.

"Venezuela has also 12 million tonnes of installed petrochemical capacity, only 2 million tonnes of which is active now. Relying on our own expertise, we can be active in this sector and export technical and engineering services," he added.

Assadzadeh also said that Russia had great potential for cooperation in the oil and gas sector, highlighting its crude oil and natural gas production.

"In interaction with Russia in the oil and gas sector, various sectors have been defined, including technological cooperation between the two countries. We hope to sign a roadmap for cooperation in the technology sector for the petroleum industry," he said.

Refinery Renovation Deal with Venezuela Under Way

CEO ofNational Iranian Oil Engineering and Construction Company (NIOEC) Farhad Ahmadi has said the agreement signed with Venezuela's El Palito refinery was under way. He said that NIOEC was involved in the El Palito refinery's development and overhaul. "NIOEC has long been involved in international oil projects, including in the construction of Turkmenistan-Iran gas pipeline, gasoline production unit at the Turkmenbashi oil refinery in Turkmenistan and conducting feasibility studies for overseas refinery construction in Malaysia, Singapore, Indonesia and Syria. Referring to the El Palito refinery's development, he said: "This project is aimed at the renovation of the refinery and modifications to its feedstock. PDVSA has welcomed NIOEC's participation in this project. After signing agreement, NIOEC is supplying necessary equipment to be installed in coming months." He also said that NIOEC had been involved in two development projects in the Abadan and Isfahan refineries. Regarding the Isfahan refinery development project, he said: "A residue hydrotreating unit (RHU) is being built at the Isfahan refinery with a capacity of 80 tb/d. NIOEC is the project manager. Design and purchase has had 42% progress now."

Iranian Commodities Supplied to Overseas Refineries

CEO of National Iranian Oil Refining and Distribution Company (NIORDC) JalilSalari about 3 million items of Iranian-made commodities had been exported to overseas refineries. "Exporting technical and engineering services is a priority forNIORDC and we have to benefit from the capacity and capabilities of Iranian engineers in the domestic manufacturing of refining equipment and facilitate conditions for their marketing both locally and internationally," he said. "In this regard, we haveentered into talks with various countries. We are highly capable in catalyst production and we have exported 600-700 tonnes. Russian companies are highly demanding Iranian catalysts and equipment. We have exported about 3 million items of refining commodities and equipment to various nations," he added. Referring to NIORDC's measures in upgrading refineries, Salari said that building new refineries as well as integrated petro-refinery plants was also envisaged. "Some refining projects with crude oil feedstock have already existed, which needed to be fed or be converted into petro-refinery complexes. Khuzestan and ShahidSoleimani refineries were among them," he added. Salari touched on the ShahidSoleimanipetro-refinery complex, saying: "Feasibility studies have been carried out for this complex. First, a group of banks moved to finance this project and we moved in this direction and a company has been established for this purpose."

$80bn MOUs, Contracts Signed with Foreign Investors

Deputy Minister of Petroleum for Planning Houshang Falahatian said more than $80 billion worth of memorandums of understanding had been signed with foreign investors to finance oil projects, $5 billion of which has turned into agreement. "The Petroleum Ministry's policy under the 13th administration is to make maximum use of the financing potential of the country. We have directed the capital of banks and holdings to the petroleum industry," he said. He added that banks and holdings were also engaged in the construction of integrated refining and petrochemical complexes. "We have also held talks with foreign countries to attract investment," he said. Falahatian said: "Signing oil agreements requires a long process because of the complexity of the agreements which need review and going through legal channels." "We will try to compensate for investment failures by making maximum use of local capacities and developing ties with neighboring and Asian nations and we hope to witness good events in coming months and years," he added. Falahatian said the current administration was specifically focused on efforts to complete the petroleum industry value chain and halt crude oil sales. "A basic agreement has been reached for the construction of new refineries with capacity of 2 million barrels by the private sector," he said.

Gas Storage Capacity to Hit 100mcm/d

CEO of Gas Engineering and Development Company (GEDC) Reza Noshadi has said a target was set to reach 100 mcm/d gas storage capacity during the four cold months of year. "To realize that horizon, we are planning for 110 mcm/d in a bid to reach 100 mcm/d by 2027," he said. "Phase 2 of the Sarajeh field and Phase 2 of the Shourijeh field are among storage projects. Contractors have been chosen for both. Operation started in Shourijeh last year and the project is 20% complete now. Three drilling rigs are operating there," he added. Noshadi said the agreement for the Sarajeh project had been signed in March and contractor had been chosen. "The three fieldsconsidered for gas storageareMokhtar, QezelTappeh and Bankoul. Licensing rounds have been held for the three fields and drilling appraisal wells has been assigned, whose data would help convert them into storage sites," he said. "We have also the Nasrabad field in Kashan and Yurtsha field in Varamin at our disposal for storage. Tender bids are to be held in spring. We intend to bring gas production capacity to about 100 mcm/d from storage in these seven fields," he said.

Iran Set to Hit New Record in Oil Exports

Minister of Petroleum Javad Owji has said Iran would be registering a new record in oil exports in the current calendar year. He said Iran exported 83 million barrels more last calendar year from the preceding calendar year and 190 million barrels more from the calendar year to March 2022. Owji said Iran's oil exports had reached two-year highs, adding: "The revenue from these exports has been received on due date." "The Petroleum Ministry is a major supplier of hard currency. Despite tough unjust sanctions against the oil and gas industry, we have registered good records in crude oil, gas condensate, oil and petrochemical products exports," he said. Owji said projects had been defined to raise oil output in the current calendar year. He added that the priority set by the current administration was to focus on the petrochemical chain. "In the energy diplomacy, the current administration has a good record in exports and signing investment deals. So far we have attracted about $5 billion in foreign investment to develop oil and gas fields," he said, adding that Turkmenistan resumed gas supply to Iran after a five-year hiatus. Referring to Iran-Saudi rapprochement, he said: "We have close cooperation with Saudi Arabia in OPEC meetings and we have made good decisions in recent months." "Regarding development of joint fields, some proposals have been presented and we have signed an agreement with Oman and we hope to reach agreement in other oil fields which we share with other countries," he added. Owji said Iran had signed $40 billion of MOUs and $4.5 billion of agreements with top Russian companies. "We hope that these memorandums would soon turn into agreements," he added. Owji also said that talks were under way with Turkmenistan to double the capacity of gas swap with Azerbaijan to 10 mcm/d.

West Karoun, Iran New Oil Civilization

West Karoun area in western Iran is expected to form a new oil civilization. Based on plans, Iran intends to rely on the 11 oil fields located in this area with a view to lifting its crude oil output from West Karoun fields to 1 mb/d within four years. In fact, what is of great importance in this area is the existence of the three joint fields-Azadegan, Yaran and Yadavaran-which are among Iran's young oil fields with heavy oil. West Karun is a relatively large area stretching from the east of the Karoun River to the border with Iraq, which, although it was a part of the oil-rich province of Khuzestan, due to the 1980s war and landmines left from that period, no exploration has been undertaken seriously there.

$11bn Needed

Azadegan, Yaran and Yadavaran, totally hold 64 billion barrels of oil in place. CEO of National Iranian Oil Company (NIOC) Mohsen Khojasteh-Mehr said recently: "If we want to complete the development process of Azadegan, Yadavaran and Yaran, we need about $11 billion in investment. With the development of West Karun fields, production of more than 1mb/d of oil will be realized in this area, which is one of the most prioritized projects of NIOC." According to initial plans, West Karoun fields' development for 1 mb/d output was expected to have become operational by March 2022, but in the last decade, Iran's focus was on the South Pars gas field. However, with all the ups and downs, recovery from West Karoun fields has reached 400,000 b/d. NIOC intends to enhance recovery from these fields in the shortest possible time. To that end, NIOC singed $7 billion worth of agreements with Iranian banks and E&P companies.

Yaran

The first phase of Yaran has already been developed by Iranian contractors. The second phase development began recently in order to raise the field's output to 36,000 b/d. Development of the first phase of the Yaran field in both northern and southern parts has already been completed, with 20,000 b/d of oil beingrecovered. The second phase development of Yaran in the northern and southern parts will be carried out under a new type of upstream oil contracts with the participation of NIOC and an Iranian company (Persia Oil and Gas Development Company). Yaran holds 1.7 billion barrels of oil in place. The second phase development is expected to raise the recovery rate from the current 4% to 7.3%. That would bring cumulated production from this field to 40 million barrels, valued at $4 billion. Downhole pumps have been used for the first time in this field while improved oil recovery (IOR) or enhanced oil recovery (EOR) would be used on a pilot basis. The total investment for development of Yaran is projected at $400 million.

Yadavaran

Yadavaran oil field is shared with Iraq's Sinbad field. This field contains 17 billion barrels of oil, of which three billion barrels is recoverable. The development plan of this field was defined in three phases. Production in the first phase of Yadavaran development plan should reach the ceiling of 85,000 b/d, which would go up to 180,000b/d in the second phase and 300,000 b/d in the third phase. The first phase of this field was developed by a Chinese contractor, and currently 110,000 to 125,000 b/d is being produced. Recently, the CEO of NIOC announced the start of negotiations with China for the development of the second phase of Yadavaran field, saying:"Unfortunately, the agreement for the second phase development of this field was not signed under the former administration." Based on the master development plan, the field output is expected at 180,000 b/d in three years and 230,000 b/d in four years.

$7bn Investment

Development of Azadegan field, as the largest joint oil field in Iran, is of particular importance. In the last two years of Iran's former administration, development of the southern part of the field was practically off the priorities of the PetroleumMinistry for various reasons, and various management problems brought the project to a halt. But in the 13th administration, by making serious changes in the managerial level of the employer, especially in all levels of the Petroleum Engineering and Development Company (PEDEC), as well as making the required management changes in Petropars, which is the general contractor of the Azadegan sector, the first step is seriously taken to re-mobilize and speed up the development of this field. To that effect, Iran has recently done something new for the first time in the integrated development plan of Azadegan, that is a memorandum of understanding to simultaneously use the capacity of the country's topstate and private banks (6 banks), National Development Fund of Iran (NDFI) and local exploration and production companies (6 companies). The Azadegan development plan, aimed at bringing output to 570,000 b/d, is to be done with a $7 billion investment. The project is projected to last seven years. A catch up plan has also been presented in order to compensate for the delay of the project in this shared field, based on which the progress of the project is accelerating. The first phase of the development of this field is expected to be completed by March 2024 and the oil production capacity from the South Azadegan field will reach 320,000 b/d. The production of oil from the South and North Azadegan fields is carried out while some part of the increase in the daily oil production of the South Azadegan field over the past three years has been realized using a prefabricated processing unit, which is a new method in cost-effective production. This method is expected to be used in other joint fields. The first exploration well in this oil field was spudded in 1976 and the huge reservoirs of this field were discovered by drilling the second well in 1999. Due to the large size of the Azadegan field, its development was divided into two sections, North and South Azadegan, but recently an integrated development of this field has been placed on Iran's agenda. The first phase of the development of North Azadegan with the aim of producing 75,000 b/d through the drilling of 58 wells has been achieved. A major point noted by NIOC officials for preventing production loss in Azadegan has been to apply EOR methods in addition to incrementally increasing its output. There are already 170 wells in this oil field, 110 of which are producing oil. Azadegan is Iran's largest oil field and is known to be the third largest in the world. It is estimated to hold 25.6 billion barrels of oil in place.

Gas Compression at South Pars

South Pars giant offshore gas field is largely expected to experience pressure fall-off within five years. Should no action be taken the field, which Iran shares with Qatar, would see its output drop 25 mcm/y. As a preventive measure, Iran's Petroleum Ministry has adopted various methods like regular planning to drill new wells, acidizing existing wells and designing gas compression platforms with a view to maintaining pressure in the South Pars reservoir. In parallel, National Iranian Oil Company (NIOC) is planning studies on onshore and offshore platforms as a preventive measure. The question is to know what role gas compression platforms would play. The wellhead pressure required for the transfer of 1 bcf of gas onshore is normally 120 Bar. Now if this pressure falls to 100 Bar it would be difficult to transfer 1 bcf of gas. At 90 Bar pressure, only 700 mcf could be transferred. That would also result in production drop. That underscores the significance of gas compression platforms which would in the end help prevent a drop in production.

Various options have been considered to boost the pressure in South Pars. Among other things, for each South Pars platform, a pressure compression platform specific to that platform should be installed, which, of course, considering that there are 38 well platforms in this field, therefore, the installation of pressure platforms will costa fortune

Output Hike

Gas compression platforms at each phase of South Pars would mean multiplication of production from its gas wells. Therefore, the ability to design and build such platforms would be highly profitable for Iran in the future. According to some estimates, about 20 gas compression platforms are needed at South Pars in the future, thereby necessitating sufficient precision and sensitivity. NIOC is currently reviewing various models of such platforms both onshore and offshore. The platform needed to handle 2 bcf of gas should be 90 Bar. Iran plans to build its compression platforms at its own yards, but since each platform weighs about 20,000 tonnes and in the absence of any experience of building platforms of over 7,000 tonnes, the required infrastructure in the country should be upgraded. Sophisticated design, necessity of proper arrangement of equipment, safety and operational issues are among features of gas compression platforms whose installation requires the float-over method whose technology does not exist in Iran. Therefore, the basic and conceptual design of gas pressurecompression platformneeds to be done by an international consultant so that an effective model would be provided to Iran to be used in other phases of South Pars.

$20bn Investment

Over the past three years, more than half of NIOC resources has been spent on South Pars projects in a bid to accelerate its phase development. However, investment is still needed particularly for constructing compression platforms so that Iran would not be outdone by Qatar. The head of Pars Oil and Gas Company (POGC) has said that $20 billion in offshore investment would be needed to preserve pressure at South Pars. The existing yards at Iranian oil installations may not accommodate giant 20,000-tonne platforms, but with some fundamental changes they may serve other South Pars phases. According to experts, due to the gas pressure decline in some South Pars reservoirs, this phenomenon will gradually extend to the entire field. It is necessary to examine measures to enhance the gas pressure before delivery to the refinery. Therefore, POGC has assigned the feasibility study project of using pressure compression platforms to Petropars, and while concluding a contract with an international engineering company/ reputable consultant, Petropars is studying the optimal conceptual design of gas pressure booster. In this regard, various options are under technical, operational and economic investigation. These studies are being carried out on the platforms and the tank of SP12, and after summarizing the studies and choosing the best option by POGC, it will be extended to all the phasesof South Pars field for standardization. The proposed options include enhancing the gas pressure offshore and onshore.

Given the 24 development phases and 42 platforms in South Pars, separate studies are under way for them with 1,000 and 500 mmscf/d capacity separately or 2,000 and 5,000 mmscf/d capacity jointly. The installation and commissioning of pressure compression systems will provide the possibility of gas recovery from South Pars field for about twenty years. In the design of pressure compression platforms, the existing facilities for installation and transportation and the construction of internal contractors have been considered. Although platforms of up to 7,000 tonnes have been built and installed inside the country, domestic contractors may develop the mentioned facilities to reduce the costs and time of construction and installation of their yard. Gas turbo-compressors are among the main equipment of these pressure compression platforms. The selection of their type has been investigated with an international manufacturer, and the maximum effort is to transfer the knowhow for manufacturing this equipment to Iran. Currently, the conceptual design of these platforms is almost completed and it is expected that after the completion of the pressure compression platform studies, the obtained results to be submitted to POGC to finalize the final option for the basic design.

Substructure

Whereas the weight of pressure boosting platforms is 10 times the weight of most current platforms in Iran; therefore, there is no crane in the world to install a 20,000-tonne platform, and this work must be done floating, that is, the float comes between the jacket bases and the platform is placed on the jacket. According to one of the experts, one of the fundamental measures to build pressure-boosting platforms in Iran is to design the facility yard by a foreign professional consultant, because the cost of each platform is $2.5 billion and one cannot take risks about it. According to him, Iran has no history of designing and building platforms of this size, and if it acquires the technology to build such platforms, it may export it in addition to meeting domestic needs. On the other hand, high-pressure sour gas compressors must be installed on the platforms, which NIOC intends to transfer the technical knowhow of making these compressors to domestic manufacturers with the measures it takes, in which case sour gas compression platforms may be envisaged.

Options

Various options have been considered to boost the pressure in South Pars. Among other things, for each South Pars platform, a pressure compression platform specific to that platform should be installed, which, of course, considering that there are 38 well platforms in this field, therefore, the installation of pressure platforms will costa fortune. Another option is to install the complexes of pressure boosting platforms in the place of the field where the pipelines exit and close together, and in the process of boosting the pressure of a set of platforms, it is concentrated in one point. Based on this, three pressure boosting complexes are expected to be built offshore, in which case, each hub corresponds to 10 to 12 platforms. This option is expected to cost more than $20 billion. In the two phases of South Pars, pilot projects are to be implemented, in the 11th phase of South Pars, pressure boosting platforms are to be built in the sea, in the other phase of South Pars, pressure boosting compressors will be installed on land and pressure boosting operations will be carried out. Of course, the second plan is still in the study stage, if the result of the second plan is positive, it could be developed or even a centralized complex could be built in Pars 2 and many compressors could be placed in this complex. The gas of the phases that face a pressure drop is transferred to this complex, and after boosting the pressure, it is transferred to the respective refineries with inter-refinery lines, and then the produced gas is connected to the national network. Pressure of the gas that is to be transmitted to the refinery must not be less than a certain figure.For example, if the gas pressure on the platform is 130 Bar,this pressure onshore must reach 95 Bar. We must have a compressor that takes the sour gas and increase its pressure and then transmit it to the refinery; therefore, the material of the turbo-compressors used in the project must be resistant to the sour gas. South Pars is one of the largest gas reservoirs in the world, jointly operated by Iran and Qatar. With 14.2 tcm of gas, it holds about 8% of world's total gas reserves. Iran is currently recovering 705 mcm/d of gas from its own section.

POGC has assigned the feasibility study project of using pressure compression platforms to Petropars, and while concluding a contract with an international engineering company/ reputable consultant, Petropars is studying the optimal conceptual design of gas pressure booster

Iran Exports Petchems Under Own Brand

CEO of National Petrochemical Company (NPC) Morteza Shah-Mirzaei has announced plans for exporting "Iranian-branded" petrochemical products in the current calendar year.

He said NPC had exported Iranian-branded urea produced at petrochemical plants last calendar year. Shah-Mirzaei said 10 petrochemical projects would come on-stream this calendar year to bring the country's output capacity to beyond 95 million tonnes. He said the petrochemical industry earned Iran more than $26 billion in revenue last calendar year. Noting that Iran's petrochemical sector is risk-free, he said that any amount of investment in this sector would yield proper rates of return. "Therefore, Iran could be a market for long-term investment."

Iran depends on its petrochemical products to earn hard currency. With the country's petroleum sector under sanctions, it has been exporting petrochemical to old and new customers.

Petchem Ambitions

Although sanctions remain in place against Iran's petroleum industry, the country has tried its best to push ahead with producing and exporting its petroleum products. Last calendar year was a good year for Iran's petrochemical industry. The country managed to inaugurate two new plants, let alone supply 69 million tonnes of petrochemicals for $26 billion.

According to Shah-Mirzaei, Iran would be pursuing ambitious plans in the petrochemical sector in the current calendar year as 70 petrochemical plants managed to supply products beyond their obligations last calendar year. Noting that Iran's petrochemical sector sought to become self-reliant last calendar year, he said that new feasibility studies would be carried out for development of the petrochemical industry after spatial planning.

Petchem Potential

The past two calendar years were two years of prosperity for Iran's energy diplomacy. Iran resumed its gas cooperation with Turkmenistan. Minister of Petroleum Javad Owji travelled to Latin America and signed memorandums and agreements for energy cooperation. Iran and Russia upgraded ties. In the petrochemical sector, NPC experts and directors have visited Brazil and Siberia in a bid to introduce the opportunities and capabilities of Iran's petrochemical industry. Last calendar year, Iran managed for the first time to export catalysts to Russia. Iranian catalyst is currently being exported to northern neighbors, European nations as well as Far East. According to Shah-Mirzaei, new markets have been found for Iran's petrochemical sector. He said Iran did not worry about selling petrochemical products as Iran's petrochemical sector relies on the country's rich hydrocarbons. Iran sits atop the world's largest oil and gas reserves combined. That would empower petrochemical companies to market their products effectively.

Diversity in Markets

Shah-Mirzaei said NPC was involved in efforts to introduce Iranian-branded petrochemical products to the world. "Since long time ago, Iranian urea was sold under the name of other countries. We accepted risks of sanctions to supply this product with Iranian brand." He added that plans were under way for exporting more Iranian-branded products in the current calendar year. Extensive sanctions against Iran's petroleum industry have prompted many companies to sell Iranian products under non-Iranian names on international markets in a bid to spare any harm from US sanctions. "It would be in Iran's best interests to export its products and technical and specialized services directly," said the NPC chief, adding that more diversity was envisaged in petrochemical exports in the current calendar year.

He said the petrochemical sector would be Iran's leading industry in the future, adding: "Petrochemicals serve as raw materials for many other industries in the country. Therefore, we have to move towards supplying final products and creating maximum value-added."

80% Local Manufacturing

Shah-Mirzaei said: "The petrochemical industry is not facing an easy path before reaching full independence. We have stepped into this path and we'll go ahead until we reach a conclusion."

He said about 80% of petrochemical projects would be developed by reliance on Iranian manufacturers, adding that NPC had formulated cohesive plans for the remaining 20%, which would require cooperation on the part of industrialists, technicians, scientific and research centers and knowledge-based companies.

27mt Exported

The CEO of NPC said Iran exported 27 million tonnes of petrochemicals last calendar year for $16 billion, adding that 12 million tonnes of petrochemicals were also sold on local markets for $10 billion. Shah-Mirzaei gave a positive assessment of growth of petrochemical production last calendar year. "According to the planning made, in case of sustainable supply of feedstock for petrochemical plants, petrochemical production will reach 80 million tonnes in the current calendar year," he said.

550 Grades

He said more than 550 grades of products were being produced in the petrochemical and polymer industry.

"NPC has defined more than 110 large and small-sized projects that are under way," he said, adding that the projects were proven to be attractive to foreign investors who had visited them.

14th IPF

Tehran is to host May 1-2 the 14th International Petrochemical Forum (IPF). Shah-Mirzaei said this event would be a good opportunity for petrochemical actors to share and exchange know-how and experience. "We will try to benefit from this scientific event in the best way possible," he said. Iran last hosted IPF meeting five years ago.

Shah-Mirzaei said: "Holding such events would help improve the quality of the petrochemical industry, which would subsequently let Iran supply strategic petrochemical products to supply midstream and downstream industries."

Shah-Mirzaei said: "In case we utilize the existing capacities we would be able to make up for delays in the petrochemical industry."

Ilam Refinery Gas Processing Up 10mcm/d

Ilam gas treatment facility is the only facility in western Iran. Sprawling on 250 ha of land, it supplies gas to western provinces in addition to feeding downstream industries including the Ilam Petrochemical Plant. The CEO of Ilam Gas Refining Company Ruhollah Nourian has said the refiner fed 1.174 bcm of gas into national grid during the first three quarters of the current Iranian calendar year (ends on March 20), up 9% year-on-year.

Output Capacity Up 50%

Construction of the first phase of Ilam gas refinery began in 2002, which came online in 2007.The refinery is fed by Tang-e Bijar fields. In addition to gas, the facility supplies 400 tonnes a day of ethane, 670 tonnes a day of liquefied petroleum gas (LPG), 250 tonnes a day of sulfur and 4 tb/d of gas condensate. The installed capacity of the first phasewas 6.8 mcm/d of sour gas. The second phase brought the capacity up to 10.2 mcm/d of sour gas with the output growing 50%. According to thellam refinery data, production and sale of refined products at the facility were up respectively 9% and 16% during the nine-month period. The refinery produced 11% more ethane year-on-year, while it sold 18% more of ethane during the three-quarter period year-on-year. Furthermore, since 2020, the refinery has seen its production rise significantly with ethane, LPG and sulfur up 284%, 216% and 10%, respectively. Nourian said LPG production was 23% up year-on-year during the three-quarter period, while sulfur production experienced a 20% increase. Ilam refinery also received 1.596 bcm of rich gas during the nine-month period, which was up 9% from the amount envisaged for the facility.

Second Phase

Nourian referred to the second phase of the refinery, saying: "Since March 2021, Iran Gas Engineering and Development Company (IGEDC) started outsourcing the second phase and the project was awarded a year later. The project has had 40% progress. Once operational, it would increase the refinery output 50%." In parallel with refining work, National Iranian Oil Company (NIOC) embarked on the second phase by drilling five wells in Tang-e Bijar fields.

Stable Output, High-Quality Products

Over 100 projects have been under way at this refinery to overcome operational challenges, carry out development projects, conduct HSE initiatives and guarantee civil defense. Some of these projects have been concluded, while some others would come online by March 2023. Regarding resolution of operational challenges to improve the performance of boilers, a project is under way at the refinery to upgrade the control system and fuel equipment and low-pressure boilers, employing local firms. Furthermore, required measures have started to upgrade the control system of gas compressors. In energy management, Ilam gas refinery, in parallel with protecting the environment, has planned two key projects for installing heat recovery steam generator (HRSG) and flare gas recovery. Implementation of these projects would be a key step in stabilizing production, upgrading the quality of products, developing infrastructure, and upgrading HSE and civil defense at Ilam gas refinery and empowering local companies and supporting knowledge-based companies.

Local Molecular Sieves and Catalysts

In line with the policy of self-sufficiency, reducing and eliminating dependence on foreign companies, Ilam refinery has identified powerful knowledge-based companies. Supporting knowledge-based companies would accelerate improvement in local business and end dependence on foreign commodity purchase. The refinery has well thought-out plans to use domestically-manufactured commodities rather than foreign ones. Supplying necessary key equipment and technologies via relying on knowledge-based companies has been a major strategy for the realization of economic resilience, defeating Western sanctions, breaking dependence and safeguarding national honor and independence, for which good steps have been taken at the facility. Nourian said, 16 items of major refinery equipment, which used to be supplied from abroad, are currently manufactured by local manpower. As regards knowledge-based companies, by adopting the strategy of completion of the chain of distribution of technology for local manufacturing and ending the chain of dependence on overseas and instead focusing on domestic manufacturing, 24 basic commodities needed in the chemical sector have been supplied with the help of knowledge-based companies. The chemicals used at this refinery, including the molecular sieve of the dehydration unit, alumina and titanium catalysts of the sulfur recovery unit and active carbon have been provided by Iranian knowledge-based firms. Ilam refinery plans to receive 21 strategic commodities from local knowledge-based companies.

Water Treatment

This refinery has taken useful steps with regard to industrial waste treatment, energy storage, conversion processes, reducing greenhouse gas emissions, expanding green space and enriching surrounding forests. For this purpose, a project was recently launched for the treatment of water coming out of the treatment station of this refinery. By inaugurating the project 400,000 liters of waterwould treated, thereby saving underground water. It should be noted that, in line with the water shortage stress and with a viewto reducing water consumption from existing water sources, the gas refinery effluent treatment project was put into operation over five months. This project has a nominal capacity of 600,000 liters per day, and the water consumption of the refinery varies from 800 to 1,200 cubic meters per day in the hot and cold seasons of the year. Limited water resources and increased demand have caused many parts of the world, including Iran, to face the problem of water stress or water shortage crisis. Considering the recent droughts and lack of water resources, Ilam gas refinery has implemented a wastewater treatment project. Water treatment is one of the ways to reuse used water for use in agriculture and industry, in which the quality of effluents is attempted to reach the desired level. One of the advantages of this plan is that, in addition to reducing and correcting water consumption, industrial effluents are prevented from entering rivers and underground waters. The process of reducing water consumption in this industrial unit has been institutionalized as a culture among the employees and the refinery in order to optimally use the available water resources, reduce water consumption in processing and non-processing areas.

Energy Intensity Down 18%

In the field of energy management in this industrial complex, in general, efforts have been made to reduce energy consumption while increasing production, and in this regard, energy indicators are in a favorable state and are in line with the company's overall goals. One of the most important indicators that is calculated in different industries in order to check the energy efficiency of companies and compare them with each other and with similar companies in different parts of the world is the specific energy consumption index, which is generally the amount of energy consumption per one-tonne production.According to the new standard, this index for the Ilam refinery is a function of the input feed. This refinery has been awarded for energy-intensive processes and saving projects due to two ethane recovery and supplanting radiating heaters with furnace heating system. Evaluation is done annually by the Industrial Management Organization in partnership with major policy-making and supervisory bodies in the energy management sector, including the Office of Vice President for Scientific and Technological Affairs, Renewable Energies Organization, Iran Fuel Conservation Organization and Iran National Standards Organization.

Iran Rivals Foreigners in Exploration

Exploration in Iran's petroleum industry has advanced to the extent that a large number of countries currently are asking Iran to share its geological experience with them. Mehdi Fakour, director of exploration at National Iranian Oil Company (NIOC), has said Iran has achieved geochemical and geobotanic technology in oil exploration, thereby becoming a rival to foreign companies in exploration technologies. Iran is currently in oil and gas exploration relationship with four neighbors. Talks are also under way for exporting local knowhow and equipment to these countries. Fakour said it would create value and income for Iran. Exploration is the first step in the petroleum industry. Due to massive hydrocarbon reserves, Iran is experiencing extensive exploration activities. There are a total of 200 sedimentary basins in the world. Some countries in the region, including Saudi Arabia, the UAE and Qatar, have only one sedimentary basin, but there are ninein Iran, three of which are internationally known. The Zagros basin is home to the highest hydrocarbon reserves. Discovery of reserves in the Persian Gulf and the Zagros Mountains gives Iran special opportunities. Fakour said Iran's energy roadmap attaches special importance to exploration, which has been already endorsed by Minister of Petroleum Javad Owji and CEO of NIOC Mohsen Khojasteh-Mehr. The roadmap is instrumental in the demographic displacement, environment and social life.

Overseas Exploration

The NIOC Directorate of Exploration is currently operating in the Middle East and Eurasian nations. As in regional countries, there is no local exploration directorate, Iran can jump at the chance to export technology and equipment to them. According to Fakour, Tajikistan, Iraq and Oman are willing to benefit from Iranian exploration knowledge. "During a recent visit to Iran by the Omani Sultan, his energy advisor who serves as minister of oil suggested establishment of a joint working group to review Iran's ideas for exploration cooperation," said Fakour.

Farsi-speaking Tajikistan is also willing to broaden its cooperation with Iran in exploration. Minister Owji held talks with Tajik energy officials and reached agreement on five areas, three of which related to exploration. Fakour said a technical team from the NIOC Directorate of Exploration visited Tajikistan in late March. He added that Tajikistan's energy minister visited Iran twice last calendar year, indicating the importance of cooperation with Iran in the energy sector. The Tajiks want Iran to help establish a Directorate of Exploration in their energy ministry, develop exploration structures, and reclaim low-yielding and capped wells. Fakour said following talks with the Tajik side on four fields exploration activity including geology, petroleum engineering and drilling has been done, adding that it was the result of an active energy diplomacy pursued by the 13th administration.

Referring to the meeting with Iranian manufacturers to engage them in cooperation with the Tajik side, he said: "The Tajik ambassador to Tehran favored utilization of Iranian-made equipment in the petroleum industry of his own country. Iranian manufacturers wanted to set up workshops there. That is while we used to be mere importers of equipment."

Complex Reservoirs

The complexity of Iranian hydrocarbon reservoirs had made Iranian engineers highly skilled. The reservoirs in the regional nations are not such complex and therefore they are now willing to benefit from Iranian technical knowhow in exploration activities. A Russian delegation recently visited Iran and met with the CEO of NIOC to discuss manner of benefiting from Iranian knowhow. Iraq, which is also rich in hydrocarbon, needs Iran's exploration experience. Cooperation in this sector was discussed during a visit to Tehran of an Iraqi delegation.

According to Fakour, these negotiations will strengthen the position of exploration in Iran and will be a new window for the NIOC Directorate of Exploration, because these measures expose the knowledge of exploration management to foreign competitors, in such a way that in the meetings held with the energy authorities of foreign countries, some foreign ministers learnt about Iran's potential.

Training courses for foreign countries were among the other topics that Fakour mentioned as the intention of foreign countries and said: "Considering the existing knowledge in the field of exploration, foreigners welcome these courses." "Whereas the period of using fossil fuels is coming to an end, this has led the owners of these fuels to think of faster extraction, and considering Iran's 110-year history in the oil industry, it has a great advantage in exporting technical and engineering services and equipment, which can create many job opportunities for the country," he said.

Long-Term Plans

Currently, exploration activities are going ahead more rapidly than in the past, so that the country's exploration roadmap has been drawn and gas and oil exploration has been included in the program. According to Fakour, identification of joint and border structures is the first priority while gas structures are the second priority, and the existing structures in the Persian Gulf are the third priority. On the other hand, a 5-year exploration plan is also intended for the 7thNational Development Plan, and a 10-year plan has progressed by about 70%, and a 20-year plan is being prepared. Fakour saidoil and gas exploration operations cover 19 provinces. "In some provinces, exploration and seismic testing is done for the first time; Guilan, West Azarbaijan, East Azarbaijan, Zanjan and Ardebil." He said that 12 exploration wells would be drilled in various provinces in the current calendar year.

Exploration Technology

The use of new exploration technologies and cooperation with knowledge-based companies are among the topics that are carried out in the NIOC Directorate of Exploration. Currently, aerial magnetometry and surface geochemistry operations are modern technologies that have been utilized by Iranian engineers in the field of exploration.

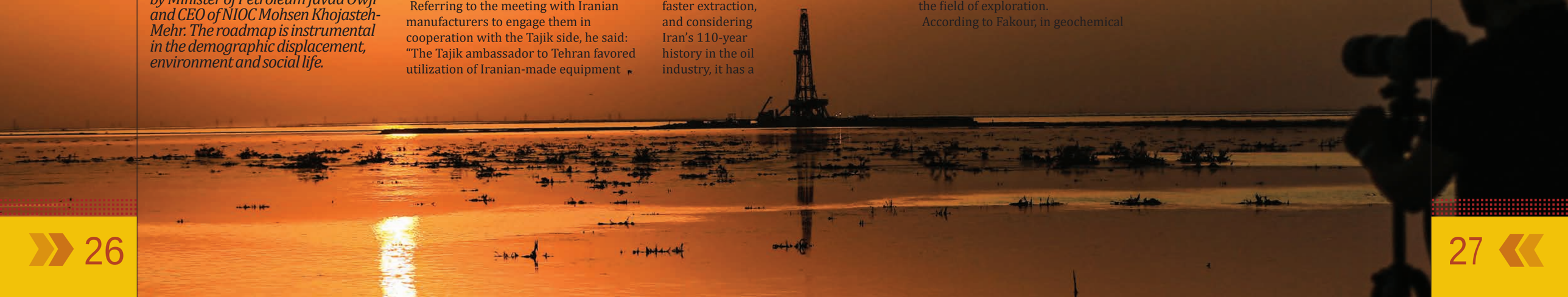
According to Fakour, in geochemical projects, which is new like magnetometry, Iran is now among the top four in the world. Currently, the risk of drilling with magnetometric and geochemical works has been reduced to 2%. "In the tests of the geochemical method in two regions, we have received 95% positive feedbacks and if this method is used in exploration, it will greatly reduce the exploration costs, and the exploration time will be reduced, of course, this method is used onshore," he said.

Gas Hydrates

Exploration of gas hydrates in the Gulf of Oman is another issue that is followed up on by the NIOC Directorate of Exploration. According to Fakour, a vessel is currently collecting information in the Gulf of Oman. It should be noted that Iran has not yet reached maturity in the field of gas hydrate exploration knowledge, but it has been able to achieve gas hydrate exploration technology along with countries like China and Japan.

Large Seismic Survey

The Haftkel-NaftSefid project, extending over 2,250 square kilometers in Khuzestan Province, recently started. It covers the cities of Ramhormoz, Haftkel, Bavi, Shoushtar, Masjed Soleiman and Bagh Malik. This is the largest seismic data gathering project in Iran's petroleum industry. Given the project's ecology, the NIOC Directorate of Exploration has been prompted to make planning for accelerating the project and protect the environment.



Iran, Saudi Normalize Ties at Critical Juncture

FereydounBarkeshli
Energy Market Analyst

Islamic Republic of Iran and Saudi Arabia, the two great oil reserves holders and producers of the Middle East and OPEC, have agreed to restore relationship that was severed duringsome seven years ago. The deal on restoration of ties was brokered by China and finalized in Beijing on 10 March 2023. The decision to restore ties may not have an immediate impact on the geopolitics and energy tectonic of the region and the world but, in my opinion, will rewrite the Middle Eastern pathway towards a much better dynamics. We've been discussing the "Asian Century" and a gradual relocation of eco-political center of gravity from West to South for quite some time. A couple of major international events; however,expedited the cycle of events.

US Hegemony on Decline

Spread of COVID-19 and pandemic dig into the world economic structures and eroded or better to say surfaced the principle ills of the global hegemonic economic fundamentals. United States printed $15 trillion since the virus turned pandemic in the country. It would be safe to say that US added this volume of money during January 2020 to December 2022. This indicated resilience of the economy at the surface. However, recent US Silicon Valley Bank's bankruptcy shows that the economy is began to react to excessive liquidity in the money market.

Next came the war in Ukraine and America's zealous to engage the entire world towards fighting Russia. According to European Central Bank Secretariat Report, February 2023, Europe alone has spent $1.45 trillion on the war in Ukraine in form of subsidies to own citizens, higher costs of energy imports bills and aid to Ukraine. United States has spent a huge amount though recovering most of it through exports of own expensive LNG to Europe, Japan and South Korea.

World Geophysical Map Redefined

Although the war in Ukraine and the hasty entrance and engagement of the United States and Western European countries into the conflict, is indicated as a major factor in a redrawn geopolitical chessboard of the Middle East and energy, it is imperative to note that the new roadmap of the region was already in process of taking new shapes based on new realities. Middle East in general and Saudi Arabia in particular had come to conclusion that America virtually abounded the Middle East. Emergence of shale oil and gas, turned US into a net energy exporter again after seventy years. In the meantime, America's Forever Wars in the region, proved that Pentagon is quite in entering wars but too sluggish to finish as witnessed in Iraq, Afghanistan and Syria. Saudi Arabia and United States entered a strategic alliance back in 1951 on the basis of which Washington undertook to safeguard security of the Kingdom. In return Riyadh agreed to sell its oil in dollar only. In fact, Petrodollar entered the vocabulary of the global energy scene on August of 1951 in Washington. It is needless to remind that the US envisaged de-coupling of dollar from gold and the idea of Fiat Currency that is a currency that is not backed up by any accepted reserves was not accepted. In fact, the US would lose its international position to British Pond again. Once oil was priced in US dollar, the country could turn its back on Bretton Woods agreement. Now back to present, once the United States realized that it no more needs Middle East oil and energy, a tendency towards de-alignment from the region prevailed in Washington. In the meantime, Middle Eastern nations realized that they have to rely on themselves and their neighbors for their safety and security and outsider powers are not trustworthy. United Arab Emirates was even the first country in the region to acknowledge the new strategic formation in theregion and that geopolitical strategic texture of the Middle East required new definitions. The UAE sustained its neighborly relationship with Iran, Qatar and adopted a balanced relationship in the Persian Gulf region. Saudi Arabia was late but still thoughtful to adopt and return its strategic priorities from within the Middle East.

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National Oil Companies of the global south will determine the future path of oil markets. The Riyadh-Tehran deal will not only strengthen the Middle East geopolitical texture in the world but the entire Eurasia will be farther incorporated into a single market and single currency mode.

China Factor

It is needless to re-emphasize China's role in what came to be known as the most important event of the Middle East in recent decades. China owes its Belt &Road initiative to Iran when back in 1996, in a major strategic development in Central Asia, 12 head of states and representatives from 50 nations attended the inauguration ceremony of the Mashhad-Sarakhs- Ted Zhan(Trajan) railway in Northwest Iran. The 165 KM railway is crucial link to revive the ancient Silk Road.

By this, I intend to convey that the notion of Asia-nation was a basic characteristic of Iran's foreign policy since its inception over four decades ago.

However, both Saudi Arabia and Iran are crucial to the success of the Belt and Road project and Global South policy of major countries in Asia and developing nations. It is clear that the United States and the West deliberately created conflicts between major strategic and energy players in the region. Any worthy development projects required peace, security and stability before it, can be implemented. Peace is the major factor for investments by any country. China has experienced a persistent growth rate for the last three decades. This, together with the highest population has made China the most popular destination for major oil and gas producers in the Middle East and elsewhere. As such Iran and Saudi Arabia have well realized that they need to seize the moment and cooperate in order to enlarge their market in China, as well as other emerging countries in ASEAN region. For the two Middle Eastern superpowers, it is "now or never" moment.

Saudis and Iranians will have competition and rivalry, but surely no enmity and hostile policies towards each other and the region. We are at a win-win game.

De-globalization

As mentioned earlier, the US economy is in trouble. The country's Federal Reserve keeps printing money for which there is no solid backing except that of hegemonic myth. Military strength and access to a system commonly known as SWIFT that allows transactions once the US government approved. Swift is basically nothing but a code that everyone dollar- denominated transactions has to be identified with.

Once Saudi Arabia and OPEC member countries decide to sell their oil(or gas) in Yuan or other internationally convertible currencies, US dollar will render irrelevant. By that I mean irrelevant to the extent that they can apply sanctions to any transactions that Washington voted against. Dollar was a privileged currency or a currency of convenience when America bought most of the oil. Now that Asia imported most of the oil, the buyers decide the medium of transactions.

Diversion from domination of dollar as medium for oil trade into a diverse basket of currencies has been oil producing and exporting countries intension for about 70 years. This is translated into termination of dollar tyranny that will eventually lead to decoupling of many more commodities and goods or services from US manipulations.

As such de-globalization is here to stay and most notably in oil and gas trade.

Iran-Saudi axis of oil cooperation has long been envied by major international market participants and rivals. As the era of the Seven Sisters comes to an end, the next phase of oil power is shaping up as The Seven NOCs.

National Oil Companies of the global south will determine the future path of oil markets. The Riyadh-Tehran deal will not only strengthen the Middle East geopolitical texture in the world but the entire Eurasia will be farther incorporated into a single market and single currency mode.

US maximum pressure tactics hurt Iran a lot, but the country made the best of it. Once the US dollar dominated oil markets vanished, Iran will be back in the market with full force.

Now addressing Iran and Saudi Arabia specifically, economies of the two countries are exceptionally complementary. By that, I mean although both economies are producers and exporters of oil, Iran's economy is vast and expansive. Iran produces a diverse variety of consumer products and services.

However, the Iranian economy suffers from insufficient investment due to severe and long years of sanctions. As such economies of the two countries are complementary.

G20 was first formed in September 1999. The group was in essence consisted of 20 most powerful nations of the world. However, G20 has begun to shrink and is losing reference to the realities of changing world order and de-globalization process. In a new multipolar world order, rules-based Northern Atlantic hegemony has lost reference.

The Shanghai Cooperation Organization in which Iran's membership is accepted and Saudi Arabia is in the process of joining, global south with over 70 percent of oil and gas resources and major demand hubs, Iran and Saudi Arabia as well as UAE and other players in the Persian Gulf region will have to play a pivotal role in shaping Asian Century. In fact, OPEC is a model for cooperation. There have been rivalries and hostilities amongst members of the organization. However, some of the most important agreements that helped support and strengthened the international oil market was taken during those difficult times.

The China-brokered rapprochement between theIslamic Republic of Iran and Kingdom of Saudi Arabia is seen as a milestone in political map of the Middle East. Syria's relationship with its neighbors is on the normalization path, too. Middle East is on the right path.

Iran and Saudi Arabia have well realized that they need to seize the moment and cooperate in order to enlarge their market in China, as well as other emerging countries in ASEAN region. For the two Middle Eastern superpowers, it is "now or never" moment.

Pemex Submits UPD for Zama

Pemex has submitted the Unit Development Plan (UDP) for the shallow-water Zama field to Mexico's National Commission of Hydrocarbons (CNH).

Zama extends across two contiguous offshore blocks in the Gulf of Mexico. All four Zama Unit Holders, including Talos Energy, Wintershall Dea and Harbour Energy, have agreed to form an Integrated Project Team (IPT) to manage development and operations going forward into the construction phase.

The UDP calls for two offshore fixed platforms, 46 dry-tree wells, and oil and gas transportation via two 68-km pipelines to new, dedicated processing facilities in the Maritima Dos Bocas terminal in Paraiso, Tabasco.

Mexico

Energean Boosts Drilling Offshore Egypt

Energean plans to deploy the El Qaher-1 jackup to drill four production wells on the Abu Qir license in the Gulf of Suez offshore Egypt, the company said in its latest results statement. The rig will start the program after completing work on the NEA/NI development in the same region, with first gas from the Abu Qir wells expected in 2024. Another well, Orion X1 (Energean, 30%) should spud late this year in the offshore North East Hap'y Block, following a delay due to rig availability issues.

Egypt

Denmark Investigating Object Close to Nord Stream

The Danish Energy Agency (DEA) has offered Nord Stream 2 AG the opportunity to participate in the salvage of an object observed close to the Nord Stream 2 gas pipeline in the Baltic Sea.

Danish authorities have investigated the object and the current view is that it does not pose an immediate security risk. It is cylindrical and measures around 40 cm tall and 10 cm in diameter, and could be a maritime smoke buoy.

However, to clarify what it actually is, the authorities have decided to salvage the object with assistance from the Danish Defence.

Denmark

Pharos Seeking Approvals for Three Wells in Vietnam

Pharos Energy is working on submitting revised development plans for two wells on the TGT Field and one on the CNV Field, both offshore southern Vietnam, the company revealed in an update. It also has submitted an application for extensions to TGT and CNV licenses for partner approval. Last December the company applied for an extension to its license for blocks 125 and 126 offshore eastern Vietnam as no suitable rigs were available for drilling in 2023. This is now with the Prime Minister's office for approval.

Vietnam

Consortium to Pitch for Floating Offshore Wind in Australia

A consortium of Spark Renewables, Simply Blue Group and Subsea7 will jointly pursue floating offshore wind development opportunities off the coast of New South Wales, Australia. Specifically, they are targeting the Hunter and Illawarra regions and their recently declared renewable energy zones. Spark Renewables is a locally based developer and owner of wind, solar and storage assets across the country. Its owner Spark Infrastructure has interests in the New South Wales transmission network operator Transgrid.

Australia

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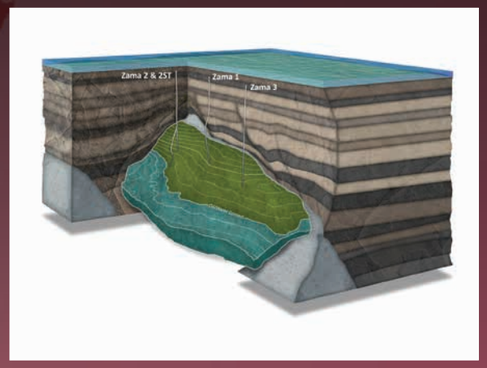


War in Ukraine and Changing Geopolitics of Energy

FereydounBarkeshli
Energy Market Analyst

As the war in Ukraine surpassed the one-year threshold with no solid evidence that it may end soon, the international oil and energy markets demonstrate its resilience to stand to the task. International oil market and energy market was once hit by Covid late 2019 and suffered hugely throughout 2020 and part of 2021. However, thanks to coordination between OPEC and non-OPEC producers, the market found its way towards normalcy and stability. While the global oil and energy markets began to embark upon better days, the news of Ukraine war broke out and the international oil markets experienced the second blow from the war in the European heartland. Although it began with gas, spread to all other spectrum of energy from coal to nuclear as well as LNG and renewables.

Such a blow to the global energy markets was not seen since the Second World War. However, back in 1972 and Arab oil embargo, world experienced severe disruptions.

Sanctioning Russian Energy

United States of America is in the business of sanctions. Washington has adopted sanctions as a principle foreign policy tool against its rivals and is in the process of forcing all others to join in and sanction whatever that makes Washington unhappy. As I am writing this, a total number of 37 countries are under some sorts of US sanctions. Number of sanctioned cases including companies, institutions and organizations, individuals and issues are so diverse and huge that Washington's Treasury Department has increased its personnel by six times during the last decade. Having said that, the global oil, gas and energy markets weren't disrupted by war but as the results of sanctions that were imposed by the US and EU plus Japan, South Korea, Australia and New Zealand. It's ironic that no country in the global south opted to impose sanctions against Russia. Talking of Global South, I mean three-fourths of the world population that includes the entire Middle East, India, China, Africa and South America. This is just to let us remind ourselves that how wrong has the West gone with the South.

Global North has imposed nine sets of sanctions packages against Russia since late February 2022. Packages include the followings:

Sanctions against 120 individuals in top administration and company management. Financial sectors, all banks and money exchange headquarters and branches.

Asset freeze of all US dollar and US dollar-based bonds and equities in overseas banks

Critical infrastructures, including oil and gas terminals, pipelines, ports, airports, power stations and operations related to each of the sectors.

Military, military-related or dual use equipment as per definition of the EU and the US. These sanctions together include some 43 percent of the Russian economy. Sanctions have basically aimed the Russian oil and gas sector. Most other sanctions are energy-related. However, as mentioned above all the sanctions are designed and implemented by 31 countries labeled as global north. No other country has recognized provisions related to the above-mentioned sanctions. Global North or as commonly known Global West have modeled long years of sanctions against Iranian economy and against Russia.

Deglobalization of World Economy

Imposition of sanctions on Russian oil and gas has virtually ended one era of global energy security. One era has come to an end but the new era isn't born yet. A new era is about to be born and come into existence within the current decade. Global oil markets and the world economy has yet to see the new era and new roadmap for the international oil market.

As the French finance minister said recently, the main objective of Russian sanctions as all other sanctions, is a regime change strategy. Many of the current sanctions against Russia appear to be run-of-the-mill restrictions used against several other countries. A number of them including export bans and the freezing of certain assets have been imposed on Russia since its annexation of Crimea in 2014. Even the exclusion of some major Russian banks from SWIFT system is not new. Two most controversial aspects of this new rounds of sanctions are:

Freezing of Russian gold and foreign currency reserves, and oil and gas export sanctions.

As said, these types of sanctions have already been deployed on other countries and on Russia itself. What makes the difference is about the simultaneous imposition of several sanctions all at once and within a short span of time. The sanction against Russia is at least two times more and all in less than six months. The current sanctions against Russia are now heavier than those imposed on Iran, Syria and North Korea put together. None of these previous sanctions were even remotely as powerful as Russia a member of G20, and the world's most powerful nuclear country.

Likewise, none of the 63 central banks that are members of the Bank for International Settlements (BIS) in Basel- known as the central bank of central banks- has ever been the target of financial sanctions. The BIS itself has even joined in on the sanctions in order to prevent Russia's access to its offshore reserves. This really is unprecedented. Since its inception in 1931 the BIS had never taken such a measure, not even during the World War 2.

So, what should we expect from the sanctions. Western think tankers will hamstring the Russian economy and energy sector, sow discontent among the Russian people and possibly even go for some sort of regime change, but history suggests otherwise. Russian economy is dependent on energy for most of its foreign exchange earnings but foreign currency is not all that the Russian economy needs. Sanctions are a form of weapon of mass destruction. As such the country under sanctions will have all options on the table.

Europe under US-Led Russian Energy Sanctions

Washington had all sanctions packages against Russia ready and laid out. Russian forces entered Ukraine on 24 February 2022 and the first sanctions package was imposed on 2 March 2022. Sanction packages kept coming one after the other and by February 2023 that marked one full year of the war reached over 15 thousand items. The hardest ever in the history.

Europe has so far spent $1 trillion on the US-led sanctions against Russia. I insist emphasizing sanctions, since the war in Ukraine did not disrupt the flow of oil or gas to Europe. In fact, gas flow was pretty normal prior to the Nord Stream 2 gas pipeline explosion. It's interesting to note that the flow of Russian piped natural gas to Europe via Ukrainian territory is still at its pre-war volume level.

When it comes to energy market disruptions and the inception of a new global energy politics, the following aspects are considered the most outstanding:

- Natural gas prices increased in US and EU after imposition of sanctions but began to rebound to the autumn level of 2022. That is to say, still high compared to pre-war range. However, gas prices have to stay high enough in Europe in order to initiate further investments in building terminals and storage facilities.
- Russia's natural gas exports to the European Union have sharply declined in the last eight months and after Nord Stream 1 and 2 explosions.
- The US exported 58.7 MT of LNG during the first nine months of 2022 (EU's share was 33.2 MT). It is needless to say that by the time Western alliance sanctions were imposed on Russian energy and financial systems, most European countries had filled up almost 53 percent of their existing facilities from gas already imported from Russia.
- The EU is heavily reliant on the US and Norway for gas supply. This dependence on gas imports from the US at a much higher price compared to the Russian gas, has led European societies to a wave of discontent as the social value of supporting Ukraine at a cost that Europe may not be able to pay for some years to come.
- Brent prices briefly increased following the war but began to fall prior to imposition of Price Cap regime by the US and EU and the so-called Northern Alliance. Nevertheless, both US and EU markets need oil and gas prices high enough to compensate for a much-distorted energy market.
- The US government withdrew some additional 200 million barrels of crude by the end of 2022. Strategic Petroleum Reserves, SPR was designed in 1975 in order to safeguard OECD members at times of war and crisis. SPR isn't meant for commercial objectives. US administration is required by law to replace the volume of withdrawn volumes within a period of six months.
- Chinese crude oil inventories (commercial and SPR), are higher than the US SPR. Also, for the first time in history of global oil markets. China traditionally refills its SPR and commercial inventories when prices are low and releases while prices are higher.
- Saudi Aramco OSP (Official Selling Price), played an important role in maintaining stability in the oil market in 2022. This was interpreted as a support gesture by Riyadh for Russia.
- Russia's crude cargoes keep moving and something like 600 ships carry crude from Russia to unknown destinations since sanctions were imposed by the Western Alliance in December 2022. In the meantime, costs of crude carriers have been more than doubled since the imposition of sanctions against Russia.
- India increased oil purchases from Russia at the highest rates ever. Parts of the imported crude finds its way to Europe and elsewhere. India is regarded as an outstanding winner in Russia's energy sanctions.
- Chinese crude imports from Russia declined as compared to 2021. However, according to tanker tracking reports, a large volume of Russian crude is bought by China via unidentifiable channels.
- Russia's crude oil output failed to return to pre-war levels of 2021. However, the lost volume is stated below 0.5 mb/d. One major issue is related to insurance problems. Some 90 percent of international insurance companies are Western and mostly London- based. Insurance of cargoes with Russia oil is not possible unless it is re-diverted to another one.
- An important dilemma for "OPEC plus" is the future ceiling and quota arrangements. "OPEC plus" is currently about 0.5 mb/d higher than the official ongoing production.

Shale Factor

US shale oil production is expected to rise to 9.56 mb/d during the current quarter of 2023. This up by 2.2 mb/d compared to the same quarter last year when the war started. America was a net crude oil importer back in 2015. US has become a major oil, refined oil and gas exporter right after the war in Ukraine. In fact, on the supply side, US is even better-off than OPEC.

However, the underlying factor is that for Shale to prosper even further and add more to volume, it's safe when prices are at around $90 per barrel and for a long time. Shale oil/gas producers are small to medium companies that rely mostly on banks to support them financially. Over recent years, more international oil companies and oil giants have been attracted towards Shale ventures with big capital and technology. As such shale is becoming more resilient towards volatility and price fluctuations. EU is currently importing LNG from United States at over four times the price of gas that was supplied by Russia via pipelines. EU doesn't have sufficient terminals and storage facilities to re-gasify LNG. They have to be built in order to import more LNG and refined products from the US at several times the EU imported just a year ago. To be more precise, Europe is financing the growth of shale oil and gas industries in the US. It's ironic that shale production is much more polluting and environmentally damaging the non-shale oil and gas production. War in Ukraine and Russian oil and gas embargo turned the United States into a net energy exporter again. A scenario that could have not been thought of in half a century.

Shale factor hasn't only pointed at rivaling Russia and capturing its traditional oil and gas markets in Europe. Energy insecurity that was shaped up by sanctions on Russia, encouraged European industries to move parts of their operations to the US. Germany, the most industrial country of Europe is heavily dependent on safe and secure flow of energy at a reasonable price. Russian sanctions have now induced Germany to move its more energy-intensive industries to the US and Canada. As of now, companies like VW and Airbus have begun to move parts of their operations outside Europe.

Such measures and mentality concepts in Europe lead to a new era that could be branded as Geopolitical Recession. In the course of time, such trends can distort Europe's position as the birth place of the first waves of industrial revolution away to Asia and the Global East where major oil and gas producers, as well as principal consumers of all types of energy reside. This is the challenge to globalization as defined and understood by West. To be even more precise, the future of Europe will be decided in Ukraine. For EU member states, Ukraine is a defining moment. It's for EU to decide about its future energy security and energy access. It's for EU to decide its future security arrangements. Europeans outsourced their security to the United States for 70 years after the Second World War. The US is now demanding that money back by way of buying more weapons from America and spending more on military equipment that will finally end up in the US coffers. The United States seems to have now been engaged in a NATO-style energy security arrangements with Europe. Middle East and global South is on the right side of the history as far as oil and energy diplomacy is concerned. The world economy and business has realized that it should move to locations within safe energy access. For now, Europe proudly woes a 19 percent cut on total energy consumption, but has it been achieved without economic costs and a downturn trend that Europe will have to live up with for years to come.

How EU Gas Price Cap Impacts Markets

The European Union (EU) has over the past two decades sought to deregulate gas, thereby supporting gas pricing based on market mechanism in gas hubs versus oil-indexed gas pricing in long-term contracts. However, in the midst of Russia-Ukraine tension and the subsequent spike in gas prices, the European bloc has for the first time set a price cap for gas transactions in a bid to blunt gas price fluctuations. But what are the consequences of this policy? What message are the Europeans sending to the gas market? The Gas Market Division of the Directorate of OPEC and Int'l Energy Fora of Iran's Ministry of Petroleum has studied this policy and its impact on global markets.

Gas Cap Regulations

The EU recently adopted regulations capping gas prices, which took effect in 2023 for one year. What are these regulations? Since the Russia – Ukraine tension in early 2022, the European Commission (EC) brought up a variety of plans to counter gas supply shortages and price volatilities. Finally after intense negotiations within the EU, it was decided to enhance solidarity through better coordination of gas purchases, reliable price benchmarks and exchanges of gas across borders and to introduce temporary mechanisms to protect citizens and the economy against excessively high prices, by way of a temporary intra-day volatility management mechanism for excessive price movements and an ad hoc LNG benchmark, to be developed by the European Union Agency for the Cooperation of Energy Regulators (ACER).

Limiting Gas Prices

Council Regulation (EU) of 19 December 2022 enhancing solidarity through better coordination of gas purchases, reliable price benchmarks and exchanges of gas across borders takes effect for one year. This Regulation introduces temporary mechanisms to protect citizens and the economy against excessively high prices, by way of a temporary intra-day volatility management mechanism for excessive price movements and an ad hoc LNG benchmark, to be developed by ACER. This Regulation establishes temporary measures, for the case of a gas emergency, to distribute gas fairly across borders, to safeguard gas supplies for the most critical customers and to ensure the provision of cross-border solidarity measures. It would include coordinating natural gas purchasing within the EU, demand aggregation and joint purchasing, increased use of LNG facilities, gas storage and pipeline, setting up temporary intra-day volatility management mechanisms to apprehend excessive price movements more efficiently, and empowering ACER to specify all the parameters of the market data that should be reported to it.

In the second regulation, an article pertains to market correction mechanism (MCM) for Title Transfer Facility (TTF) Virtual Trading Point derivatives takes effect on 15 February 2023 for one year.

The MCM activates if the month-ahead (or front-month) TTF prices (i) exceed €180/MWh for three consecutive days while (ii) being €35 above an LNG reference price to be set by ACER.

The base price is determined based on the average price of LNG delivered to Northwest Europe, the Mediterranean, Northeast Asia, National Balancing Point (NBP) Price and LNG daily assessment by ACER. This mechanism does not apply to TTF daily transactions or over-the-counter (OTC) ones.

20 Working Days

Once activated by ACER, the dynamic bidding limit shall apply for a minimum of 20 working days, unless suspended by the Commission.

The dynamic bidding limit shall be deactivated, 20 working days from the occurrence of the market correction event, if the reference price is below EUR 145/MWh for three consecutive working days.

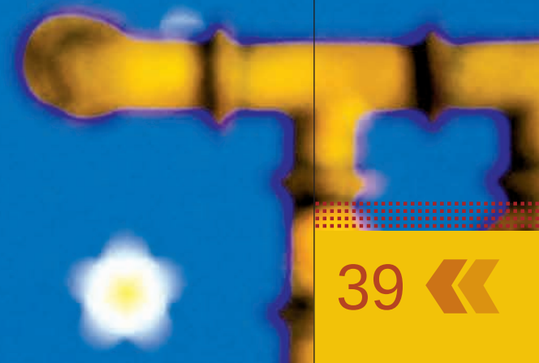
Where a regional or a Union emergency has been declared by the Commission, notably in case of a significant deterioration of the gas supply situation leading to a situation where the gas supply is insufficient to meet the remaining gas demand ('rationing'), the dynamic bidding limit shall be deactivated. That assessment shall take into account price developments in other relevant organized marketplaces, notably in Asia or the United States. The European Securities and Markets Authority (ESMA) and ACER are tasked with assessing the impacts of these mechanisms on financial markets, as well as energy and supply security to report to the EC by 1 March 2023.

Assessment

The MCM for the front-year TTF derivative settlement price shall be activated when a market correction event occurs. A market correction event shall be considered to occur when the front-month TTF derivative settlement price, as published by ICE Index B.V. (the Netherlands): exceeds € 180/MWh for three working days; and is € 35 higher than the reference price during the period referred to in point (a). Therefore, only for a 49-day period, stretching from 26 July to 13 September 2022, both conditions have been fulfilled and Europe has absorbed a significant volume of LNG cargoes to meet its gas demand and fill its storage facilities for winter. It is possible that if MCM was implemented in this period, Europe would not be able to absorb enough LNG cargoes and the cargoes would be directed to other markets. However, the EU could have suspended the mechanism in this period, too.

Disruption

The outstanding point in this regulation is the gradual elimination of Russia from Europe's gas market, which would impose heavy burdens on the bloc at least in the short-term. Governments have no option but to support consumers who cannot support high gas prices, but when the price ceiling is set below a balanced price, the supply-demand balance disappears and the market mechanism will be automatically disrupted. It is the first time the Europeans are experiencing a serious gas crisis. That is why they have worked out such a mechanism in order to disrupt the market themselves. The Europeans have regularly accused OPEC of market manipulation, but it is the first time they are manipulating the market due to increased gas prices. Adam Smith's invisible hand is apparently working in Europe's markets against the backdrop of the Ukraine war and concomitant impacts on Europe. The Europeans have set a price cap for Russian gas imports. In the crude oil market, their objective is to restrict Russia's oil income while guaranteeing oil supply to Europe. As far as price ceiling on gas retailing is concerned, they want to make sure that consumers would be spared any harm from high energy prices. But the price ceiling set by the EU in the gas market follows the Netherlands' TTF benchmark with a view to slowing down price excess in gas transactions. That is while prices in the TTF market is artificially higher than other benchmarks and may not be a good criterion for limiting prices in gas transactions.



Long-Term Deals

The main faults found with this European policy is the incompatibility of the proposed plan with deregulation and price liberalization policies in Europe, ambiguity in pricing policymaking and calling into question long-term gas contracts and their terms.

Gas producing nations have always been in favor of long-term gas prices. They maintain that gas deals should be long-term in order to ensure the supply security as the gas supply chain is capital-intensive and may not be expanded based on intraday prices. In simpler terms, you cannot tell them to build first and then go for marketing and margins.

The Netherlands' market regulation section has criticized this European policy on the grounds that making efforts for imposing price ceiling on futures transactions would result in negative consequences such as physical shortage of gas. The European Federation of Energy Traders (EFET) has also announced that imposing price ceiling would increase demand, lower supply and reopen talks about LNG contracts, where energy suppliers would get the upper hand.

Another consequence of price ceilings is disruption in gas supply to Europe and access to gas customers and artificial lowering of prices. Therefore, cargoes will be headed to Asia's market and Europe will be left with problems in access to gas.

Thus, by interference in the market, price discovery will hit snags and margins will drop in the stock market. That is why many operators prefer to focus on gas transactions in markets outside Europe. Of course, it's no question of moving towards Asian markets. However, if this method is intensified it may drive LNG cargoes towards Asian markets and affect long-term investment in the gas sector.

GECF Revenue

Europe is a major destination for gas cargoes supplied by the Gas Exporting Countries Forum (GEFC). Therefore, such regulations may significantly impact the GECF member states' revenue from exports. Setting a price ceiling in the TTF market and its impact on other European gas hubs may result in lower revenue by GECF member states whose LNG contract prices are linked with the hubs affected by the price ceiling. However, under the current circumstances in the gas market, the MCM mechanism is unlikely to be activated unless serious disruptions come up in further gas supply to the EU. GECF member states are required to solidify their position vis-à-vis these new regulations, developed various scenarios, assess possible risks and design specific measures to minimize any negative impact from these regulations. Simultaneously, the GECF Secretariat will continue to monitor developments associated with the EU regulations and any new interference in the market to assess its potential impacts on the global gas market and GECF member states.

Stock Exchange Impact

The EU's latest gas regulations may have significant impacts on the natural performance of Europe's gas market. Gas price measures including intraday fluctuations management and MCM mechanisms may negatively impact stock exchange transactions and increase margin call and manipulate the price discovery function. Setting a price ceiling in TTF transactions can directly affect Europe's gas market, not to mention its impact on the global gas market. Over the past two years, LNG spot prices in Asia have been largely affected by European hub prices. Therefore, imposing a price cap in Europe may reduce LNG spot prices in Europe. However, as LNG demand increases in Asia, there would be more competition for the cargoes and any price restrictions in the TTF may divert LNG cargoes away from Europe to Asia. That would bring about gas shortage within the EU and finally disrupt gas demand in this zone, as well as reducing investment in the gas industry.

Therefore, numerous trading companies and financial institutions have expressed concern with the EU's recent regulations. ICE operators have also expressed concern over the EU's market interference and its potential risks for the TTF and financial stability.

Assessing the technical and financial feasibility of operating the TTF gas hub is under way by ICE. Then, it may be decided that the TTF be moved out of the EU. Furthermore, the European Central Bank (ECB) has announced that these regulations may negatively impact the Eurozone's financial stability and result in further fluctuations and margin calls.

Turkmen Sahra, Land of Wilde Horses

Turkmen Sahra is located in northeast Iran. This vast area covers the cities of Gonbad Kavous, Bandar Turkmen, Aq Qala, Maraveh Tappeh, Kalaleh, Simin Shahr, Gomesh Tappeh, Negin Shahr, Anbar Aloum and Dashli Boroun. Turkmen Sahra and Gorgan Desert enjoy an ancient history. This piece of land was totally Persian up to the 17th century, but after Turkmen nomads settled there it turned into Turkmen-speaking area. Turkmen Sahra is estimated to date back to seven millennia ago as archeological excavations indicate. Turkmen county enjoys significant historical characteristics. Horse breeding has been common in Turkmen Sahra since long time ago. Turkmen purebred live in that area. They are mainly gray with a thin body. Unlike other horses, they have flat abdomen. Exporting these horses is forbidden. Here we briefly review tourist attractions in Turkmen Sahra.

Equestrian Center

Gonbad Kavous Equestrian Center was built in 1961 in order to stage horse races and breed purebreds.Covering 160 ha of land, it hosts horse,races in spring and autumn. Horse racing is also held in Bandar Turkmen too. Horse tracks are among tourist attractions in this city. There are three horse tracks Golestan Province (Aq Qala, Gonbad and Bandar Turkmen).

Ashouradeh Island

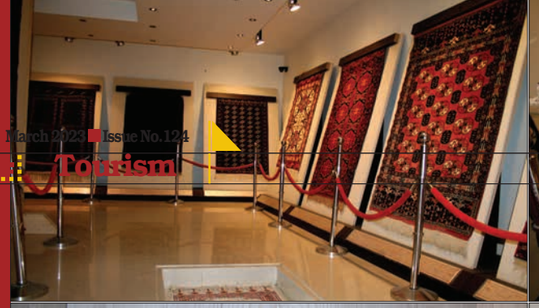
Ashouradeh is the only Iranian island next to Turkmen Sahra. Over years, 800 ha of this island has been covered with water and it is now uninhabited. The island had initially an area of 1,200 ha. At present, the remaining 400 ha is usable. In most history references, Ashouradeh is known as an archipelago comprising three islands. As water level has come up two small islands have been submerged. This place was used for hunting during the Safavid rule. Therefore some fortresses were erected there. Massive flooding in 1993 led to the evacuation of this island.

Bandar Turkmen Jetty

The most attractive spot in Bandar Turkmen is its jetty. The Caspian Sea and Bandar Turkmen tourist jetty lie west of the city. Therefore coastal markets selling colorful handicraft.

Bandar Turkmen

Bandar Turkmen is not historically old. Currently located in Golestan Province, the city was established in 1927after then ruler Shah Reza Pahlavi forcibly moved nomads. This city was set up for military purposes. Bandar Turkmen is the capital of caviar in the world. Cotton is also raised around it and is a main source of income for the area. Residents of Bandar Turkmen are mainly Turkmen, but their culture is a combination of Iranian, Turkmen, Russian and Kazakh customs. Despite being connected to Caspian Sea, Bandar Turkmen has semi-arid weather conditions. It is because of its proximity to Turkmen Sahra and southern deserts of Turkmenistan.








Gonbad Kavous

Gonbad Kavous is located in the eastern part of Golestan Province. It neighbors Turkmenistan to the north, the cities of Aliabad, Aq Qala and Gorgan to the west and Kalaleh to the west. The city's name is derived from Kavous bin Voshmgir, who was a ruler during Al Ziar dynasty. His capital was where we know today as Gonbad Kavous.

Carpet Museum

Gonbad Kavous Carpet Museum is the third top carpet museum in Iran, just behind Tehran Carpet Museum and Astan Qods Razavi carpet museum in Mashhad. It is located near the tallest brick tower in Gonbad Kavous. The museum puts on display different stages of production of Turkmen carpet, introduces techniques and motifs for this carpet and also displays distribution of Turkmen carpet across the globe.

Iran Petroleum

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Your views are appreciated

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Gonbad Kavous