Iranian Oil, Gas & Petrochemical Products Exporters' Union

ENERGY WORLD

No.8 - Fall 2013

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Iran's Private sector smiles upon new Oil minister

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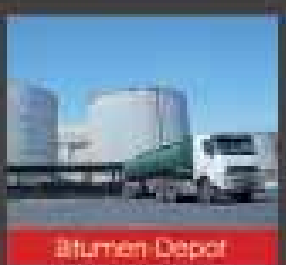
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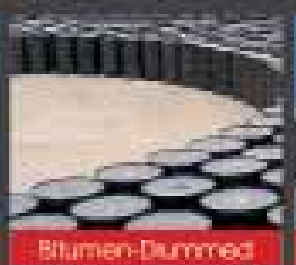
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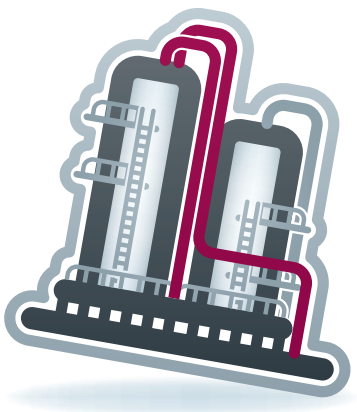

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Export of petrochemical products returning to its previous trend

Modernizing and diversifying its energy portfolio

The role of economy in peace progress

Seyed Hamid Hosseini*

In today's world, economy and peace are getting uniquely bounded together; just as Montesquieu said that peace is the natural consequence of nations' commercial relations. Peace is something that human being is intrinsically tended to, since war and fray bring nothing but destruction and poverty in human societies. This is, however, man's ideal, since reality shows something else; long history of wars and bloodsheds, like the two World Wars, cultural and religious frays, and great misery and poverty caused by them are just instances of our world's reality. So culture, economy, politics, and many other factors as well, have some roles to play in global security and peace progress.

Since one basic aim of people in their lives is to secure and improve their livelihood, so this is government's responsibility to provide societies with more financial facilities and improve their prosperity. The question is what role economy might play in peace progress and how governments can make progress and peace in societies running a proper economy.

Just as peace is a necessary requirement for a progressive and stable economy, the peace itself requires economic progress and stability. Economic instability has caused political and social upheavals and crisis in many places throughout the globe; even civil wars are caused more by economic desperation and helplessness rather cultural (racial and tribal) disputes.

Another important issue to be concerned about is economic relations and peace between countries. Limited resources and facilities for production and globalization of economy have led to the expansion of commercial relations and cooperation between countries. According to interdependence theory in contemporary international system, economic and welfare issues have replaced political and security ones and so violence cannot be efficient in economic relations between world governments; quite the contrary, negotiation and deal making, which are essentials of commercial engagement, are better fit to do so.

If we are to explain what role economy plays in development of peace, we have to first take a closer look at military expenses (war economy) and its effects on society:

While one fifth of the world population suffers from hunger and over a billion people do not have access to basic health care, an enormous amount of money is being spent on military programs. Military business makes jobs, but in time it augments security risks, cause annual budget deficit and makes tax increase for citizens. Seymour Melman ironically pointed out that a submarine is a technological masterpiece but consumers can't eat it; can't wear it; can't ride in it; and can't make anything with it.

The president of Islamic Republic of Iran, Dr. Hasan Rohani, addressing world's heads of the sates in 68th UN general assembly, demanded them to think about "enduring peace" instead of "coalition for war." The essence of this demand is to reduce military expenses and to exchange war economy for peace economy. Just as the economic growth brings about human development, so investment on human needs (health, sanitation and proper nutrition) will do the same. By reorganizing military corporations for peaceful uses by dedicating to them tax advantages and direct budgets and transforming military bases into proper residences for poor people, we can take some steps towards peace.

Severe poverty is a definite cause of violence; people fight each other to overcome the lack of food and their other basic needs, and this will lead to the government losing its authenticity and support among citizens; this is what is happening in many places around the world, like Africa. So development of economy is the necessary condition for peace but it is not sufficient; if peace is to be prevailed in society, we must also put efforts on expanding human development (civil and political rights) along with economic progress.

Developing trades with the help of local and international economic media is one of the most important economic strategies which aid the establishment of peace between nations. If we accept that today economy has an inseparable bound with peace, we actually accepted in advance that, either directly or indirectly, economic activity do help strengthening peace and security. So we have to develop economy, by any means even publishing a journal, if we want to develop peace.

The most important aims of World of Energy journal are: providing information about capacities, and capabilities of middle-eastern and central Asian producers and exporters of oil, gas and petrochemical products; communicating information about relevant national and international rules, regulations, and legislations; providing information about new achievements in production and exportation of oil, gas and petrochemical products, and related fields like transit, swap, bunkering, customs affairs, warehousing and reservoirs, packaging, market, pricing, quality control and standard, raw material supplies. ■

*** Editor – in – Chief**

Breaking news

Oil prices continue falling as Syria risk apparently lessens

Oil futures prices reached their lowest level in 3 weeks with the Sept. 16 closing while the US and Russia agreed to terms under which Syria is expected to submit chemical weapons to international officials, reducing the likelihood of a military strike and possible disruption to Middle Eastern crude supplies.

Crude oil prices have been volatile since Aug. 21 when more than 1,400 Syrian citizens were killed with a chemical weapon. US authorities blame the Syrian government for the attack. US President Barack Obama had threatened a targeted air strike on Syria if diplomacy failed.

Syrian President Bashar al-Assad denies responsibility, but he worked with Russia on an agreement to declare Syria's chemical weapons to the Organization for the Prohibition of Chemical Weapons.

The US and its allies asked the United Nations on Sept. 16 for a resolution that would call upon Syria to dismantle its chemical weapons arsenal.

Meanwhile traders and analysts continue to watch the situation closely in case the agreement breaks apart.

In other international news, Libya reported production has resumed at El Feel and Sharara oil fields. Strikes at Libya's oil export terminals led to reduced crude output during August.

Energy prices

The October contract for benchmark US light, sweet crudes on the New York Mercantile Exchange fell $1.62 on Sept. 16, settling at $106.59/bbl. The closing was the lowest price for front-month crude since Aug. 26. The November crude contract declined $1.35 to settle at $106.19/bbl.

Heating oil for October delivery dropped 5¢ to a rounded $3.06/gal on NYMEX. Reformulated gasoline stock for oxygenate blending for October fell 5¢ to $2.716/gal.

The October natural gas contract rose 6.1¢ to close at a rounded $3.74/MMbtu on NYMEX, the highest since July 23. Above-normal temperatures across the Midwest and south into Texas prompted higher gas-generated electric demand for air conditioning, analysts said. On the US spot market, the gas price at Henry Hub, La. was $3.68/MMbtu, up 4¢.

In London, the October IPE contract for North Sea Brent crude decreased $1.63 to $110.07/bbl. The October contract for gas oil settled at $944.25/tonne, down $5.50.

The Organization of Petroleum Exporting Countries reported its basket of 12 benchmark crudes was down 83¢ to $109.04/bbl on Sept. 16. ■

Iran's private sector smiles upon new oil minister

Iran's Oil Ministry sets to resolve the problems in the countries private sector with government support ,"Energy World" reported quoting the chairman of the board of directors in Iran Oil , Gas & Petrochemical products Exporters Association Hassan Khosrojerdi as:" Hassan Khosrojerdi hopes for more improvement and liberties in Oil ministry by the aid of the government's new economic team. "We have good dealings with some countries if we can create a harmonic unity and cooperation with each other we will have a non partisan and postindustrial take to solve obstacles that are on the way of our association," he said.

In his interview with Energy World Hassan Khosrojerdi explained the opportunities and obstacles connected with the Oil industry's private sector.

Considering that Bijan Zanganeh previously served as Oil Minister, can private sector find more common ground with the new government?

Yes. We had a meeting with Mr. Zanganeh at Iran Chamber of Commerce, Industries and Mines (ICCIM) before he assumed the position of minister , I have asked questions about interaction with private sector and Mr. Zanganeh responded "I am neither the person in 2004 nor the private sector is the same.", by this of course he pointed to changes in his views both on the private sector and the inner workings of the ministry. Mr. Zanganeh announced that he would support the private sector and made some promises however he pointed to some factors that need special consideration; he said: "The private sector and active players in this field will be our top priority as partners, however our evaluation depends on their work to meet standard levels and their commitment to invest in the field. I don't need a private sector with no money."

What was your response to Mr. Zanganeh's concerns?

Yes , I have asked him to set up meetings twice in each month for us to discuss the issues concerning the private sector to which he responded: " we shall do so Immediately to discuss the issues and problems with 70 or 80 members of the private sector." The other issue was the matter of standards, Other countries, especially Europeans are constantly bettering and perfecting their standards and thus making it very hard for us to be able to compete with industrialized countries. It also needs to be said that even china the Arab world have created policies on standards which will also render difficulties for us. Thus we need to conclude and go about this very logically and efficiently in order to be able to create an upstanding and valid place for Iran amidst all the competition and be able to truly compete with the industrialized world. The second thing is that the game should be Iranian. On the money issue we have stated that the private sector has developed inside governmental economy those are not powerful in oil and trade sector. We might have private sector in construction that has many facilities and capital which is investing in industry and now this private sector has no capitalistic view and no capital surplus from its production. If the new government signs a protocol to support and aid private sector it can move toward the development goals also the government can fulfill its promises of boosting exports and creates a better future for the industry.

How can the government achieve such goals?

We expect that the new government will not fully set aside plans set by the previous administration. We expect that Mr. Zanganeh in Oil management to defines the red lines equally for everyone and define economic rent in Oil. It should be defined so that anyone from Oil Minister to management in lower levels knows the specific definition so that no administrator can eliminate a company on pretext of economic rent. We look forward to be financially supported since our financial section is quite weak also we except the Central Bank of Iran(CBI) to give guarantee when we bring a foreign partner to a project. If the government starts an inclusive training for all managers in economic sector and assign a red line and unity among all administrations so all obstacles in this industry will be resolved.

Will we witness change in the private sector with the new administration?

As we bound ourselves to cooperate with this government we would also make all efforts to aid the government on this sensitive economic situation and we support Mr. Zanganeh like previous Oil Minister Mr. Ghasemi .Some directors in Oil subsidiaries consider us as rivals therefore they put obstacles on the path of collaboration between Oil Ministry and this association, in the past we offered approaches to bypass sanctions , one of these solutions was the construction of small refineries inside and outside the country. Also the private sector is ready to aid government in case it promises to build refinery to another country.

Does the private sector take the issue of building small refineries seriously?

On the issue of building small refineries, we invited domestic and foreign investors and succeeded to bring some of them up to inauguration stage and they are currently active. We even offer the domestic and foreign investor to create a joined consortium. One of the ways to solve financing is to build small refineries in

other countries where two countries provide financing for these refineries but most of it's share will be provided by a foreign country. we have signed memorandum to construction of small refineries with joint investment of 9 other countries up to 20,000 barrels per day. The private sector is building 6 small refineries in African countries and 3 in Non- African countries which their feedstock will be provided inside Iran. Building small refineries in Iran will be followed as well. Until now the construction of 10 to 11 small refineries with capacity to produce between 2,000 to 10,000 barrels per day across the country has been started. However considering the small refineries the private sector faces problems. Small refineries in the country that are in production phase work with difficulty and low capacity. The reason for this low capacity is lack of refineries feedstock due to bad position in construction stages therefore with current infrastructures it is not possible to provide more feedstock to the refineries. Right now some of the small refineries started to import feedstock from Iraqi Kurdistan and Central Asia.

It appears that oil minister has expressed concerns over construction of new refineries?

The building of refinery in Gorgan(province)which started this year still continues and Mr.Zanganeh is unlikely to object with construction of this refinery, the concerns of the Oil Minister is that there is't economic profit in building this refinery he is worried that construction of refinery in the country is not financially viable therefore he did not make an effort over it in the past but with negotiations of association and ministry we concluded that since this small refinery financed by private sector therefore small refineries should be constructed inside the country and there are even 9 refineries outside the country with 6 refineries in African countries and 3 in Non-African countries that are constructed by private sector where it's feed stock will be provided from Iran.

Does the private sector still follow the issue of crude oil export?

We are waiting for the government policies on this issue. It has been started in previous government but since the oil industry sees us as rival and practically it has not believed in private sector. Oil exports by private sector did not run smoothly however by the end of it's term , private sector has agreed with previous government which should be continue in new government. If the pervious gov't could export more oil it would have done it in past two years. We are ready to enter in places where public sectors are not active anymoreso by aid of government we can surpass the obstacles set by the enemy for Oil export. If private sector and government unite and create a non-partisan perspective team , we can bypass sanctions. Although I believe that country's diplomacy is a hopeful one but I don't see the world political

We hope that in new government oil swaps restarts. For instance in Kazakhstan despite increase of daily oil production to 800,000 bpd the presence of US companies in the area and construction of platform and repository of 170,000 tones created difficulty for our oil swap. Currently 11 refineries with production capacity of 2,000 , 5,000 , 10,000 and 20,000 barrels are being constructed in the country

and economical situation in a way that westerners would give us more points. In international negotiations , westerners will continue thesanctions for a longtime therefore we should move toward positive steps in private sector. Today Europe increased standards in some items to prevent us from entering and this issue created problems for our industries. Financing country 's manufacturing sector is another problem where lack of capital has set many corporations to produce with halfcapacity.

Does the Association export oil to Afghanistan market?

The government exports gas oil to Afghanistan directly and the private sector is only active through swap and transit with Afghanistan fuel trade

Does Iran revive oil swap?

We hope that in new government oil swaps restarts. For instance in Kazakhstan despite increase of daily oil production to 800,000 bpd the presence of US companies in the area and construction of platform and repository of 170,000 tones created difficulty for our oil swap. Currently 11 refineries with production capacity of 2,000 , 5,000 , 10,000 and 20,000 barrels are being constructed in the country

Last word?

Iran Oil , Gas & Petrochemical products Exporters Association support government like before and we expect with mutual cooperation during current economical situation a joint team from government and private sector solve problems ofthe country's oil industry. Association created consortiums in previous government to bypass sanctions and this approach continues in new government. We expect the new government to support private sector since it is facing challenges many problems due to lack of financial resources. If we think of country's economic development we should consider to support and create developing guidlines in this sector. RostamGhasemi dedicated full support of private sector during his ministry and we demand Mr. Zanganeh to continue this support . If the government and Oil Ministry willing to collaborate we can have mutual interaction and by this collaboration we can move the country forward. ■

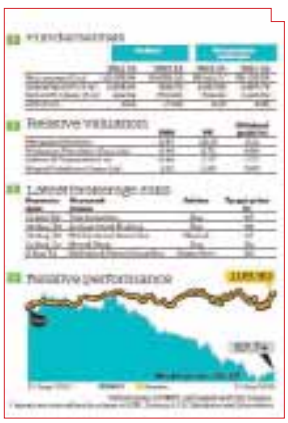
Good bet at current level

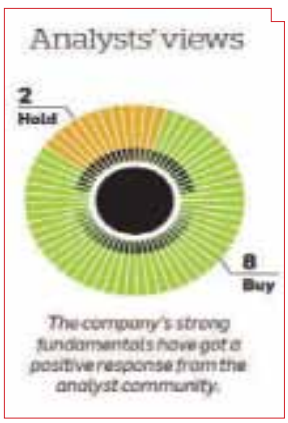
Refinery and Petrochemicals Ltd. (MRPL) has grossly underperformed the broader market for several quarters. As is evident from the chart on the right, its underperformance over the past one year vis-a-vis the Sensex has been more than 50%. The main reason for this underperformance was the stoppage of crude import from Iran on account of the economic sanctions slapped by the US and insurance-related issues.

After obtaining reinsurance cover from the General Insurance Company (GIC), MRPL has resumed the import of crude oil from Iran. Iranian crude is available on the best possible terms: the price is lower and payment has to be made 90 days after delivery. Hence, the resumption of supply will help MRPL improve its gross refining margin (GRM) significantly in the coming quarters.

Expansion project delayed: Another reason for its underperformance is the delay in the third phase of its expansion programme. The timeline for project completion has been extended for the last one year. But now the expansion project is 99% complete, hence further delays are unlikely. Once expansion is complete, MRPL will join the ranks of complex refineries. It will be able to process heavy or sour crude variants, which are cheaper than light or sweet crude variants. Hence, MRPL's refining margin is expected to improve in the coming quarters.

Its ability to produce higher value-added products after expansion will also help expand its refining margin. Upon completion of expansion, MRPL's GRM is expected to be higher than the benchmark Singapore GRM. The third phase of expansion is also expected to reduce earnings volatility. MRPL is expected to reap the benefit of expansion in 2014-15.

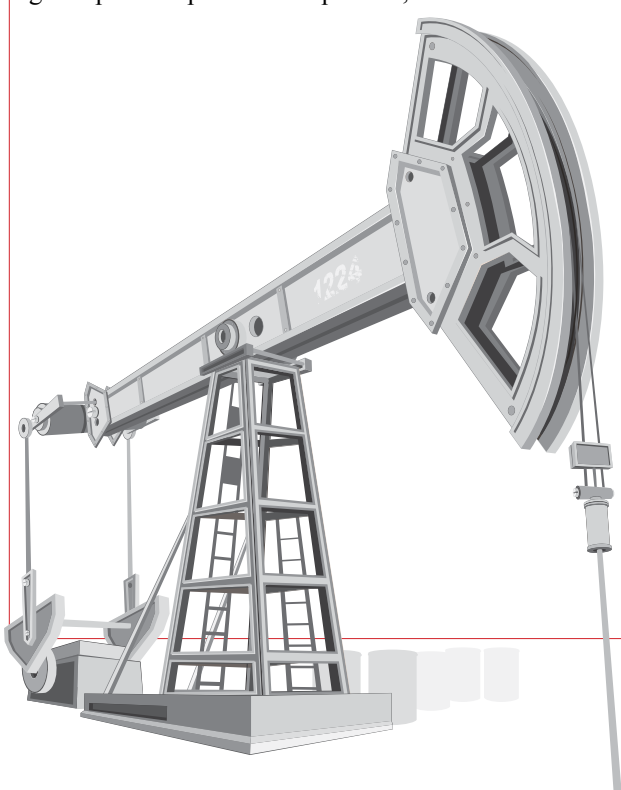




However, market sentiment vis-a-vis MRPL and all other oil refining companies will continue to be affected by the government's dillydallying on the pricing formula for domestic petroleum products. MRPL sells 55% of diesel produced in the domestic market. Any shift in pricing policy from the present import-parity price to export-parity price will reduce MRPL's GRM by around $1-1.5 per barrel. Since MRPL's fundamentals have started improving and its price has been beaten down more than warranted, it is a good long-term bet at current levels.

Selection methodology: We choose the stock that has shown the maximum improvement in "consensus analyst rating" over the past one month. Consensus rating is arrived at by averaging all analyst recommendations after attributing weights to each of them (5 for strong buy, 4 for buy, 3 for hold, 2 for sell and 1 for strong sell).

Any improvement in consensus analyst rating indicates that analysts are becoming more bullish on the stock. To make sure that we pick only companies that are widely covered, this search will be restricted to stocks that are covered by at least 10 analysts. ■



All Path leads to Iran

Not notice to transit role of Iran

Moghim Sadigh

"Now about 11,000 oil tankers, 2400 tanker cars, and 7 tanker ships in Persian Gulf are active in the public transportation fleet of country. Also, there are about 14,000 km pipelines for transfer of oil products. A view to advantages of transit in Iran shows if the eleventh government can activate this sector, it can accomplish a few election promises."

Universalization in economics is more prominent. Near economic relations of countries and displacement of million tons of goods from one country to another emphasize the importance of transit. It is important when and how a good reaches to a consumer with thousand kilometers far away. Now, million dollars are spent in transit yearly. Optimum usage of this situation can ordain a percentage of this income to Iran.
Islamic Republic of Iran is from those countries that encounters many transit advantages because of its geographical situation. thus, tic and utilize this opportunity by expansion of transportation and communication networks to promote its strategic situation in the region.
Persian Gulf includes many oil producer countries and it is an energy throat. Caspian sea is also the best communication bridge between Iran, Russia, Kazakhstan, Turkmenistan, and Azerbaijan.
Location of Persian Gulf and Oman Sea in south and Caspian Sea in north and lack of access of northern countries to free waters have created a transit situation for Iran. An expanded transportation and communication network doubles this feature.
One of the constraints of northern countries is lack of access to free waters. From one hand, this limits their relation with international markets and waives many opportunities from them, and from the other hand, incurs limitations for energy transfer for those countries with energy reserves.
The north-south transportation corridor was constructed one decade ago to accomplish communication between northern countries and free waters. This corridor was established on Sept. 12, 2000 in Saint Petersburg by participation of Iran, Russia, and India in order to foster transportation cooperations. This corridor connects Indian Ocean and Persian Gulf to Caspian Sea and Russia and North of Europe through Iran.
Now, this corridor has developed by acceptance of 11 new members. These members are: Azerbaijan, Armenia, Kazakhstan, Kirgizstan, Tajikistan, Turkey, Ukraine, Belarus, Oman, Syria, and Bulgaria. Iran as a trust country, undertakes to inform the member countries about join or leave of other countries to or from this treaty.
As estimated, by activation of this corridor and construction of Kaveh Deck, $10 billion net income will ordained to Iran yearly by transit of goods.
Another advantage with different dimensions is improvement of livelihood situation of east country people including Sistan & Baluchestan and Chabahar. This will decrease bootlegging, increases people income, and increased security in the region. It also will at least create 20,000 stable occupations.
If Iran couldn't prepare necessary infrastructures on time, goods will be transited from other paths. For example, if we cannot finish installations of Chabahar Port and Bandar Abbas on time, then goods will be transited from Guador Port in Pakistan.
Chabahar Port, the start and end point of trade for northern neighbors of Iran
Communication of Middle Asia countries with Persian Gulf and access to free international waters and other countries are very effective in development of Iran's trade. Many countries are going to establish such communications through Iran.
Chabahar Port, because of its strategic situation, is the nearest way of access to free waters for countries of Central Asia (Turkmenistan, Uzbekistan, Tajikistan, Kirgizstan, and Kazakhstan) and is very important.
If we look to the situations of these countries in last years towards exploitation of Chabahar Port as a pilot for commercial activities with neighbor countries, it seems that regional countries are decreasing their dependence to Russia and they look to Chabahar Port as the most valuable, secure, and nearest way for their commercial transactions.
By one view, this port is the start and end point of trade of northern countries. Therefore, these countries will accept any cost to preserve this point, including dollar cost, haggling of Iran, and increment of dependence of these countries to Iran.

Increment of national income, occupation, national security, development and construction, especially transportation and trade infrastructures, supplying economic needs (import & export) of neighbor and region countries, dependence to Iran and its services, and cultural communication and introduction of Iran are direct advantages of this transit.

Also, increment of role and share of Iran in regional and international provisions, help for development and integration of neighbors, and promotion of quality of related infrastructures are indirect advantages of this transit.

Each government of Iran has pointed to the direct and indirect advantages of this transit and the strategic situation of Iran in the region. Governments know that activation of east-west and north-south corridors can ordain plentiful income, but at the end of each government we see no special development in this area. Negotiation with neighbor countries and conclusion of contracts with them were always in their work order and we saw these negotiations in TV many times. However, in practice we see no success in this area and each new government emphasizes lag of Iran and to effort to boom this.

Now, the tenth government spends its final days and the eleventh government will take this rudder. Although north-south corridor was activated somewhat in few last years, but we propose to the eleventh government to include Iran's transit in its work order to use this strategic situation.

If the eleventh government follows up transit of Iran from its first days, naturally it will accomplish its elections promises rather than activation of this area. Increment of occupation, income, security, and desire of neighbors for investment in Iran, decrement of dependence to oil,… are from promises of the selected prime minister. ■

India's Iran oil imports far below levels last year

India's imports of Iranian oil shot up in August to more than four times the volume taken in July as one refiner resumed purchases after a four-month break, but the average annual pace of shipments is still far below last year's levels.

India's intake of Iranian oil to date in 2013 is down over 40 percent on the year because international sanctions aimed at curbing Tehran's nuclear programme have made it difficult to insure refineries and ships involved in the trade and forced some oil payments to be made in rupee.

Even though Indian oil minister M. Veerappa Moily says he wants Iranian oil imports near last fiscal year's rate of 260,000 barrels per day (bpd) - which he says would save $8.5 billion in foreign exchange and help curtail India's current account deficit - daily shipment rates are much lower than that.

Industry sources also told Reuters there would likely be no great import resurgence despite the government putting together a new reinsurance package for refineries processing Iranian oil.

India imported 151,000 bpd of Iranian crude in August versus 35,500 bpd in July, when only Essar Oil bought from Tehran, data compiled by Reuters from trade sources shows.

Iranian oil imports in August were about a fifth less than last year's 192,000 bpd, the tanker arrival data shows. Imports for January-August dropped about 44 percent from a year ago. Other data provided by industry sources and Reuters calculations indicated that Indian imports from Iran will run about 190,000 bpd in the year to end-March 2014.

The U.S. and EU sanctions aimed at forcing Tehran to

negotiate an end to its nuclear programme have more than halved its oil exports from about 2.2 million bpd and cost it billions of dollars a month in lost oil revenue.

Western powers believe Iran is developing nuclear weapons, while Iran says its programme is for power generation.

Only two refiners - Essar Oil and state-owned Mangalore Refinery and Petrochemical Ltd - bought Iranian oil in August.

Losing ground

Iran was ninth biggest crude oil supplier to India in August, improving its ranking from 15th place in July, but that was still down from sixth a year ago.

India imported about 52 percent more oil from Latin America in the first eight months of the year as its Iranian shipments dropped. Crude imports from Iraq over the same period increased nearly a quarter.

Overall, Asia's third-largest economy shipped in 26 percent more oil in August than a year ago, while imports for the January-August period rose about 12.4 percent, the data showed.

India and other buyers of Iranian oil - including China, Japan and South Korea - can win exemptions from U.S. sanctions by continually lowering their purchase volumes. India will be up for review of its six-month exemption in December. ■

Deputy of Ministry of Economics and Finance and Chairman of Iran Investment and Economic

Helps Investors wonder for peerless attractions of Iran reserves

Asadollah Khosravi

"Although private sector could play and important role in production and export of oil and petrochemical products, but broadness of infrastructure and presence of god granted sources implies that foreign investors come to Iran to be released from raw-sale, more exchange income, to preserve rights of next generations, and to move toward creation of value added. Considering production to boom exports, to supply exchange needs, to create infrastructure projects, and to develop country depend investment and activity of private sector in conversion industries and energy process. Here we read an interview with Dr. Behruz Alishiri, Deputy of Ministry of Economics and Finance and Chairman of Iran Investment and Economic Helps."

What is your strategy to attain exchange by selling national resources by private sector, so that we can preserve rights of next generations and production to export qualitative goods with high value added?

Undoubtedly, because of high energy capacities and plentiful reserves, Iran is the land of golden opportunities for investment. Daily oil production capacity is about 4.5 mbpd, natural gas is about 700 million m3, and gas liquids more than 400,000 bpd. However, Iran encounters many competitive advantages and if private sector could act toward conversion of raw sources to products, certainly it can produce extraordinary capacities for occupation and profitability. In addition, Iran is the second oil producer in the world, and the second holder of gas reserves in the world. These advantages beside young and educated force are in few countries. If we look to metal sources of country, we see Iran is in 4-9th rank of the world in production of zinc, lead, cobalt, aluminum, Manganese, and copper. However, the way for internal and external investment (common investment) is open to prevent raw-sale of these god-granted sources. In these conditions, notice to private sector is very important because of their efficiency and expertise in production.

What are advantages of external investment and whether this approach is not an obstacle for internal investors?

As I mentioned, Iran has a plentiful of oil and gas resources and it is ready to absorb external investments rather than internal ones. However, because of vast petrochemistry sources, Iran can construct several refineries for external investors. Although private sector has a high power in production and export of oil, gas, and petrochemical products, but there are investment vacuums in many economic sectors because of existence of vast god-granted sources. Therefore, absorption of external investment is an economic approach, and government always supports

external investors by facilitate and accelerate administration affairs of investment. Entering external investors not only cause economic growth and attaining technical knowledge for internal technicians, but also it provides a progress bed in all sectors. Entering raw materials, spare parts, and machinery for factories, easy export, access to external markets, establishment of infrastructure installations; to offer monetary, bank, and insurance services; are part of advantages of external investors, especially by common investment.

What assures external investors to invest in Iran in different economic sectors, oil, gas, and petrochemistry confidently?

Iran's government grants special facilities to external investors to assure them to do economic activities in Iran. For example, government has decreased duration from start of investment to issue exploitation permission from 45 to 30 days. Exemption of production line machinery and equipments (new machinery) from customs duties, and redemption of customs duties paid for entering raw materials are samples of encourages for external investors. Work circulation in Iran has been shortened and everyone in country can access service centers for external and internal investors. Assuring political risks of invest-

ment, assuring product purchase, assuring feed supply by competitive price, to supply expert human force, to supply necessary infrastructures, legal supports, and no limitation in participation, external investment, transferable profit, transferable capital, and type of investment are many samples of stimulants for investors in different economic areas, especially energy. On the other hand, investment market in Iran, especially in oil, gas, and petrochemical projects cannot be compared with other countries, because now more than 400 projects in different areas are ready for external investment. Anyway, Iran with about 77 million population and educated youngs, plentiful energy sources, infrastructure installations, the best situation in the regional market, and the longest coast in Persian Gulf, can be used as a motor for economic developments. In addition, political and social stability of Iran also can be one of the exclusive features of this country in the region. Signing agreement to encourage and protect of investment, to prevent obtaining double taxes, and customs agreements are positive steps to preserve rights of external investors.

How much is the required investment to execute upstream and downstream projects in oil industry?

Investment for upstream projects is about $70 billion, in which 7 projects have been defined for development of oil and gas fields concurrently, 14 projects for development of gas fields, 13 projects for development of oil fields, 10 projects for development of other oil and gas fields, and 13 projects for development of gas gathering and injection stations. Also, an investment of $51.800 billion was in downstream projects in oil industry. Of course, there are many investment opportunities in this sector, because 9 LNG projects, 7 gas refinery and pipeline projects, 7 crude oil and gas liquids refinement projects, 15 crude oil and products pipeline projects in downstream section of oil industry are executed. Additionally, Iran holds the vast South Pars project, which is 8% of world gas reserves and half of country gas reserves in this region, and is the largest industrial complex of country and the most important value chain of oil industry, so that its development assures a significant growth in economics of country. Now, 136 billion barrel of capacity of crude oil of country, which is 11% of world oil reserves, provides the potential of possession of private sector in downstream and midstream industries for investors. However, 62% of natural gas reserves are in the fields that have not been developed yet and this is a golden opportunity for investors.

Iran's government grants special facilities to external investors to assure them to do economic activities in Iran. For example, government has decreased duration from start of investment to issue exploitation permission from 45 to 30 days. Exemption of production line machinery and equipments from customs duties, and redemption of customs duties paid for entering raw materials are samples of encourages for external investors

Why there were no desirable movements for external investment during last few years to supply projects financially?

At first, I should say a brief of advantages of this method. When we talk about external financial resources, we should know there are two types of external financial resources: 1. Loan; namely, an agency borrows from a financial agency, which it may also be guaranteed by government. If these projects will not be profitable, its installments must be paid. This is a method that different sectors always concentrated on it. It means many companies desire to work by finance method. In our country, private companies know this method well and seek this. 2. Foreign Direct Investment (FDI). Any contract provisions include in this style. It is different from the first method by any trade risk is due to contractor in this method. Installments have no deadline, participation is by shares and depends success and marketing projects. If an agency profits, all internal or external stockholders profit; otherwise, they both lose. It has no repayment risk, but has capital return risk, so that stockholders must anticipate and prevent it by different tools. The most important point is that its risk will not return toward internal agencies and government. Also, it produces occupation. FDI means increment of economic growth rate.

What is your view about profit of private sector investment in Iran? Whether entering to this sector satisfies investors?

Many demands, low costs, and other effective factors in projects in Iran caused desire productivity rates in some projects. Specially, in oil, gas, and petrochemistry, this is more obvious. Existence of necessary infrastructures, skillful work force, and easy access to energy sources are factors that increase project productivity rates in Iran. According to article 3 of Foreign Investment Act, there are two main methods for investment in Iran: a) Direct Foreign Investment in areas that are permitted for private sector; b) Foreign investment in all sectors in the framework of civil participation, buyback, and construction, exploitation, and assignment, which has capital return and profit and does not depend to guarantee of banks and governmental companies. ■

7,500 bird deaths at gas plant unusual

Smithsonian scientist suggests future Canaport LNG environmental assessments consider flare impact

A research scientist with the Smithsonian Migratory Bird Center in Washington says he's never heard of flaring at a natural gas facility killing thousands of migratory birds before.

Peter Marra was responding to the deaths of an estimated 7,500 migrating songbirds at a gas plant in Saint John over the weekend.

It appears the birds flew into the gas flare, which towers 30 metres above the liquefied natural gas receiving and regasification terminal, some time between Friday night and Saturday morning, officials have said.

Marra says it's not surprising the Canaport LNG terminal's previous environmental impact assessments do not appear to have considered the impact of the flare on birds.

"I'm a person who really thinks about a lot of the threats that migratory birds face — cats, buildings, wind turbines — and I hadn't thought about the flaring that occurs at these natural gas facilities," he said.

'While it is probably something we need to go back and re-evaluate, I'm guessing that it was a natural oversight, unfortunately.'

- Peter Marra, Smithsonian Migratory Bird Center

"So, while it is probably something we need to go back and re-evaluate, I'm guessing that it was a natural oversight, unfortunately."

New Brunswick Department of Environment officials have declined to comment and referred all inquiries to federal officials.

The Canadian Wildlife Service is responsible for enforcing the Migratory Bird Act. Calls to the agency were responded to by an email from Environment Canada, stating it is committed to the conservation and protection of migratory birds ■

An environment disaster is coming
Oil on the blade of environment

Insatiable demand for oil is near to its peak. This can be a bad news for oil producers and a good news for people of earth.

By report of energy world, "It is not a long time from start of oil era of world. Historical evidences show that 6000 ago people used oil to insulate their boats against water; however, oil was really extracted from 1895 in Pennsylvania, USA.

The first oil barrel cost $18 that is equal to today $450. This oil was used to produce kerosene that was the main fuel for lighting. Other produced liquids by refinement were smoky and unstable, so they wasted or burnt. But gasoline and diesel fuel found their place very soon. These fuels have been used by development of internal combustion motors few years later.

Ever since, except for 1970 and 1980 decades, demand for oil has been increased progressively by increment of trips by cars, airplanes, and ships. Billion of Chinese and Indians were rich during improvement of economic situations in their countries and they bought cars. Large oil companies, Energy International Agency, and US Energy Information Organization anticipate that this progressive trend of demand will continue. Even BP Co., the largest oil monster of England, has anticipated that demand rate from 89 mbpd at today will be increased to 104 mbpd in 2030.

Many other experts believe that these oil companies mistake and oil demand is near to its peak. This new theory is different from the "oil peak" that was propounded many years ago. In that theory, many experts claimed that oil supply would be in its peak few years later. However, we do not talk about supply, but we talk about demand. In rich countries, oil demand has reached to its peak now and its descending trend was commenced from 2005. Even if demand ratesis ascending in China and India, but the two technology revolutions will mitigate world appetite for this black good.

The first revolution is Sale Gas Revolution that has been born under shadow of "slot" technology. By this technology, nontraditional gas can be extracted from oil shale beds. These nonconventional reserves beside improvements in exploration of conventional gas reserves have increased world reserves from 50 to 200 years. Now in USA, shale gas is extracted, liquefied, or compressed and it has opened its way to fuel tanks of buses and trucks. Gas is capable to be substituted for oil in ships, power plants, petrochemistry factories, and home and industrial heating systems. This decreases demand rate up to 2020.

The second revolution is the fundamental changes in vehicle industry. Rapid developments in design of motors and vehicles threats oil dominion. Even diesel and gasoline motors have changed and their consumptions have been decreased. Also, materials used for manufacturing vehicles are becoming lighter and stronger. Day-to-day electrical and hybrid vehicles working with natural gas or hydrogen cells are increasing. These all decrease oil demand.

City Bank's analyzers suggested that if fuel throughput of vehicles and trucks increases 2.5 percent per year, then this is enough to cease the progressive trend of oil demand. This great financial institution has anticipated that oil demand will be at its peak for next few years, that is 92 mbpd. Ricardo Co., one of the largest vehicle mechanics companies in the world, has found a similar result.

However, there are many opposite factors that will increase demand rate again. One factor is Saudi Arabia as the largest oil producer in OPEC. This country holds 11% of total daily oil throughput and has most excess production capacity in the world. It is probable that Saudi Arabia decides to increase its productions to decrease oil prices. This will hold demand rate high. Second, if demand decrement cause decrement of oil prices in world market, drivers may turn toward high-consumption vehicles again. This was done in 1990, when oil price reduced in 1990s. If oil demand decreases, its first outcome is environment improvement and decrement of carbon dioxide leakage. The second result, of course, is changes of hierarchies of companies. Now, Exxon Mobile Co. and Apple Co. are at vortex of list of the largest com-

panies in the world. However, Exxon and other oil monsters are vulnerable more than that is supposed. According to evaluations of Bernstein Research Co., today extraction of 1 oil barrel in poles of other hard areas costs more than 100 dollars. Therefore, these oil companies are on the blade. The largest effect of demand decrement will be exactly geopolitical. Vladimir Putin took account of oil to accomplish his political plans and Saudi kings also need high price oil to execute their social programs and budget balance. When oil came into the life of human, it brought many struggles and stresses; undoubtedly, exit from it will not be quiet. ■

2 Oil & Gas Projects Even Environmentalists Would Like

Energy companies and environmentalists don't always seem to see eye-to-eye. Despite the disagreements, oil and gas companies really are trying to make a positive impact on the environment. Here are two areas where energy companies have really listened to their critics to make great strides to be better stewards of the environment.

Water Recycling

Energy companies require massive amounts of water to develop oil and gas projects. In order to reduce the amount of freshwater used, companies are increasingly turning to water recycling projects to provide the water needed to secure our future energy supplies. One of the more unique projects is a 50-50 joint venture between Encana and Apache for the Debolt Water Treatment Plant in British Colombia. This first of its kind plant pulls water from the Debolt aquifer, which is a deep sub-surface non-potable, saline aquifer. The water is then treated, used to frack wells and then recycled back into the same Debolt formation where it can be used again. The project has enabled Apache to reduce the fresh water it uses in fracking the natural gas rich Horn River basin by 95%.

In Oklahoma, Devon Energy built a water recycling facility in order to support the development of the Cana-Woodford shale. The project includes a 500,000-barrel storage reservoir and a series of pipelines that connect to Devon's well sites. Not only does this facility dramatically reduce the amount of water Devon needed to pull from nearby farm ponds or the North Canadian River, but it also helped to reduce truck traffic. Further, the project reduces the amount of water that needed to be injected into water disposal wells, which are thought to cause minor earthquakes. Water recycling projects like these will become increasingly more important to the industry as it works to better safeguard our most precious natural resource.

Carbon Capture and Storage

Oil giant Chevron is spending $2 billion on the world's largest carbon dioxide injection facility. The project will store over 3 million tonnes per year in a saline aquifer. It's part of the company's massive Gorgon LNG project in Australia. Because the raw gas produced out of the Gorgon field contains about 14% carbon dioxide, Chevron needs to separate and safely dispose of it before it can purify, liquefy and sell the methane to world markets. It's one of the most ambitious carbon capture and sequestration projects in the world and could become a global template for future carbon capture and storage projects.

Another company with a unique spin on carbon capture and storage is Denbury Resources . The oil company has secured carbon dioxide from a number of industrial sources, which it's using to enhance oil recovery. So, instead of injecting the carbon dioxide into an aquifer, Denbury is injecting it into a mature oil field in an effort to push more oil out of the reservoir. Overall, the company has six projects either currently producing or proposed, which will supply it with a portion the carbon dioxide it needs to capture more oil out of these fields.

Final Foolish Thoughts

The energy industry and the environment really can live in harmony. That's because the industry is making great strides to reduce the amount of freshwater it uses as well as providing solutions to curb carbon emissions. It's a good thing too, because right now the world is craving energy and we need these companies to continue producing at high levels.

Looking for More Forward Thinking Energy Companies?

Oil and gas production in the U.S. is booming. Profits are flowing to investors. The question you need to ask yourself is how much of those profits are flowing into your portfolio? If you said not enough, then The Motley Fool would like you to take advantage of a comprehensive look at three energy companies set to soar during this transformation in the energy industry. ■

Last situation of gas export in the world

Russia seeks a new OPEC!

"For many years, natural gas is a regional product and producers that access to world market by pipelines have been the only players of this scene. Future perspective of LNG and export by new producers has changed logics of game. Thus, predecessors of oil and gas arena try to preserve their chairmanship site by creation of a new gas cartel similar to OPEC. This paper tries to study real nature of a gas cartel and the meaning of Gas OPEC for natural gas industry. By report of Monthly Full Journal, in the last session of Gas Exporting Countries Meeting, Vladimir Putin, Prime Minister of Russia, encouraged members of this meeting to support traditional gas pricing method according to oil price by conclusion of long term contracts."

According to Putin's speech, this subject can donate energy security for gas importer countries. Although Putin tries to show "others" important, but there is no doubt that his main goal is controlling prices in favor of producers.

Despite USA, many natural gas markets in the world work upon long term pipeline contracts that are fixed and are determined by oil price formulations. This model is changing because of prominent oil productions. Countries like Qatar, which tried to increase its LNG exports to USA, now by lack of its largest customer, Qatar seeks new LNG markets.

However, according to predictions of experts, we will see more severe conditions, because USA is going to commence its LNG export in 2015 after construction of its first LNG export terminal called Chanir Energy. In these conditions, it is probable that prices of energy in European and Asian markets would be decreased.

While costs of natural gas, its liquefaction and transportation are less than import prices, there is a chance to buy gas under oil-based contracts from countries such as Russia. Undoubtedly, this would not satisfy Russia as the greatest exporter of oil in the world, because economic health of Russia depends on gas export. Gazprom as the largest gas monster of Russia supplies 10% of its GDP.

Gas OPEC

Now member countries in Gas Exporting Countries Meeting hold 60% of total gas export of the world, and the value for OPEC countries is 57% of total oil export market.

According to the reports of US Energy Information Organization, Russia has exported 21.39 bcf/day. This value is 11 for Qatar, 9.41 for Norway, 5.4 for Holland, 5.03 for Algeria, 2.51 for Nigeria, 1.70 for Trinidad & Tobago, 1.2 for Bolivia, 1.02 for Egypt, 0.94 for Kazakhstan, 0.88 for Iran, 0.51 for Tropic Guinea, 0.5 for United Arab Emirates, 0.35 for Libya, and zero for Iraq and Venezuela.

Some of these countries control prices of a special part of market. For example, either Gazprom or Statoil of Norway holds 40% of European natural gas market, which all these gases are sold by oil-indexed prices. However, what makes an organization, such as OPEC, powerful, is its ability to maintain excess natural gas capacity and closing gas production pumps when prices decrease significantly. If member countries of this meeting want to do such a movement, undoubtedly they would hold a very powerful tool to control gas price in the world in the future.

But, here there is a question that "Can this action decrease benefits of US natural gas export?" Potentially, yes. But, undoubtedly there are some other countries in the world will be damaged by this decision, such as Australia that tries to control its costs because it has not cheap food sources.

On the other hand, establishment of a new organization similar to OPEC to control prices can constrain USA export potentials economically. Gazprom has recently signed a 30-year contract with Petrochin and has obligated to export gas to China from 2018.

This date is exactly concurrent with utilization of many LNG production projects in the world. If Russia could attract these new gas exporters, play rule in world gas

market would be changed completely.
According to this report, in the recent session of Gas Exporting Countries Meeting, the members requested a concordant action to support benefits of gas exporting countries in a common declaration, and they announced that they should not bend against pressures of governments of consuming countries.
As the host of this meeting, Putin said: "To agree about form of pricing, to enact conditions to decrease gas price vibrations and to improve transparency of this sector, must be from the important duties of this sector. Non-acceptance of primary principles of long term contracts not only means damages to producers, but also incurs serious costs, and this movement hurts energy security in consuming countries".
Also, Vladimir Putin warned his mates towards efforts to compel unacceptable economic conditions to gas producers.
This report says that Shale Gas Revolution in USA forced many to think about change of long term gas contracts. In these conditions, European gas importers try to review 50-year agreements with 10-15 percent of costs more than market prices. However, many European importers have signed long term gas contracts.

Whether deprivations will be incurred to LNG?

Production of LNG in Iran and USA

"Deprivations are the only obstacle for Iran to enter international LNG markets. If these deprivations are removed, LNG of Iran will become an undisputable rival in the world trade because of large volume of gas reserves and low extraction costs in Iran. Recently, Business Mirror narrated from Bloomberg says: By more gas production from clay sources in USA, Iran's dreams will disappear. Wishes of Iran about exploitation from the largest natural gas reserves of the world will encounter more problems by deprivations of USA and increment of gas production in the world and increment of shale gas production by USA."

These nonprofessional movements by two news agencies are in line of policies of Reuters, voice of America, and BBC about six months ago. At the same time, in a paper titled "Criticism of jokes of Saudi Arabia and oil shale", Shana examines the claim by some news agencies that try to return atmosphere of oil and gas markets toward themselves by propagation of false and non-scientific news.
As if the subject of gas production from clay sources by USA is supposed to be a fixed analytic discussion to bring under pressure the countries with major oil and gas reserves in the world. So, this can be used as a tool to control prices and to decrease geopolitics of Iran and Middle East in international energy markets.
Therefore, on Wednesday 8/21/2013, in another response to dreams of some reporters such as Bloomberg and Business Mirror, Shana published a paper titled: "The myth of cheap and plentiful energy in USA".
Also, in another scientific paper, Shana tired to remove some suspicions about production of LNG in Iran and its affectivity from production from unconventional sources in USA and other countries, produced by speech agencies and countries that want to control world energy markets.
In another paper that was recently published by Engineering Management of National Iranian Gas Export Co., they studied the subject "Production of LNG in Iran, and its comparison with gas production from unconventional sources of USA and its effects on world market".
Introduction
Natural gas is a combination of hydrocarbons such as methane (70-90%), ethane, propane, butane, pentane, and other impurities such as carbon dioxide, nitrogen, and hydrogen sulfide. Less carbon in natural gas, in comparison with oil or coal, decreases emission of CO2, thus prevents increment of earth heating and climate changes.
Demand for natural gas in the world has increased 2.7% in average annually. In 2010, natural gas comprised 21% of energy supply of the world after oil and coal. This is while the world need and desire to use this cleaner fossil fuel in increasing.
This paper tries to compare gas extraction from conventional and unconventional sources, and then to examine the situation of LNG world market and its place in Iran.
A) Conventional and unconventional gas reservoirs
Natural gas is produced from residues of plants, animals, and micro-organisms during millions of years under high pressure and heat in earth shell. Generally, two types of stones can constrain natural gas in the earth shell:

High permeable porous stones that mostly are sandy and are called "conventional reservoirs".

Lime, sandy, and clay (shale) non-porous stones with low permeability and their extractionsare very complex and costly. These reserves are called "unconventional reservoirs".

Unconventional reservoirs are categorized into three groups: tight, shale gas, and coal bed methane. Gas extraction from shale gas reservoir may be significantly different from another shale gas reservoir, but generally two digging methods are used: horizontal, and injection of a large amount of water, chemicals, and pressed sand to create cracks in stones. The following table shows distribution of conventional and unconventional gas reservoirs in the world.1

Up to before 2005 and production of gas from unconventional reservoirs in USA, world gas basket was supplied from conventional wells in land or sea. In 2010, more than 20% of gas production in USA was from shale gas reservoirs. This is while 15% of gas production in the world was supplied from unconventional reservoirs and mostly from North America. Anticipations show that gas consumption in USA will reach from 24.4 TCF in 2011 to 29.5 TCF in 2040. This is while this country decides to control world gas market to increase production from clay reservoirs so that to export its excess production by pipeline or LNG. One of the major reasons for USA to extract gas from unconventional reservoirs is dominancy of Russia on world gas market, especially Europe. Free news agency of Canada by pointing that energy of each country shows its power, reported: USA decides to decrease portion of Russia from European gas markets from 27% in 2009 to 13% in 2040.

Now, the question is that "How much USA can accomplish its gas dreams and what price will be paid to accomplish this dream?"

B) Problems of gas extraction from unconventional sources

By approval of an act in 2005, despite of much opposition, congress of USA removes supervision of US Environment Protection Agency in Underground Drinking Waters on activities of oil industry related to use hydraulic break technology. This organ is the only one having environment protection permit to inject dangerous chemicals directly into underground water sources or beside them. The largest USA shale gas reserve is Marcellus in north-east of USA, which is extracting now. This reservoir includes vast areas of Pennsylvania, West Virginia, and New York, which are very populated. The following map shows shale gas reservoirs in USA.

B1) Environment-destructive effects of gas extraction from shale sources in USA

Major environment-destructive effects of gas extraction from shale sources in USA are:

Effects of excess waste water by digging of shale sources on aquatic animals and pollution of rivers beds and underground water sources.

Sound and air pollutions.

Presence of 596 toxic compounds in chemicals injected

to wells.

Emission of methane and CO2 during digging and increment of greenhouse gases during hydraulic break; also increment of earth vibration activities during digging and probability of earthquakes (e.g. many earthquakes in Blackpool fault,…).

B2) Economic and technical problems of gas extraction from unconventional sources in USA and other places

Gas production from shale sources in USA and other places of the world and its export is questionable economically. Some of these problems are:

Gas extraction from shale sources, e.g. Marcellus reservoir in north-east of USA, has many problems. While gas extraction is faster than conventional sources, but this reservoir is emptied faster than conventional reservoirs, and cost to build new reservoirs in Plateau is very much and uneconomic.

Regarding the situation of Marcellus gas reservoir, costs for construction of pipeline to transfer gas from this reservoir to the coast to convert to LNG and to export it to the markets, are very high and uneconomic.

Marcellus shale gas is located in a populated area, and this increases pipeline construction costs because of considering safety factor, HSE considerations, people dissatisfaction,…

Low finished price of natural gas makes shale gas sources uneconomic. Price of natural gas in 2008 was about 10 $/mmbtu, and this has reached to 3-4 $/mmbtu. This decreased profitability of shale gas because of its high production costs. The reason of this gas price decrement is partly from changes of gas supply and demand market because of production from unconventional sources.

Because of multi-step break processes to prepare shale gas wells before production, production cost is about $2-3 million for each well. Generally, finished price for each shale gas well is about $5-7 million.

Now there are anxieties about shale gas production in Asian countries near Iran, such as Pakistan, India,… Extraction and exploitation price of shale gas in Pakistan was estimated 14 $/mmbtu; while gas production price from conventional sources in this country is 4 $/mmbtu in average. Therefore, because of high difference of these prices, gas extraction from shale sources in Pakistan is not economic.

Similarly in Australia, gas price must be between 6.3-9.5 $/mmbtu to make the production and transportation of gas economic.

Gas production from shale sources in Canada is low now. However, studies show that this country has potential of production of about 1000 TCF of gas from shale sources. But, Canada has not enough confidence to enter into this industry. Investment in this area will be economic if cost of production from conventional sources is more than cost of production for shale gas sources.

Till 2030, need of world to energy is 40% more than that in 2007 (IEA). If we link 9.2 billion population of world up to 2050 with this statistics, it is obvious that we will need current energy sources. Thus production from unconventional reservoirswill not threat conventional gas reservoirs.

C) Gas world market and LNG production perspective

Major exports of natural gas in the world are done by pipelines and LNG. Although many believe gas export by pipeline is the simplest way, but many experts do not accept this. They recommend conversion to LNG and exporting it by ships. Today, LNG has special strategic and economic shares in world market and entering into this area will increase maneuver power.

In fact, LNG is the methane part of natural gas that is chilled up to -162°C after separation of its heavy hydrocarbons to decrease its volume into 1/600 of its original volume. Chilling natural gas is generally done by the gas itself by changing its pressure and temperature parameters. Despite natural gas, LNG can be reserved and transported by ships to far markets including far Asia.

C1) Exporters of LNG in the world

In 2010, LNG has covered 9% of world gas demand by few producer countries. The largest LNG producer in the world is Qatar with production capacity of one-fourth of world demand. Indonesia, Malaysia, Australia, and Algeria are other major exporters of LNG. Russia and Yemen in 2009 and Peru in 2010 started production of this product. Angola and New Guinea also will joint to producers of this product. Entering two players (USA and Australia) to this market complicated its supply and demand market. Now, Australia has planned for a large

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Not only Australia has not sufficed its current projects with total capacity of 24.1 mt yearly, but also it has seven new projects for LNG with total capacity of 61.1 mt. This is while the price of construction in that country is high between 2400-4050 $/ton (including gas extraction to conversion to LNG). In addition, it has other seven LNG projects for next years. it has been said that many problems such as increment of inflation and its negative effect on construction costs of LNG factories (15-40%), high construction costs, and high competition in LNG market are there in major gas goals of that country. Institute for Energy Economics of Japan (IEEJ) in 2010 has completely studied future of LNG market. This report considers production, consumption, and pending projects. Also, exploitation of shale gas reservoirs as one of the existing risks in LNG market was considered in the calculations. Finally, they concluded that by assuming accomplishment of all LNG projects in the world, LNG production capacity up to 2020 is a little more than its consumption. But after 2020, demand will overcome from supply.

C2) Situation of Iran in gas and LNG world markets

According to statistics of 2013, Iran by holding 33.6 trillion m3 gas reserves is the largest holder of natural gas and according to statistics of 2011, it is fifth major natural producer in the world.

The reality is that gas export through pipeline cannot be the only option of Iran in gas world markets. Because of access to free waters, Iran has a high potential to access to other markets.

Regarding to the share of Iran because of its geographical and strategic situation, entering into this scope is necessary and inevitable.

Although Iran has done efforts to setup LNG units from 2000, unfortunately, because of many reasons, the goals of production of this product have not been accomplished yet. PARS LNG and PERSIAN LNG projects with TOTAL of France, Shell of Holland, and Repsol of Spain have been completed up to pre-construction from 2008. The only under-construction project is IRAN LNG. This project was started from 2007 and has progressed about 60%.

Undoubtedly, LNG projects of Iran have many advantages including:

Maximum exploitation from South Pars reservoir for gas export

Decrement of government operation and monopoly according to article 44 of constitution

Access to gas liquefaction technology

Economic bloom, attracting foreign capitals, creation of new occupations

Development of internal equipment manufacturers and contractors

Availability of clean energy

Establishment of international cooperations with other gas-holding countries

Utilization of transportation profits

Absorption of far markets

Maneuver power in world gas market, absorption of valid customers, supply flexibility

Current gas refinery power of country is about 640 million m3/day. Fortunately, regarding to development of new phases of South Pars, production capacity of country will be 1400 million m3/day. So, LNG export and stabilization of place of Iran in the regional and universal gas markets.

Conclusion

Regarding to the above topics, we conclude that world need to natural gas is increasing daily. Despite of a large volume of advertisements about extraction of gas from unconventional sources in USA, production from these sources is not economic and is complicated technically. It also has serious environment problems in its production sites. Instead, Iran can use its large gas sources to compensate its delay to world LNG markets. This requires cooperation in oil society and major management of country, overcome to deprivation problems, and start of construction and completion of unfinished LNG projects. By completion of unfinished LNG projects, necessary conditions for powerful presence of Iran in markets before 2020 are provided.

Now, results of many years of efforts in LNG projects have been reserved in National Iranian Gas Export Co. We hope this provides required base for achievement of long term goals of country to present in world gas markets. ■

Extended programs to rehabilitate Iran's gas marine swap

Ex-Deputy of Ministry of Oil said about setup of Iran's gas marine swap in Caspian Sea. He announced: "Development and improvement of Abadan, Shazand, and Lavan refineries will be finished up to the end of this year".

By pointing to the first Iran's gas marine swap in Caspian See, Alireza Zeighami said: "Now, swaps for other oil products, such as fuel oil, form other countries around Caspian Sea are done".

General Manager of NIOPDC said: "Swap of oil products of Iran was not stopped. By setup of marine path of Iran's LNG, transfer costs of this product have been decreased".

Deputy of Ministry of Oil said: "Most liquid swap was done by railroad. This is the first time that LNG swap is done by tanker ships in Caspian Sea".

By elapse of more than one decade from the start of swap of oil products, especially LNG and fuel oil, from margin countries of Caspian Sea, this is the first time that LNG swap is done through Caspian Sea. Before this, swap cargos were transported by tanker trucks. By setup of marine swap, the volume of passing tanker trucks will be decreased significantly. This follows decrement of road traffic, accidents, environment damages, road depreciation, and fuel consumption decrement".

In other words, by setup of this marine path, liquid gas is transported by a tanker instead of transportation by 60-70 tanker trucks, each 15-18 ton.

In last years, NIOPDC supplied fuels of four power plants of Bisotin Kermanshah, Mofatteh Hamedan, Sahand Azerbaijan, and Neka by swap in order to decrease transportation costs of fuel oil and other oil products.

Opening and setting up 3 new refinery projects

Zeighami pointed to opening and setting up of gasoline-production project, improvement of Tehran Refinery by presence of Prime Minister and said: "Rather than the project for development of Tehran Refinery, we have 3 new refinery projects. Now, gasoline production capacity of Iran has reached to 60 million liter/day. By exploitation of Mehr Mandegar projects in oil refinery industry, gasoline-production capacity will pass from 70 million liter/day".By suggestion about development project for Lavan, Abadan, and Shazand refineries, Zaighami said: "Now, the last phases of pre-setup and setup of gasoline-production of Shazand refinery (RFCC) and RCC unit are fulfilled".He said: "These two gasoline-production projects will be setup up to the last of this September. Now, construction and installation of these units have been finished".

Deputy of Ministry of Oil also said about opening and setting up of other Mehr Mandega projects such as gasoline-production of Tabriz refinery, phase 2 of development and organizing Mahshahr Port, gasoline-production of Isfahan refinery and Bandar Abbas refinery in the first half of 2013. He said: "By acceleration of contractors, we can setup the first phase of Persian Gulf Star Gas Condensates".

Iran' LNG swap in Caspian Sea Region

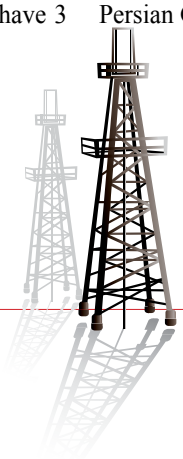
By describing Iran's programs for swap of liquid gas in Caspian Sea Region, Managing Director of NIOPDC said about start of gasoil export to Afghanistan in 2013 and announced: "This year, the volume of swap of oil products will be increased by 30%".

In describing the most important trade development plans for Iran oil products in this year, Mostafa Kashkuli said: "Swap of oil products will be increased by 30% this year, including gasoline, gasoil, and liquid gas".

By emphasizing that major part of exports of Iran was gasoil to Iraq and Afghanistan, Managing Director of NIOPDC said: "Intensives for bootlegging oil products will be decreased by exporting and saturation of Afghanistan's markets".

He also remembered: "Last year, more than 100,000 ton oil products were swapped. This year was 30% swap increment was planned".

In continue, he said: "This year, Iran has announced its readiness for swap of liquid gas from Caspian Sea countries. Liquid gas cargos will be obtained in Neka and will be delivered in Bandar Abbas and Mahshahr in Persian Gulf to the customers".



Destination of Iran oil export

Iran oil capitals

Inventory of Iran oil fields reserves is about 10% of total world Statistics of Iran oil income

Income of Saudi Arabia during last 8 years

According to Economist, dollar reserves of Iran in 2013 is about $61.5 billion. ■

Energy security:Strength in reserve

The shale boom will strengthen US diplomatic influence but will not allow it to disengage from the Middle East

Twenty years after Mr Clinton's tribute to the might of America's fleet, the location of its carriers still reveals much about US foreign policy priorities. Of the US navy's 10 operational aircraft carriers, three are in foreign waters: one in Japan and two with the Bahrain-based 5th Fleet in the Gulf.

One of the two, the USS Nimitz, sailed into the Red Sea on Monday, moving into position for possible air strikes on Syria. The other, the USS Harry S Truman, remains in the Arabian Sea, launching missions to support US troops in Afghanistan.

Both are also positioned to keep watch over the oil-producing countries of the Middle East, and in particular the Strait of Hormuz at the mouth of the Gulf, the conduit for a fifth of the world's supply.

The 100,000-ton carriers are physical evidence that while a great deal has changed in the global oil market in the past five years, a great deal has not. The US shale boom has unlocked huge reserves of oil and gas, transforming the country's energy industry and raising hopes that America can begin to disentangle its economy and its foreign policy from the messy politics of the Middle East.

Anxiety over energy supplies has gripped the US since the Arab oil embargo of 1973. Every president since Richard Nixon has talked about breaking America's addiction to foreign oil, without success. Until now.

Thanks to a combination of soaring production in places such as the Bakken shale of North Dakota and domestic demand that is still 10 per cent below its 2005 peak, the share of US oil demand met by imports has fallen from 60 per cent in 2005 to less than 40 per cent this year. The International Energy Agency, the rich countries' think-tank, believes that the US could be more or less self-sufficient in energy by the 2030s.

Tom Donilon, until recently Barack Obama's national security adviser, has described the shale boom as a "transformational moment", which "affords us a stronger hand in pursuing and implementing our international security goals".

China set to become top oil importer

The global oil market will hit a milestone next month when China overtakes America to become the world's largest net oil importer, if projections by the US Energy Information Administration are correct.

The switch highlights the shifting international relations driven by the steady growth in China's oil imports and the steep decline in America's.

Continue reading 'China set to become top oil importer'

Others have gone further. Lisa Murkowski, the ranking Republican on the Senate energy committee, wrote this year that US dependence on Opec, the oil cartel, "makes it difficult for us to advance our values and defend our interests" but by 2020 that dependence could be broken.

Amid this optimism, the Syria crisis has been a reality check. Syria neither exports much oil nor controls a critical trade route. But its civil war has become a proxy battle for the world's largest energy producers, with Russia and Iran backing President Bashar al-Assad, and Saudi Arabia, Qatar and the US supporting the rebels.

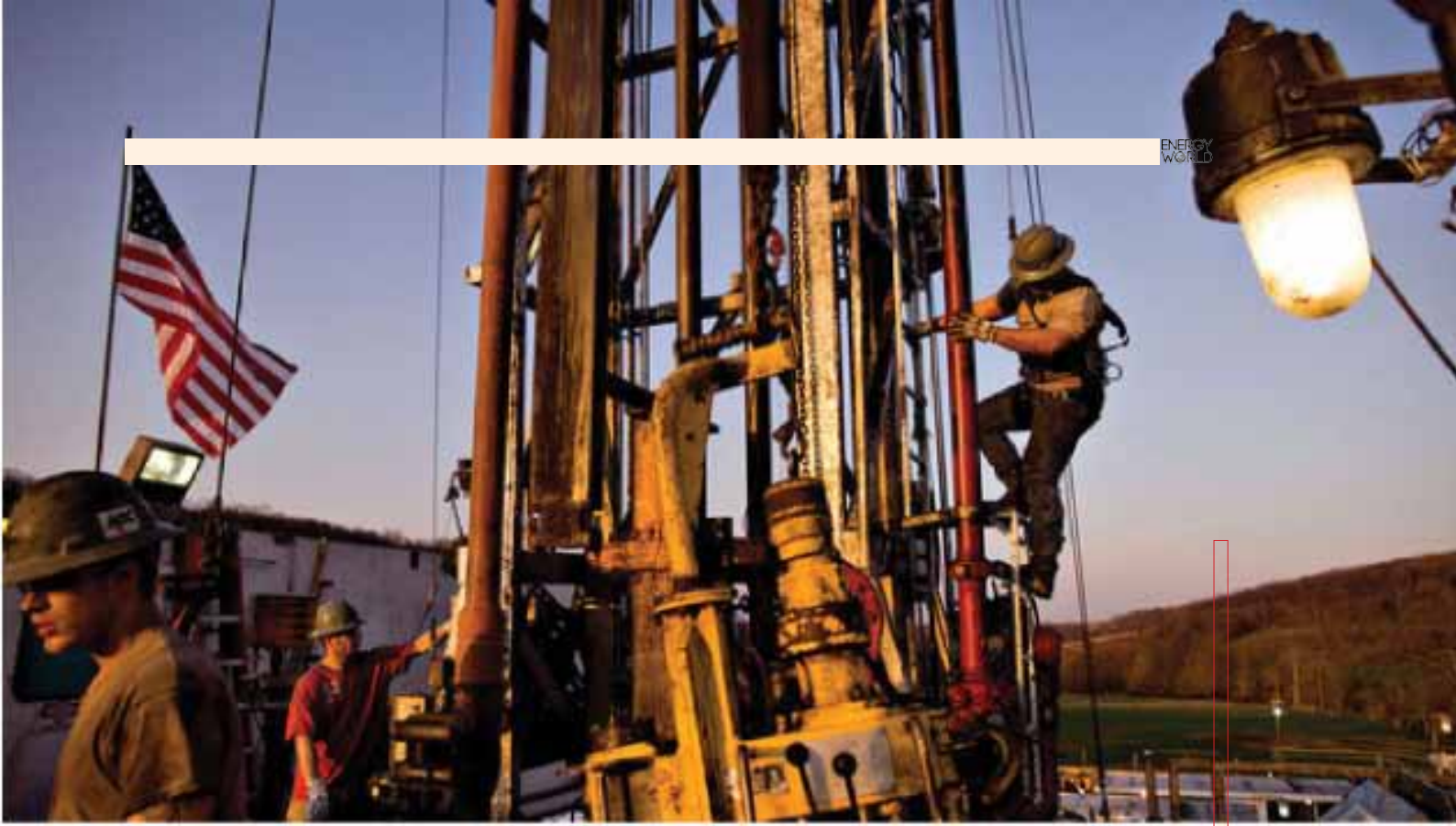
Fears that the conflict will spill over to countries that are important oil exporters, including Iraq, helped push US crude prices to a two-year high last month. American motorists are paying six cents more for a gallon of petrol than they did last week.

If the US begins strikes against Mr Assad's forces, analysts expect the price of crude to rise further. The crisis is demonstrating both the potential of the US "energy weapon" and its limitations.

"Energy independence", which would make it possible for the US to turn its back on the rest of the world in general and on the Middle East in particular, remains an alluring vision. The reality is not so simple. . . .

"Everything's better with Bakken" reads the sign taped up in a control room at the Phillips 66 refinery in Bayway, New Jersey.

It is a joke – a play on the popular line "everything's



better with bacon" – but also utterly serious. A few years ago, all the oil processed here came in tankers from north or west Africa, or from the east coast of Canada. Now, about a third of it comes in rail cars from North Dakota. When a new rail terminal is completed next year, that proportion could rise to two-thirds.

The competitive advantage offered by Bakken crude, costing about $10 per barrel less than its internationally traded equivalent, has thrown the Bayway refinery a lifeline.

As a result, the residents of New York and New Jersey are increasingly likely to fuel their cars with petrol that originated not in Algeria, Nigeria or Angola but in the American heartland.

Advances in the techniques of hydraulic fracturing ("fracking") and horizontal drilling have enabled a 50 per cent rise in US oil production since 2008.

They have also been responsible for a boom in natural gas, which is now much cheaper in North America than in Europe or Asia. There are more than two dozen projects in development for exporting liquefied natural gas from the US. Even if only a few of them go ahead, it will be a significant exporter in the next decade.

Mr Donilon says that rising oil and gas production is helping the US to meet its foreign policy objectives.

Last year, when the US and other countries imposed tighter sanctions on Iran, international action was easier to co-ordinate because rising US production eased fears of a damaging rise in oil prices.

"Sanctions against Iran were more successful than people thought they would be because we were able to replace the lost supply in world markets and thus get co-operation from China and India and others," says Jason Bordoff, a former senior White House official now at the Center on Global Energy Policy at Columbia University.

"We could pull 1.5m barrels per day off the market without causing a spike in prices, which would have hurt our economy and helped Iran."

Increased US production is also helping blunt the threat of a rise in prices over the Syria crisis.

The global crude market is tight, with production severely disrupted in Libya and Nigeria. Saudi Arabia's output is at a 24-year high as the kingdom attempts to make good the shortfall and Opec's spare capacity to cover any further disruption is running low.

The recent rise in crude oil prices would have been worse without the extra supply from the US, which has brought an additional 1m barrels per day on to the market over the past year. "It has been beneficial to the US, and to everybody else," says Stephen Eule of the US Chamber of Commerce. "And as we continue to increase production, we'll see that even more."

In gas markets, too, rising US production is eroding the influence of America's rivals. Russia has been able to use its position as the world's largest gas exporter for leverage over its smaller neighbours, especially Ukraine, and to strengthen its ties to countries

such as Germany, Italy and China. That position is now threatened by competition from LNG supplies that would otherwise have gone to the US, and prospectively by exports from America itself.

Lithuania, for example, is building an LNG import terminal, potentially opening an alternative source of gas that could supply 75 per cent of the gas demand of all three Baltic states. China has been striking a hard bargain with Russia about a gas pipeline deal, demanding a lower price. Customers across Europe have been renegotiating contracts on more favourable terms and Ukraine has been blatantly confrontational, refusing to pay a $7bn bill from Gazprom, the Russian state-controlled gas company.

One direct benefit for the US, suggests David Goldwyn, a former US official and now an energy consultant, is that Russia is again prepared to open up to foreign oil companies, allowing its state-controlled Rosneft to work with ExxonMobil of the US in exploring the Arctic Kara Sea.

American gas diplomacy has scored one other notable success. Japan said in March it would enter negotiations over the proposed Trans-Pacific Partnership trade deal, a US objective, in part because joining an agreement would smooth the path for it to import American LNG.

US shale knowhow can also be a useful export. The administration has been working with countries including Poland, Ukraine, Jordan, China and Mexico to help them develop their shale resources so they can meet more of their own energy needs from domestic production rather than from Russia, Iran or other potentially unfriendly countries.

The shale boom is creating jobs and profits and boosting tax revenues. As Mr Donilon says: "A country's political and military primacy depends on its economic vitality."

Cutting back the US commitment to the Middle East also looks like an attractive way to save money. In response to budget cuts that went into effect this year, the Navy is planning to step down from two carrier groups in the Gulf to one.

Yet as America's confidence in its energy resources climbs ever higher, there is a danger of the optimism running ahead of reality.

While the trends and forecast look encouraging, the US is still the world's largest or second-largest importer of oil. (It is running roughly neck-and-neck with China.) For now, higher oil prices will hurt the US economy more than they help it by fuelling the boom in North Dakota and Texas.

As recent weeks have shown, while US oil production can help moderate prices, it cannot control them. The private sector oil producers of America will never emulate the state-controlled industry of Saudi Arabia, holding capacity in reserve to stabilise the market when needed.

Nor is the distinction between US crude and internationally traded benchmarks much help. Oil is a global market and when the world price of crude rises, the US price rises, too.

Moreover, the shale oil revolution is still very young and the industry will need to continue the rapid growth of the past few years to make good the promise of self-sufficiency suggested by the IEA.

"It would be wildly irresponsible to make defence policy decisions based on the assumption that the US is going to be energy self-sufficient in 10 or 20 years," says Michael Levi of the Council on Foreign Relations. "If that turns out to be wrong, it could be disastrous. One of the big lessons here is: don't be too confident."

. . .

Even if the US could secure all the energy it wanted, it would still have to worry about supplies reaching its allies and trading partners. If the Strait of Hormuz is closed and China runs short of oil, that is America's problem, too.

The US also has other interests in the region apart from oil. As Ernest Moniz, the US energy secretary, put it: "We import very little oil from the Middle East but it doesn't change our security posture in that part of the world."

For US allies that export oil, including Saudi Arabia, the shale revolution is not an opportunity, but a threat. If American production continues to grow and demand weakens, there will be a risk of a glut, forcing Saudi Arabia and other Opec members to cut output or risk a collapse in prices.

In a turbulent region, the prospect of falling oil revenues straining budgets is worrying for every government.

Trevor Houser of the Rhodium Group, a consultancy, says: "It's not clear to me that a sharp drop in oil revenue in Saudi Arabia, Kuwait or the United Arab Emirates would improve global stability, given current instability in the region, and it's not clear it would ultimately be in America's interest."

In 1973, when Mr Nixon launched Project Independence 1980, intended to make the US self-sufficient in energy by the end of the decade, he said its aim would be to make sure that "we will hold our fate and our future in our hands alone".

Forty years on, that promise still shows no sign of being fulfilled. ■

Gas load management: PML-N to continue with PPP govt's plan

'Tight oil' boom likely to go global, study says

Twenty-three "tight oil" plays across the globe are likely to hold 175 billion barrels in reserves, with potential to dwarf North American production, according to a study by analytics firm IHS.

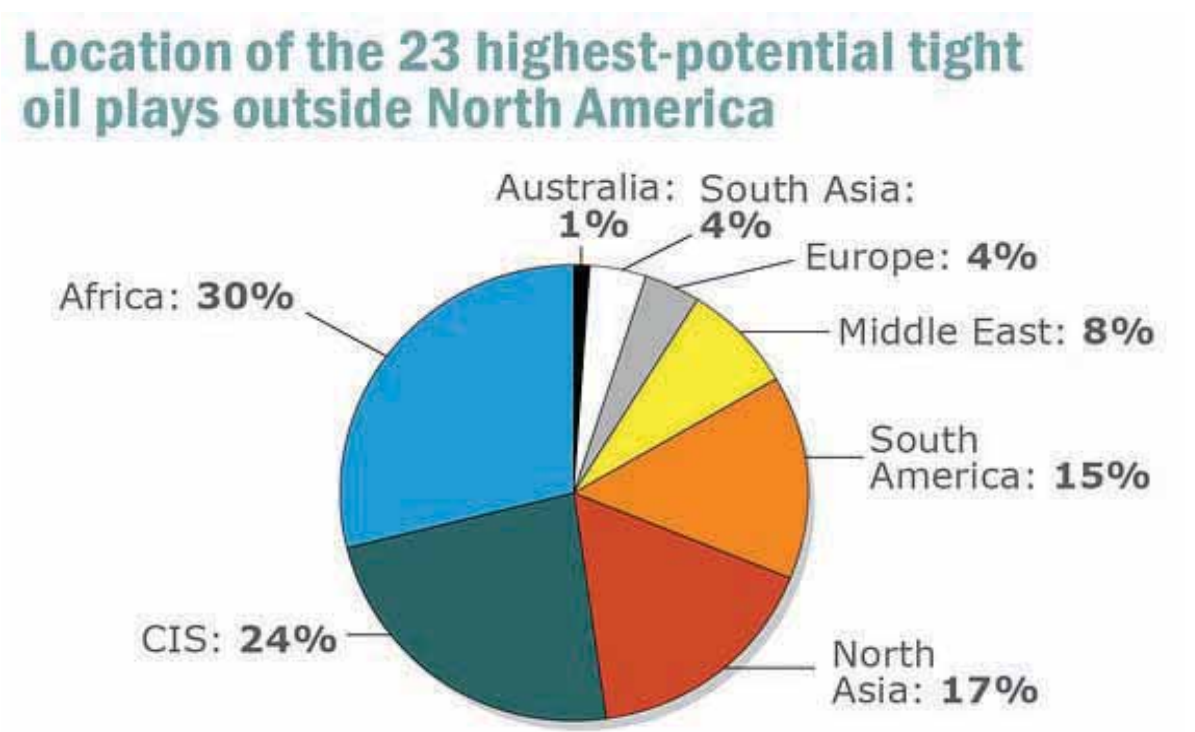
It is "too early" to know how much could be commercially recovered, the firm added. The potential is significant compared to the 43 billion barrels of commercially recoverable resources of tight oil estimated in North America by previous IHS studies.

IHS called its reserve estimates "conservative."

Geological potential, however, is no guarantee of a fast pace of development. Technical issues such as services, specialized crews, and equipment, as well as market conditions and government policies would most likely make development slower overall than North America's, IHS said.

The 23 highest-ranking tight oil plays identified in the study include Argentina's Vaca Muerta (where Chevron Corp. CVX is positioned), the Silurian "hot" shales in North Africa, and the Bazhenov Shale in Siberia. The highest-ranking plays were identified from a group of 148 potential areas, IHS said.

"Tight" or unconventional oil and gas includes production from oil sands, shale formations, and deep water. Improvements in techniques and technologies such as hydraulic fracturing and horizontal drilling have opened up vast oil and gas fields in North America and elsewhere.



Russian Natural Gas Export Opens Eastern Horizons

Igor Alexeev
A Russian journalist and blogger for Strategic Culture Foundation, Press TV and Route Magazine. He writes on the oil and gas sector, Eurasian energy security and shipping industries in the Arctic.

Real alternative to EU exports is born during recent talks in Moscow. Representatives of Chinese National Petroleum Company and Russia's oil & gas giants Gazprom and Novatekhave inked the agreement to sell abundant Siberian resources to the fast-growing Eastern market. The Chinese are investing billions to Russia's fuel energy complex diversification program. Positive Fitch report on the historic deal indicates that both parties are planning to reach synergies and profit from cooperation.

Since the adoption of the "third energy package" in 2009, Moscow has been deeply disappointed by European red tape in the sphere of energy policy. Step by step Brussels introduced bureaucratic hurdles for Russian energy companies on the EU market in order to revise downwards existing contracts on natural gas supply with fixed delivery volume. These purely political measures have nothing in common with market economy and resembled something from Russia's recent past, namely the heavy-handed style of government regulation during Soviet era. At the same time leaders of some EU member states are daydreaming of mythic "shale opportunities" on the densely populated continent with limited drinking water resources.

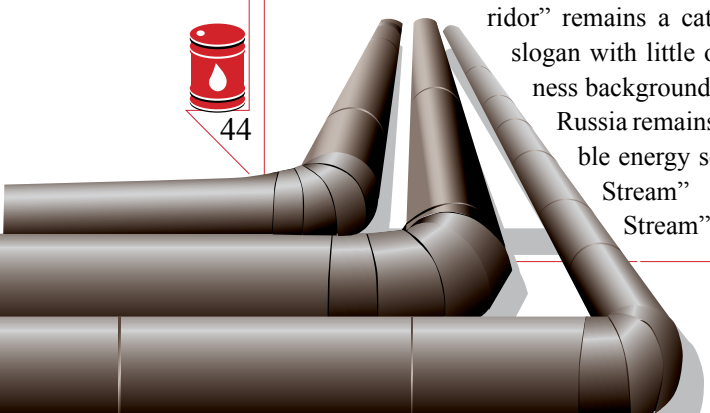
Nearly dead projects like "Southern Gas Corridor" lacking both resource base and political will are advertised as something economically feasible, despite the fact that its participants, for example, Romania are calling for return of investments. Money back demands from smaller investors have always been a correct sign of a dead project. European authorities used all available "soft power" mechanisms but couldn't convince sovereign states to wait about a decade for first return on investment. Today "Southern Gas Corridor" remains a catchy political slogan with little or none business background.

Russia remains the only stable energy source. "Nord Stream" and "South Stream" projects are making impressive progress in Serbia and Bulgaria. EU and Russia have agreed a deal on the use of Germany's OPAL link to Gazprom's Nord Stream gas pipeline, a Russian energy ministry spokeswoman confirmed on September 16. However, attempts of EU Directorate-General for Energy to create non-competitive advantage haven't gone unnoticed in Moscow.

Russia's fuel energy complex diversification program has begun to take shape in Siberia strengthening credit profiles of Gazprom and Novatek. Last Thursday, September 5, Russia's top producer Gazprom and Chinese National Petroleum Company came closer to a deal to ship natural gas to China. Corporations agreed on basic terms but not on price that has been a cornerstone issue for years. Much debated price problem is going to be solved soon given the unprecedented level of intergovernmental cooperation on the highest level. Final agreement is expected by the end of 2013, Gazprom Chief Executive Alexey Miller said last week in St Petersburg.

An oil-linked benchmark, the Japanese Crude Cocktail, for Chinese or other Asian gas deliveries could be used as the point of reference for future price talks. The basic agreement signed by heads of Gazprom and CNPC in the presence of presidents Vladimir Putin and Xi Jinping "defines the volumes, start of deliveries, payments, "take-or-pay" amendment" and other issues, Gazprom announced in a statement.

High degree of readiness attracted Chinese investors to another Russia's LNG endeavor aimed at the Eastern market. China National Petroleum Corporation and a consortium of Chinese financial institutions also concluded a memorandum on project financing for Novatek's $20 billionYamal LNG project in Russia's Arctic buying 20% stake in it. Novatek envisages the construction of an LNG plant with annual capacity of 16.5 million tons per annum based on the feedstock resources of the South-Tambeyskoye field (Yamalo-Nenets Autonomous Okrug). "CNPC's entrance in Yamal LNG is an important milestone for the



project," Chief Executive Officer Leonid Mikhelson said in an e-mailed statement. "We are pleased to welcome a new, strong partner who will contribute its capabilities and resources to the successful implementation." China, on its part, seriously considers increasing LNG imports to balance the use of coal in its fuel mix.

Fitch rating agency experts believe these deals indicate China's growing willingness of to invest directly in Russian natural gas industry. Gazprom (BBB, outlook Stable) will enter a fast-growing market and mitigate non-transparent regulatory risks in Europe. After closing the deal Novatek may improve its "BBB-" credit rating and raise funds for the challenging project in the High North ■

Greenpeace activists scale oil rig in Russian Arctic

Two activists from Greenpeace were scaling an oil platform owned by state energy giant Gazprom in the Russian Arctic in a bid to stop it drilling for oil in a hugely sensitive area, the environmental group said.

The activists set off before dawn in inflatables launched by Greenpeace mothership the Arctic Sunrise and headed towards Gazprom's Prirazlomnaya oil rig in the Pechora Sea, Greenpeace said in a statement.

The Russian coast guard arrested two activists but two others managed to attach themselves to the platform with ropes, defying freezing cold water hosed down on them from the platform.

Greenpeace said that Gazprom intends to start production from the Prirazlomnaya platform in 2014, raising the risk of an oil spill in an area with three nature reserves that is home to polar bears, walruses and rare seabirds.

"This rusty oil platform is an Arctic disaster waiting to happen," said Greenpeace activist Sini Saarela in a statement.

The world's largest gas firm, Gazprom has expanded its oil production operations in recent years and describes the Prirazlomnoye oil field as an essential element of its oil business development strategy.

Russian and foreign environmentalists regularly accuse Gazprom and other big Russian energy firms of turning a blind eye to ecological concerns as they seek to find energy resources in ever more remote locations.

However the Russian energy firms insist they fully adhere to environmental regulations during exploration and production operations ■

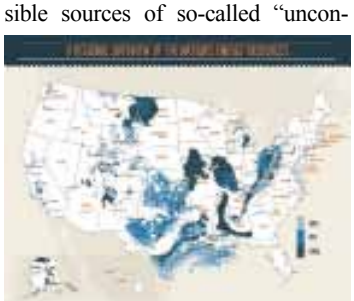
US energy in five maps

America has a lot of energy, but it's not distributed evenly. Various types of energy are concentrated in different parts of the country. To better visualize it, Saxum, an Oklahoma City-based advertising and communications firm, has developed a portrait of the country's vast oil, gas, coal, solar, wind, and other resources:

1. Oil, gas, and coal

American runs on fossil fuels: 82 percent of US energy consumption comes from oil, gas, and coal, formed hundreds of millions of years ago from the remains of living organisms. Innovative new drilling techniques suggest these carbon-heavy fuels will remain a significant part of the energy mix for a long time to come.

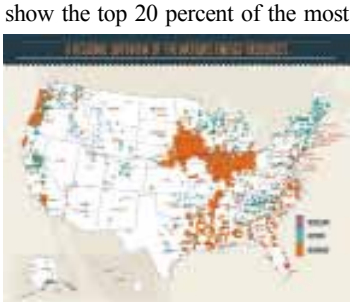
The US holds the world's largest estimated recoverable reserves of coal, in dark blue on the map (click image for larger version). Much of it lies in the Appalachian states and central and southern Illinois. After losing ground to cheap natural gas, coal has been staging a comeback recently, accounting for 40 percent or more of the nation's electricity since November 2012, compared with 25 percent from natural gas. The breakout story of the past 10 years is oil (blue) and natural gas (light blue). Hydraulic fracturing and horizontal drilling have opened up previously inaccessible sources of so-called "unconventional" oil and gas in the Bakken formation of North Dakota, the Marcellus formation of Pennsylvania, and other formations of shale rock. The dots above show just the sites of active wells. The total recoverable resources cover even greater areas.



2. Hydroelectric, nuclear, and biomass

The sources comprising the first wave of clean energy are still some of the most prevalent today.

Renewables make up about 12 percent of electricity generation in the US, but of that hydroelectric dams (shown above as teal dots) contribute 56 percent. Most of those dams were built before the mid-1970s, as part of ambitious federal infrastructure efforts like the Hoover Dam in Nevada. The orange blocks above show the top 20 percent of the most productive counties in terms of tons of potential biomass output. That includes gas emissions from landfills or organic waste from farming and timber industries. Together they make up about 12 percent of renewable electricity generation.



There are 104 operable commercial nuclear reactors at 65 nuclear power plants (purple dots above) in the US, generating about 20 percent of the nation's electricity. Most definitions don't include nuclear as "renewable," since it relies on exhaustible uranium for fuel. It is "clean" in that it produces no carbon emissions, but nuclear waste and radioactive leaks can pose environmental threats.

3. Solar, wind, and geothermal

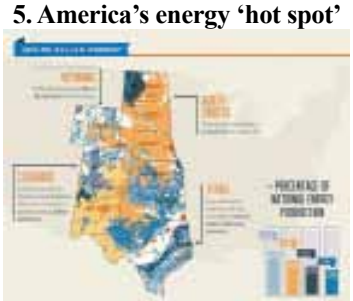
Solar power is the least prevalent of the nation's renewables, making up 1 percent of renewable generation. But as the price of photovoltaics continues to fall, the sector is growing dramatically.

Photovoltaic capacity grew by 76 percent between 2011 and 2012, according to the Solar Energy Industries Association. The areas shown in yellow above represent the top 20 percent of areas in terms of average annual solar energy potential. Wind is second only to hydroelectric in renewable energy. It generates about 28 percent of renewable power and, with the extension of a production credit earlier this year, is expected to grow 7 percent in 2013. The areas colored orange are where wind speeds fall into the top two most productive categories, according to the National Renewable Energy Laboratory. In addition to the inland regions shown above, areas off the nation's coasts also hold great potential for capturing wind power. Areas favorable to geothermal power are shown above in purple. Roughly 3 percent of the nation's renewable portfolio comes form harnessing earth's heat.

4. The big picture

Layering all the country's resources onto one map gives a sense of the wealth and diversity of US energy resources. Coal remains king, but environmental concerns and the falling price of alternatives are challenging its reign. Oil and gas are booming and there is great potential for growth in renewables, particularly with solar across the Southwest. Nuclear faces competition from natural gas and suffered a public-relations setback in the wake of the Fukushima disaster in Japan in 2011. How the US exploits these diverse resources will depend on economics and government policies, which suggests lots of jockeying among industries lies ahead.

5. America's energy 'hot spot'



The middle of the country holds vast amounts of the nation's resources. It's not just oil and gas in Texas and North Dakota; It's solar in Arizona and wind in Nebraska. Together, these nine states make up 46 percent of the nation's energy production, according to Saxum's calculation. The company calls it "America's energy hot spot." For more information, visit The United States of Energy on Saxum's website and explore the interactive version of the map. ■

Sources: US Geological Survey, Alaska Department of Natural Resources, Saxum, Energy Information Administration

Colorado floods impact Anadarko, Noble Energy, others

The Denver-Julesburg basin, Colorado's richest oil field, is under water, raising concerns about operations and environmental contamination, according to a story by The Denver Post.

Thousands of wells have been affected, and some remain in rushing water, the newspaper added. Companies have shut the wells affected and are using boats and helicopters to assess the damage.

Torrential rains in Colorado caused deadly flash floods starting last week. Eight people have been killed and more than 600 remain unaccounted for. Flood warnings in parts of the state continued Tuesday.

Analysts at Simmons & Co. said flooding will have some impact on third-quarter production at Anadarko Petroleum Corp. APC , Noble Energy Inc. NBL , and Bill Barrett Corp. BBG , adding that the extent is still unknown.

The companies have shut in wells and facilities in the affected areas but with roads closed, site access may limit "how quickly they can ramp production back to pre-flood levels," the analysts said.

Anadarko has shut in 600 wells in their Wattenberg holdings. The area produced 106,000 barrels of oil equivalent a day in the second quarter, less than 15% of the company's overall production.

While some impact is to be expected, "it is a stretch to think that all 15% of corporate production will be materially impacted," the analysts said.

Noble has also shut in wells; its acreage in Colorado produced about 100,000 barres of oil equivalent a day as of late July, about 35% of the company's overall production, the Simmons analysts said. They estimated that about 7% of Noble's producing wells in the region were affected.

Bill Barrett has reported minimal impact on their Colorado acreage, with four wells being shut in in the Denver-Julesburg production, the Simmons analysts said ■

Dreaming of a new golden age

The government's hopes of attracting private investment may be dashed

IRAN, like Mexico, has a new and more reform-minded president who wants to loosen the national oil company's grip on his country's massive reserves, and bring in private investment to boost output. One big difference is that Iran's ability to do so is severely curtailed by international sanctions on the country over its nuclear programme. Nevertheless, the president, Hassan Rohani, has brought back a former oil minister, Bijan Zanganeh, who in his previous stint, in 1997-2005, ushered in what some Iranians remember as a golden age of oil investment.

Back then, Mr Zanganeh signed deals with many foreign oil majors, bringing billions of petrodollars to Iran. He decentralised the powerful National Iranian Oil Company (NIOC) and filled his ministry with technocrats. Some of these were blemished with financial scandal. On taking office, Mr Rohani's populist predecessor in the presidency, Mahmoud Ahmadinejad, denounced them as the "oil mafia" and chucked them out. Now Mr Zanganeh has hired some of them back.

International relations

The minister is aiming to raise Iran's crude-oil production to its 2005 level of around 4.2m barrels a day, a 60% boost on current output. He is promising to speed up work on the country's South Pars offshore gas development, which has suffered big technical and financial problems as sanctions have scared away foreign investors. But his proposal to foster a competitive private sector to help develop Iran's many stalled energy projects will pit him against the powerful Revolutionary Guard. This militia, answerable only to the supreme leader, Ayatollah Ali Khamenei, owns various engineering firms that have become involved in oil projects.

There are also plans to reform the way Iran contracts with private oil companies to develop fields. In recent years the government has typically offered "buy-back" agreements, in which the oil company gets a small, fixed return on successful projects, rather than "production-sharing" deals, in which the contractor gets a share of the output and thus stands to gain much greater rewards. A Tehran-based oil analyst says the NIOC is likely to offer production-sharing deals on some of the riskier projects on Iran's border with Iraq. However, it will face objections from the many parliamentarians who believe that such contracts are unconstitutional, because they give foreigners a share of Iran's natural resources.

Iran's inflation rate of over 40% makes it hard for the government to finance projects by issuing its once-popular oil bonds. So it needs foreign investment all the more. Mr Zanganeh also wants the foreign oil firms to teach modern extraction techniques to Iranian engineers.

However, notes Michelle Moghtader of Energy Intelligence Group, a research company, the international sanctions will make it hard for the new minister to attract the level of foreign interest he won in his first term in office. "They will be forced to court Chinese and Indian companies, who don't have the same expertise as the oil majors," she says. Mr Zanganeh hopes that offering juicy deals to Western oil firms will make them lobby their home governments to ease sanctions. But without some sort of diplomatic breakthrough in the dispute over Iran's nuclear programme, there is little chance of that happening.

New colonialism and weal OPEC

Mohsen Jandaghi

Exploitation policies of large oil companies in 1960, called "seven sisters", caused establishment of an organization to confront with exploitation. Representatives of Iran, Saudi Arabia, Venezuela, Kuwait, and Iraq met in Baghdad and decided not to cell oil cheap. By holding oil production technology and dominance on crude oil transportation network, seven sisters prevented oil price increment and held its value low in the market. Establishment of Oil Producing and Exporting Countries (OPEC) applied a substantial shock to oil exclusive market, so the price of this black gold went up and down by a decision of OPEC members.

The goals of establishment of this organization are: "Coordination and integration of oil policies of member countries and determination of the best solution to supply individual or common benefits; to design methods to assure oil price stability in international market in order to remove unnecessary price vibrations; special notice to oil producing countries and special notice to necessity of provision of fixed incomes for oil producing countries; to supply oil for consuming countries effectively and economically; to provide suitable efficiency for investors".

In the first years, OPEC could convince many main oil producing countries for membership: Qatar, Libya, UAE, Algeria, Nigeria, and Angola. So, two-third of world oil reserves was held by this organization. Certainly, this situation was not pleasant for west and main energy consumers, but primary cooperation of OPEC member constrained exploitation policies.

Ups and downs of OPEC

West countries knew that oil pricesare more than their real values, but they didn't show any reaction. But a simple event commenced long term plans to destroy OPEC, and that was support of Arab members of OPEC from policies of Abdolnaser and entering them into 6-day war with Israel. In 1973, OPEC prevented exporting oil to those countries supported 6-day war of Egypt. This caused increment of oil prices in world markets by 4 times. This continued for 5 months. Thereafter, on Jan. 7, 1975, OPEC countries agreed to increase crude oil price by 10%.

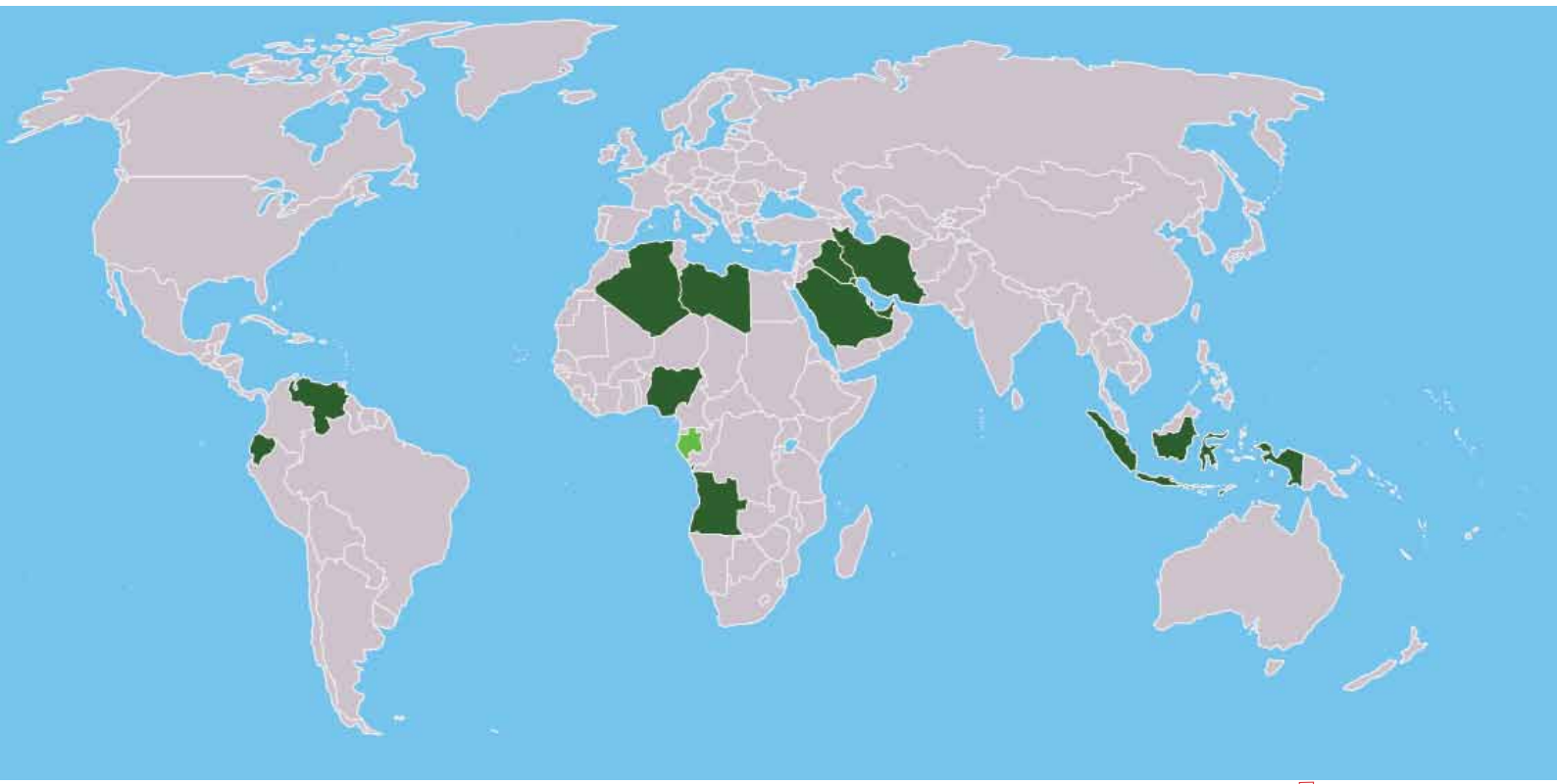
Leaders of Arab countries didn't suppose they would agree for survival of Israel and would overcome for development of their relations with Israel. Economic security is one of the key discussions of west. The second and third historical challenge were imposed war of Iraq against Iran and 8 year later, attack of Iraq to Kuwait. These three countries were members of OPEC, and after the end or war and isolation of Iraq, oil price was in its lowest level. West expanded its relations with Arab countries by miscellaneous policies. OPEC work trend in the last decade shows that their members have least coordination and unity. For example, members struggle for election of General Secretary for a while, or some members do not notice to approvals of OPEC and talk about its relinquishment. OPEC must be stable and cohesive to affect on oil world market, but this will not happen practically. For example, members approve not to increase production, but Saudi Arabia increases its production. These events caused:

Break of coordination and integration of oil policies of member countries, that is one of the goals of articles of association. Namely, OPEC has converted to a disorder organization.

Utilization of world powers from this miscorrelation, which caused lack of increment of oil prices practically.

Decline of OPEC place in oil world market till in 2004, OPEC announced it has not excess production capacity. This means that OPEC will not affect crude oil prices in world markets.

Loss of regeneration opportunity for OPEC, so that other rival producers became prominent in energy market. Norway, Mexico, and Canada are countries that emerged in energy market for last few years. Meanwhile, USA welcomed investment in country such as



Mexico to prevent any problem for supplying its needs. USA executed all its programs to increase production and oil capacity. Last year, International Energy Agency (IEA) published a perspective of world energy up to 2035. The most important section of this report was development in supply and demand and export and import of energy in North America specially USA. One of the major economists of this agency in an interview to introduce this perspective said that USA will become the first oil producer of the world in 2017, thus it will outdistance from Russia and Saudi Arabia. IEA anticipated that oil production of USA in 2020 will be 11.1 and in 2025 will be 10.9 mbpd.

New colonialism

West countries, and USA in their top, will not forget their colonialist goals to achieve their goals. At the first of 21st century, we see a kind of third-millennium colonialism. To achieve to its most important goals that is monopolism, USA must redact various strategies in different sectors. Strategy of USA in energy scope is decrement of role of OPEC and increment of parallel oil activities. Some of OPEC members help west to achieve its goals. In this regard, some OPEC members, including Saudi Arabia (that is one of the main oil producers and exporters of world), intentionally or unintentionally contravene all goals of OPEC and go toward wills of west. For example, in these days that west countries press OPEC to increase its production and these countries cease production by encouraging Iran, Saudi Arabia acts like a saver of west and increases its production. Saudi Arabia is not only a raw-seller, but is the largest oil exporter in OPEC. It does not need production increment regarding to its GDP; however, this country is the main west's geopolitical allied country and is executive of policies of west countries practically.

Now, in this subtle situation, Saudi Arabia plans for OPEC's General Secretary and it intends to implement its energy policies by possession of this chair. Meanwhile, Iran as the main rival of Saudi Arabia in OPEC can occupy this chair by midterm planning and increment of its oil transactions with OPEC members. Otherwise, it is anticipated that this organization would become ineffective by its incoherence that it would not worth to pay its $5 million membership fee; a thing that west waits for it. ■

central bank head:

il unrest to slash Libya's economic growth

Libya's economy could grow just 5 percent instead of around 18 percent predicted by the IMF this year if the country cannot end protests that have all but halted its oil exports, its central bank governor told Reuters.

The government has been trying to negotiate with feuding tribes, militia and protester groups over the past two months to end the worst disruption since the country's 2011 revolution. The stoppages have cost the Libyan government billions of dollars in lost revenues and helped drive global oil prices to six-month highs during August.

With the economy almost entirely dependent on hydrocarbons, Governor Saddek Omar Ali Elkaber said the collapse in output to a tenth of Libya's maximum capacity of 1.5 million barrels per day would leave the government with barely any revenue. But he said he opposed suggestions by some decision makers and politicians that the government could draw on Libya's foreign exchange reserves or cash deposits in its $60 billion sovereign wealth fund.

"This is wrong... resorting to reserves would be possible if there were external circumstances," Ekaber said in an interview on Monday.

"If... there was a drop in oil prices globally, then you have force majeure... but this (stoppage is) an internal factor and you should control it by other means," he told Reuters in his ornate office in the old quarter of Tripoli.

"Part of these reserves are foreign credit obligations and contracts that cover Libyan banknotes. People think we are just sitting on them."

There was also no intention to sell assets from Libya's sovereign wealth fund. "These were long-term investments and there is no intention to liquidate any assets now."

The portfolio includes shares in Italian bank UniCredit .

Unlike other countries that went through Arab Spring uprisings, Libya is rich because of its oil reserves and accumulated oil earnings.

Gross domestic product "growth was expected at 18 percent according to IMF estimates for 2013," said Elkaber, who was appointed after the 2011 war that ousted dictator Muammar Gaddafi.

But "if these strikes continue in the sources of production and ports of export, I don't think growth will exceed 5 percent," Elkaber said.

The International Monetary Fund estimates Libya's economy shrank 60 percent in 2011 because of its civil war, but expanded 122 percent last year as oil output resumed. It expects growth to average 7 percent between 2014 and 2017.

The government's $54 billion budget is 95 percent reliant on oil and gas revenues.

Elkaber said Libya was struggling to end the legacy of state control over its $100-billion-plus economy.

Billions of dollars of subsidised foodstuffs and fuels are smuggled abroad.

The IMF was advising on a fairer cash transfer system although many hurdles stood in the way of changing a cultural mindset under Gaddafi of dependence on the state, he added.

"There is no justice in distribution if the subsidies stay in this way," Elkaber added.

He said the central bank did not intend to issue licenses to global and Arab Gulf banks despite repeated requests until a permanent government and constitution are in place, a goal set for next year.

"There are pressures by global banks to enter the market and get licenses, but ... we said it's premature until the Libyan state is set up. Now we are in a transition period," Elkaber said.

"After that, Libya would have an open market and economy and survival would be for the fittest."

Elkaber said any global banks interested in entering the Libyan market would have to work under Gaddafi-era banking laws that permit foreign banks to strike management deals or buy up to 49 percent equity in existing Libyan commercial banks.

He said the bank was lobbying with the legislature, the General National Congress, to delay a law they passed earlier this year that bans interest on financial transactions and forces banks to become Sharia-compliant by 2015, a ruling that banks blame for high private credit costs.

In the meantime, the central bank was in talks with five local investor groups who are competing for three banking licenses that would be awarded soon, Elkaber said.

"This would create Sharia-compliant banks from day one," he added. ■

OIL India achieved highest ever gas production, 54 AGM of the company

Oil India Limited, country's second largest national oil and Gas Company on Saturday stated that fiscal 2012-13 was a year of significant achievements for the Company as its annual gas production achieved highest ever total production at 2639.21 MMSCM.

Production of Crude oil and Condensate (including JV Share) was 3.701 MMT. Main reason of shortfall in crude oil production during FY13 was direct, indirect and consequential losses arising out of a number of unforeseen problems many of which were beyond the control of the Company.

The turnover of the Company was the highest so far and stood at Rs 9947.57 crore as against Rs 9863.23 in the last fiscal, while the Profit after Tax touched a new peak of Rs 3589.34 crore - an increase of 4.13% percent over the previous year. As a result, the Company declared dividend at 300%

Chairman and Managing Director S K Srivastava during the 54 thAnnual General Body of OIL in Duliajan said that improved financial performance has helped OIL to increase its net worth to Rs 19212 crore as against 17721 crore during the previous fiscal. The CMD also pointed out that this achievement was in spite of having provided subsidy discounts to the tune of Rs 7892.17 crore as compared to 7351.77 crore during corresponding period of 2011-12 to Oil Marketing Companies to compensate for their under recoveries in line with Government policy. The subsidy has affected the PAT of the Company for the year under review by Rs 4481.74 crore.

Srivastava also mentioned about OIL's substantial contribution both to the State and Central exchequer in terms of Cess, Royalty, Sales Tax etc. The contribution to the State Exchequer during the year was Rs 1849.89 crore and that to the Central Government was Rs 4874.79 crore. He also mentioned that it is a matter of great pride that OIL's audited annual accounts have "Nil" comments from the Comptroller and Auditor General of India for the Eleventh year in succession.

Giving an overview of the Company's scenario,Srivastava mentioned that in the first nine rounds of NELP bidding OIL now has twenty seven blocks, either alone or in partnership with other national or international companies with operatorship in twelve blocks. He informed that OIL is actively pursuing planned exploration activities as per committed Minimum Work Programme in all the NELP and other blocks spread throughout the country.

Srivastava informed that the Company is working towards building up its gas production potential from current 7.2

MMSCMD to a level of 10 MMSCMD in the North East by drilling of non-associated gas wells and workover of shut-in gas wells and adoption of the new well completion technology. The Gas produced from the Company's Jaisalmer field is supplied to RRVUNL through GAIL (India) Limited's pipeline for generation of electricity. The existing gas supply agreement to the customer is 0.7 MMSCUMD and actions are in hand to revise the same for additional supply.

Shale/non-conventional oil /gas has emerged as an area of interest. Shale Gas Policy is being formulated by the Government of India and as and when the bidding rounds are announced OIL will actively participate in the same. The Company shall also continue to pursue Shale oil / Gas opportunities overseas. OIL also has one CBM block in the North East with M/s Dart Energy Ltd, who will act as the operator. Work is in progress in the block as per work programme. LNG is another area where the Company is actively trying to enter into.

OIL Pipelines operates a 1157 KM long Crude Oil Pipeline of 5.5 MMTPA capacity that transports crude oil produced from oilfields in Upper Assam to the public sector refineries at Numaligarh, Guwahati and Bongaigaon. The 600 KM pipeline segment between Bongaigaon and Barauni has been re-engineered to enable oil flow in either direction and is now transporting RAVVA crude from Barauni to Bongaigaon. The pipeline runs through the states of Assam, West Bengal and Bihar traversing hostile terrain, dense forests and cuts across 78 rivers including the mighty Brahmaputra. Since many of the facilities associated with the pipeline are more than 50 years old, the Company has currently undertaken a project for upgradation of all the pump stations at an estimated cost of Rs. 871.35 crores.

Growth of Saudi Arabia's private sector accelerates in August

The Saudi British Bank "SABB" has published the results of the headline SABB/HSBC Saudi Arabia Purchasing Managers' Index (PMI) for August 2013 - a monthly report issued by the bank and HSBC. It reflects the economic performance of the Saudi Arabian non-oil producing private sector companies through the monitoring of a number of variables, including output, orders, prices, stocks and employment. The latest survey data signalled a further improvement in operating conditions at Saudi Arabia's non-oil producing private sector firms. The headline PMI rose to a four-month high of 57.5 in August, up from July's 56.6. Operating conditions have improved in every month of the survey history to date.

Output rose at an accelerated pace in August, as 22% of survey respondents reported higher activity. Increased business was repeatedly mentioned as the main driver of the latest expansion. In line with stronger output growth was a solid rise in order intakes. The latest increase was partly driven by improved market conditions, and increased marketing and sales efforts. Growth was the sharpest since April. Meanwhile, client demand from foreign markets also strengthened.

Driven by higher purchase prices and increased staff costs, input prices in Saudi Arabia's non-oil producing private sector increased at a sharp rate. According to anecdotal evidence, the rise in purchase prices was partly attributed to general economic pressures and increased market demand.

In contrast to an accelerated increase in input costs, Saudi Arabia's non-oil producing private sector companies lowered their charges in response to increased market competition. Selling prices fell for the second month in succession, and at the second-sharpest rate in the 49-month series history. As has been the case for most of the survey history to date, employment levels rose in August. Companies that hired additional workers often commented on higher production requirements.

Backlogs of work accumulated at the fastest pace in a year-and-a-half in August, with almost 12% of panel members indicating higher volumes of unfinished work. Panellists linked the rise in incomplete orders to higher business.

The SABB/HSBC Index signaled an increase in sales, which was the main driver for the latest rise in purchasing activity at Saudi Arabia's non-oil producing private sector companies. The latest rate of increase was in line with that seen in July. Concurrently, stocks of purchases accumulated at the weakest pace since December 2011, with the vast majority of survey respondents indicating unchanged inventory levels. Suppliers' delivery times shortened again in August. Survey respondents often linked the improvement to increased market competition.

Kazakhstan Has The Largest Oil Field Outside The Middle East

From time to time, huge oil reserves are discovered, and are added to global supply reserves. In this regard, we find that the large-scale production of oil in the Middle East began shortly after WWII, though some mega fields had been discovered in Iraq, Saudi Arabia, and Iran before the war. In the North Sea, discoveries started being made since the mid-1960s, and high production began in the early 1970s, until it recently declined to half of its peak levels.

For its part, the Caspian Sea region has been known to hold significant oil reserves since the beginning of the twentieth century. But Moscow had placed a moratorium on development of hydrocarbon fields in the countries of the Caspian, in favor of fields in Russia itself. Then shortly after the collapse of the Soviet Union, international oil companies scrambled to the Caspian and invested billions of dollars there.

These countries began occupying an important place in the global oil industry. For example, a consortium led by Italy's Eni announced last week that production would be starting from the Kashagan field discovered in 2000, located in the north of the Caspian Sea in the waters of the Republic of Kazakhstan. Kashagan is the world's largest oil discovery outside the Middle East in the past four decades, since the discovery of the Prudhoe Bay field in Alaska. The field is estimated to hold 13 billion barrels of oil, and production is expected to reach 110,000 barrels per day this year, rising to 180,000 and then 370,000 progressively, until ultimately reaching a productive capacity of 1.6 million barrels per day (the equivalent of Libya's current maximum productive capacity).

The consortium comprises the Kazakhstan government-owned company KazMunaiGaz, the U.S. group ExxonMobil, France's Total, Royal Dutch Shell, and Japan's INPEX.

Kashagan is the world's largest oil discovery outside the Middle East in the past four decades, since the discovery of the Prudhoe Bay field in Alaska. The field is estimated to hold 13 billion barrels of oil, and production is expected to reach 110,000 barrels per day this year, rising to 180,000 and then 370,000 progressively, until ultimately reaching a productive capacity of 1.6 million barrels per day

The consortium's companies have faced immense difficulties working together, and competed with one another over leading the project until they agreed to hand over leadership to Eni. Disputes were also aggravated as a result of a delay of about 5 years in development works, with costs ballooning by billions of dollars, reaching $41 billion.

But the main reason for the delays and increased costs is the complex nature of the field itself. Pressure in the field, for instance, is very high, something that requires extra caution against oil spills in the Caspian, a sea with a unique ecosystem containing rare species of fish and other marine life. The field also contains high amounts of the toxic gas hydrogen sulfide, requiring workers to wear special masks.

Oil from the Kashagan field will supply the Kazakhstan-China oil pipeline. The Chinese government acquired a $5 billion stake in the field in 2013. It is also worth mentioning that Kashagan is not the only mega oil field in Kazakhstan, with the country holding up to 30 billion barrels in oil reserves. Other important fields include Tengiz, Karachaganak, and others. Kazakhstan began oil production in 1911, and has the second highest oil reserves compared to Russia and the republics of the former Soviet Union. Kazakhstan's output in 2012 was approximately 1.6 million barrels per day. The country also sits on rich reserves of natural gas.

Yet one thing that has proven to be an issue for Kazakhstan is the fact that it has no access to the open seas. This has compelled it to build costly and long pipelines to be able to export hydrocarbon. Kazakhstan is also lacking in export infrastructure. Kazakhstan has a pipeline network to carry its oil through the Black Sea and then the Mediterranean Sea, especially to Italy. The pipeline Baku-Tbilisi-Ceyhan is also used to export oil to Mediterranean markets (oil is transported through tankers to Azerbaijan and then through the Azerbaijan-Turkey pipeline), at a capacity of one million barrels per day.

It is worth noting that the old pipeline network in the country aimed first and foremost to carry oil to the Russian pipeline network and the Russian market, which explains previous heavy reliance on Russia. Now, the plans in place seek to increase and diversify the destinations of pipelines eastward and westward. At the same time, Kazakhstan is trying to export its resources to two huge markets: Russia and China.

For instance, there is the Chinese-Kazakh pipeline, with a length of 1,348 miles and a capacity of approximately 240,000 barrels per day, which is being expanded to reach 400,000 barrels per day. A gas pipeline was also built between Kazakhstan and China with a capacity of 1.4 trillion cubic feet of gas annually.

The national oil company of Kazakhstan handles negotiations with international oil companies by investing in joint ventures.

Given its promising reserves, investments by international oil companies in Kazakhstan have increased. The U.S. company Chevron has the largest stake in the oil sector among foreign companies, owning 50 percent of concessions in the Tengiz mega field, and 20 percent in Karachaganak. Kazakhstan also cooperates with Russian companies like Lukoil and Chinese companies through government agreements.

The Caspian Sea area is characterized by its ability to export oil and gas to markets in South Asia, South East Asia, and Europe. However, this requires a very long pipeline network, and positive political relations, as the pipelines have to cross several countries, and since any negative political developments would bear on the policy of exporting oil and gas through these pipelines.

It is worth noting that the policy of building long-range pipelines was initiated by the Soviet Union in the mid-1980s, in exporting gas to Europe. Today, Russia continues to rely on operating this vital network in an economical manner. Russia's gas exports to Europe never stopped because of deep political disputes and interests between the two sides, but they did stop for a very short period of time following a dispute over pricing with Ukraine, the transit country through which Russian gas is exported to Europe ■

Big Oil's climate disasters: People must adapt as we focus on profits

American capitalism works because it is a $16.6 trillion economic war zone where high-functioning narcissistic sociopaths compete with millions of other high-functioning sociopaths as well as other competitors who sometimes value the public interest as much as profits. And while Madoffs frequently emerge, more often than not we see capitalists like Bill Gates, billionaires signing his Giving Pledge and others backing the X-Prizes.

So where does Exxon Mobil and Tillerson fit on this economic battlefield? A decade ago the Bush Pentagon said climate change was the "mother of all national security issues" with "warfare defining human life" by 2020, a time bomb ticking louder and louder.

Exxon has been America's leading climate science denier. A 2007 Newsweek editorial reported that at a Senate Environment Committee hearing Barbara Boxer said: "Warming of the climate system is unequivocal, citing a report by 600 scientists in 40 countries." But right after, "a conservative think tank long funded by Exxon Mobil offered scientists $10,000 to write articles undercutting the new report and the computer-based climate models it is based on." Their goal, sow doubt, is now the battle cry for all climate science deniers. ■

About Iranian Oil , Gas and Petrochemical Product Exporters' Union

The oil, gas and petrochemical sector is the first and the foremost strikingly relevant superiority of the country and the reliance of Iran's economy. With respect to the importance of this sector and the need for more congruity and coordination of activists in the field of production and export of oil, gas and petrochemical products, a number of adroit entrepreneurs of the private sector have gathered to take collective and integrated countermeasures to the threats and grab opportunities by relying on one's power and wisdom. Holding same idea, the Iranian Union of oil exporters established at October 22nd, 2003 with the total number of 54 members. With the aim of developing the Union's working span, and strengthening the sense of cooperation, the Union changed its previous name to 'Iranian Union of Oil, Gas and Petrochemical Exporters', following the board's suggestion and the approval of the Extraordinary-General Meeting of the Union at June 17th, 2006; and currently, approximately all 265 active companies working in the field are the members of the Union.

The most important actions of the Union, since the establishment:

1. Organizing the oil export plans; designing and creating systems concerning production and exports; planning the implementation of programs and coordinating them with the Anti-Smuggling Headquarters

2.Designing electronic information systems for the members regarding news, corporate and internal information via web site; designing and creating secretariat office automation system and members' electronic user dashboards

3.Publications, yearbooks, specialized Union directories

4. Cooperating with the authorities of the Islamic Republic of Iran via providing professional views in preparing, adjusting and modifying related rules and regulations of oil export products

5. Carrying out problem follow-ups for the exporters (including their banking problems, taxes, customs, standards, transit and etc.)

6.Attendance and participation in Iran's international oil, gas and petrochemical fairs; efforts in taking charge of aforesaid fairs

7.Renewing the rate of oil export products

8.Establishing Iran's Oil Export Development Fund as the greatest achievement of the Union in its first time period

9. Holding the exporters' annual conferences of oil, gas and petrochemical products over 6 consecutive years

10.Developing services and providing conveniences and privileges for the members through the continuing coverage of complementary therapies; establishing housing cooperatives for the Union members

11.Corporate problem follow-ups including members' financial problems; revising guidelines related to anti-trafficking issues and supplying subsidiary oil products to outside of the network; introducing the Union's reputed companies to correlated organizations such as the Anti-Smuggling Headquarters in order to further their export procedures; more collaboration with Iran Mercantile Exchange Agency regarding the procedure, supplying goods, their quantity, pricing process in the Stock Exchange, and modifying export ring instruction

12. Publishing the Union's professional journal, 'World of Energy'

13. Efforts to establish a consortium to sell crude oil and other petroleum products

14. Efforts to take sales and export permission of distillate fuel from relevant organizations

The most important actions of the Union at the present time

Improving the utilization of the Stock Exchange potentials through more collaboration with Iran Mercantile Exchange Agency, holding joint meetings and posing questions among parties; pricing and examining how to supply goods in the Stock Exchange; trying to solve related problems in performance of the Stock Exchange

Utilizing the potentials of the Article 44 of the Constitution including the interaction with the Privatizing Organization, Ministry of Oil and the private managers of other oil, gas, petrochemical, refining and distribution subsidiaries to pave the grounds for participation of the members into the process of submissions; encouraging members to create consortiums in order to boost investment in relative fields of industry and in an association with the subfields of oil and gas industry; predicting proper solutions to encourage the international companies to cooperate with the established consortiums in terms of technology transfer and direct investment by establishing joint ventures

Promoting interaction with the Parliament (Majles)

Holding joint meetings with the Special Economic Measures Staff and the Oil Committee

Pursuing export awards

Interacting with the Oil Ministry in order to resolve the problems related to pricing of oil and petrochemical products, the process of supplying them in the Stock Exchange; the swap and transit of petroleum products and the completion of topics related to the approved feed rates of manufacturing members

Trying to introduce the Union in the international bodies and its acceptance as the pricing source by the Trade Promotion Organization of Iran and the Central Bank of the Islamic Republic of Iran

Carrying out promotional plans and marketing in the target marketplaces through holding seminars and local and international conferences, inviting business delegations; printing advertisements such as in prestigious publications and professional journals, and in the target media through televising teasers in television and satellite channels; trying to register members' brands in the target markets

Establishing the necessary consortiums, cooperative enterprises and technical working groups

Pursuing the necessary arrangements for holding the first international conference attended by Ambassadors, Business Advisors and economic activists of the target countries

Introduction of specialized commissions and their most important activities

With the aim of achieving goals and doing one's duties, the Union may hold a few permanent or interim commissions from among the managers and representatives of the partner companies or the actual members of the Union. The Commission's activities are defined by the regulations that were prepared and approved by their board of directors. With respect to the diversity of the members' activities, and with the aim of the members' participation in decision-makings, the Union has intended to establish the following specialized commissions:

Lube Products

Paraffin Products

Bitumen

Petrochemical, chemical and gas

Swap, Transit and Bunkering

The commissions are in fact the two active arms of the board of directors that would operate upon the given expert opinions and advices; their sessions are scheduled according to a program which is planned at the beginning of each year and held monthly in the Union Secretariat.

Their most important duties are as follows:

Providing information about events, news, business opportunities and investment, holding fairs and specialized conferences, training courses related to the field of oil, gas and petrochemicals

Union's subscription reviewing and enrollments

Oil product pricing

Submitting professional views in preparing, adjusting and modifying related rules and regulations of petroleum products and their exports

Investigating members' issues and carrying out problem follow-ups and finally suggesting solutions to resolve problems. ■

Export of petrochemical products returning to its previous trend

Ali Khosravi

Mr. Hamid Safdel, Chairman of Trade Development Organization, in an interview with "Energy World":
Export of petrochemical products returning to its previous trend

"Successful experiences of advanced countries in economic arenas are outcomes of their efforts towards export. While economic developments move toward fundamental changes, Experience Development Organizations play an important role in development of trade activities, competitive business, and economic development in countries."

Irans Trade Development Organization has commenced its activities from 2005 towards development of external trade of Islamic Republic of Iran by creation of its organizational structure and utilization of valuable experiences of activities of Iran Export Development Center for four decades. Iran Trade Development Organization is an active and knowledgeable organization to follow major programs of country and to develop and amplify external trade and to access more share of goal market effectively. By providing effective transactions with its trade parties and beneficiaries, its effective human resources, and using modern knowledge and technology, this organization always tries to develop trade and to provide a suitable bed for major export management and development of external trade of country by planning, policy-making, and higher supervision. The most important goals of Iran Trade Development Organization are improvement of trade balance, amplification of competition potential for export products and services in international markets, increment of export incomes, and increment of the share of country in world trade. In addition, the strategies of this organization are movement toward complete freedom of external trade to cooperate with world economics.

Fundamental goals of this organization are promotion external export, amplification of internal trade capacities, elevation of trade balance, promotion of export culture and knowledge; planning, policy-making, and higher supervision to develop external trade; and promotion of organizational resources efficiency and efficacy.

Export decrement, especially in oil products, is our most important reason to interview with Mr. Hamid Safdel, Deputy of Economic Relations Development of Ministry of Industry, Mine, and Trade and Chairman of Iran Trade Development Organization, in order to study the reasons and factors of this subject. He confirmed this and said: "New information and reports of export development in petrochemistry indicate return to previous export levels. We will see more speed in petrochemistry export in next new months. He mentioned the reasons of export decrement during last year and said: "These obstacles have been removed significantly. The root of notices causing disorder in export of petrochemical products is severe vibrations of currency, especially in last October and November. Of course, there were also deficiencies in its previous months in supplying raw materials of downstream industries, causing disputes for petrochemical products, copper, aluminum, etc., so that different industries believed that raw-selling must be prevented and raw materials must be converted to products and be sold with higher value added".

He added: "However, there was a worry that these restrictions may create obstacles for some export products, including petrochemistry. Thus, many meetings were hold by Iran Trade Development Organization and by Deputy of Industrial Development of Ministry of Industry, Mine, and Trade and petrochemistry authorities were asked to look at downstream industries, too. Of course, this request was friendly and expertise. But, in hard conditions of September 2012, many downstream industries were in threshold of vacation and this subject got out of the scope of this organization. So, a set of related economic organs constituted a headquarter that decided to issue export ban notices". Deputy of Ministry of Industry, Mine, and Trade said: "By available information from necessity of obligations of petrochemistry, investments, participations, and the role of this organization in export development and occupation, this organization tried to cancel these export restrictions. Also, they believed that downstream industries must be supported and they confirmed that production increment is the main solution to compensate deficiency of primary products".

Mr. Hadim Safdel said: "Fortunately, although many hard decisions were made in last October and November, however, this organization could balance these decisions. So, article 11 was again approved in Government Board and many new options caused companies could act their obligations. On the other hand, a part of goods were exited from forbidden list. Now, from 13 export-forbidden primary goods in petrochemistry group, only 2-3 items remained". He said: "Many petrochemical products are now in export group and they will be probably exported by a new proposed method. By confirmation of this method and by mutual understanding, we may create unlimited export without any duties". He emphasized: "Also, downstream industries must access their necessary raw materials".

About execution time of these decisions he said: "This organization has proposed his views and it is following them". He said: "We hope to do this before change of government. Iran Trade Development Organization follows this proposal to maximize export share in markets. Now we see return of petrochemical products to their previous export situation and we saw a good growth during first three months of this year. We received good news about export of petrochemical products and we will see more speed during future months". ■

The place of petrochemistry industry in national economics

Iran's petrochemistry share in global market

Ali Dehdashtinejad

"Petrochemistry is a part of chemistry industry that produces its products from crude oil of natural gas. Petrochemical products are produced so that an upstream unit produces raw material of other downstream units; such as Olefin unit that produces ethylene and propylene for other units. Petrochemistry is one of the mother industries that produces occupation and feeds other industrial sectors. It can play an important role as motor of economic movement of country."

Place of petrochemistry of Iran in the world

The share of Iran's petrochemistry in world markets has reached from 1.1% in 2005 to 2.4% in the end of 2002. Accordingly, the share of Iran's petrochemical industries in world markets has grown 181%. Now, Iran's petrochemical products are exported to 60 countries: India 13%, South-East Asia 23%, China 22%, Far East 18%, European countries 5%, and Middle East 19%.

On the other hand, according to ranking of 100 dominant petrochemical companies of world, which is done by ICIS each year, the rank of National Iranian Petrochemistry Industries Co. has promoted from 82% in 2004 to 39% in 2011, and the share of Iran's petrochemistry industry has promoted from 82% in 2004 to 12% in 2011. In other words, during 2004 to 2011, Iran's petrochemistry industry promote 70 levels.

The place of petrochemistry industry in national economics

Diversity of petrochemical products can complete many lost rings. Undoubtedly, development of dependent industries can play an important role in supplying needed goods of internal industries. In recent years, Iran's petrochemistry industry has achieved great outcomes in production of conventional and basic petrochemical products, so that the share of petrochemistry industry from GDP has reached from 1.29% at the end of 2004 to 1.5% at the end of 2011. On the other hand, the share of petrochemistry industry from non-petroleum exports with 48% growth, has reached to 37.2% in 2012. The share of industrial products with 34% growth, has reached from 34.8% to 46.5%.

Study of current trend of petrochemistry industry

To analyze petrochemistry industry, at first we should study performance of this industry in last years. The following table shows details of this performance from 2005 up to now. The results from the table are:

Performance of petrochemistry industry was very different from 2005 to 2011 with its performance in the last year (2012). It means that during last 7 years, petrochemical products has grown by average of 18.02%, export by 23.22%, internal sale by 16.1%, export value by 36.22%, and internal sale value by 38.1%, and this growth was continuous every year.

Production of petrochemical products in 2012 was reversely decreased with 4% decrement. Its main reason was lack of feed for petrochemistry industries.

Although production of 2012 has decreased 4%, but export has decreased 13.18% and export value has decreased 23.81%. While in last years, export rate has grown more than production rate. Export decrement than production rate in the last year indicates the effects of deprivations on this industry.

The production capacity of installed petrochemistry industries in 2011 was 54.5% mt, which shows a production by 78% of its capacity. But, in 2012, despite of capacity increment by up to 57.1 mt, production has decreased; namely, only 72% of its capacity was used. Therefore, ratio of production to installed capacity in 2012 has decresed by 7.7% than it in 2011. In current year (2013), installed capacity is 58.5 mt, which is by 72% of its capacity.

Despite of production decrement in 2012, GDP value of petrochemical products has increased 40.95%.

In a prediction for 2013, production has grown 3%, exports have grown 2%, and internal sale has grown 2.5%. Consequently, this industry will not experience a dominant growth.

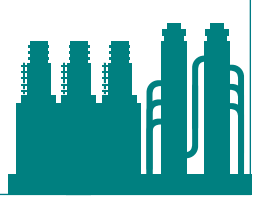
Future perspective of petrochemistry industry

In order to analyze the future perspective of petrochemistry industry in short term, mid-term, and long term intervals, the qualitative and quantitative factors of this industry must be evaluated. To analyze qualitative factors, we study advantages of this industry against its threats.

Advantages of petrochemistry industry

It is anticipated that value of petrochemical products in the world will be equal to $791 billion till 2018. So, it will have a growth of 6.7% from 2012 to 2018. Also, by consumption amount, it is anticipated that this number reaches to 627 mt till 2018, which will have a growth of 5.4%. Therefore, petrochemical companies of Iran can play and important role in this development.

Diversity of petrochemical products can complete many lost rings. Undoubtedly, development of dependent industries can play an important role in supplying needed goods of internal industries. In recent years, Iran's petrochemistry industry has achieved great outcomes in production of conventional and basic petrochemical products, so that the share of petrochemistry industry from GDP has reached from 1.29% at the end of 2004 to 1.5% at the end of 2011. On the other hand, the share of petrochemistry industry from non-petroleum exports with 48% growth, has reached to 37.2% in 2012. The share of industrial products with 34% growth, has reached from 34.8% to 46.5%.



By pursue of import replacement policy, petrochemistry sector was the most successful one in country economics. Business Monitor Institution in a report about Iran petrochemistry industry has suggested that Iran petrochemistry industry has most growth capability in petroleum sector and other Iranian industries during next 10 years.

According to the legal trends of investment in petrochemistry industry in the sixth development plan, development of complementary industries has been noticed and petrochemistry chain was considered as a main strategy, and it is estimated that Iran would be on the first place of petrochemistry industry till 2025.

To plan for increment of production capacity up to 100 mt at the end of fifth development plan and to setup more than 65 new petrochemical projects can increase growth of this industry significantly.

Since this industry is export-oriented, growth of dollar rate has increased sale competitiveness of Iranian products and its profitability in international level.

Other advantages of Iran's petrochemistry industry are existence of rich oil and gas sources in country, availability and adjacency of petrochemistry industries to feed sources, good geographical situation of Iran, availability to Asian and European markets, availability of free waters (ease of export, decrement of transportation costs), availability of sea water regarding necessity of petrochemistry industries to water, existence of a growing internal market, and existence of tax exemptions for production projects.

One of the most important advantages of petrochemistry industry is its high value added. It means its product value can be added by 10-15% by chemical and physical changes of oil and gas hydrocarbons.

Industry threats

Not enough feed: Production capacity has decreased because of not enough supply of petrochemical units, so that units produce 70-80% of their real capacities. Petrochemical feeds are in two categories of gas and liquid feeds. Now,

Factor	2005	2006	2007	2008	2009	2010	2011	Growth rate sum	2012	Change than last year	Anticipation for 2013
Production mt	15.8	18	23.9	20	34.2	40.2	42.7	18.02	41	-3.98	42.2
Export mt	5.2	6.04	9.5	12.3	14.2	17.9	18.2	22.22	15.8	-13.18	16.1
Internal sale mt	4.9	6.1	6.4	7.6	7.9	10.5	12	16.1	12.2	1.66	12.5
Export value $billion	2.3	2.3	6.1	7.8	9.3	11.6	14.7	36.22	11.2	-23.81	11.8
Internal sale value Rial billion	16,052	26,520	32,208	40,056	46,788	67,692	111,344	38.1	156,933	40/95	189,850

ethane, which is a very important feed in petrochemistry industry, is deficient because of non exploitation of phases 15, 16, 17, and 18 of South Pars. This deficiency creates an interval between nominal and real capacities in petrochemical products. On the other hand, feed may be rationed to supply ethylene and natural gas for new petrochemical complexes.

Increment of feed price: Methane feed was firstly calculated by 7 cent (m3) by reference dollar rate of Rls.12260. But, by changing reference dollar to transaction dollar, petrochemistry feed rate was practically decreased from 7 to 3 cent. Then, in April 2013, government ordered to increase the rate of this feed to 13 cent that is equal to 333% growth. Also, price of ethane was increased from $140 to $240 that is equal to 71% growth. However, companied didn't considered this approval. Therefore, one of the threats of this industry is implementation of feed rate increment. This action will incur 10-60% negative EPS balance to companies.

The place of petrochemistry industry in stocks market

Petrochemistry companies activate under title of chemistry industry, which is the largest industry in bourse. Petrochemistry industry has the highest share in implementation of article 44 of constitution about privatization of affiliated companies.

Consequently, up to now about 99% of petrochemical companies were privatized and this enlarged this industry in stocks market. Current value of this industry in bourse is equal to Rls.406,260 billion.

This industry includes about 19.49% of total value of stocks market. Also, the average of daily transactions value in this industry is 21% of total daily transactions value of bourse. In terms of profitability, petrochemistry industry in located after sugar industry with a growth of 1384% from start of 2009 up to now. In other words, efficiency of this industry was about 14 times during last 4 years.

We understand the following results from table 1:

P/E ratio of this industry is lower than that in market, which is equal to 6.38.

Current prices of petrochemical companies are about 3 times of their book values in stocks market.

Despite of high efficiency of this industry in bourse, its P/E ratio is acceptable, and this is because of positive adjustments of profitability of companies in this period.

According to beta coefficient, price vibration in this industry is 25% more than it in total market.

Study of P/E chart shows that when P/E is high, the modification index is low. By adjusting P/E to lower values, the ascending movement become strong. However, the important point is that in 2011 and 2012, investors always hoped for positive adjustments for EPS of companies. But, the important question is that if these companies would not give positive adjustments for EPS in 2013, is the current P/E ratio suitable for this industry? Namely, whether profitability expectation of this industry can increase prices like last years, or prices must be modified?

To find the right answer, we should analyze financial structure of this industry, profitability of last years, and current anticipation.

As we see in table 2, this industry is in a good situation by its fundamental factors and financial structure than other industries. It is also in a higher place by profitability and profit margin. Consequently, this industry has enough growth potential. But as we said before, the main problem in this industry in short term is lack of feed for more production.

Study of previous trend of financial information and current anticipation

Table 3 shows percentage of changes of production factors and profitability of petrochemistry industry during last 2 years. It also shows average anticipations of current petrochemical companies about current budget (2013). We see that all numbers for 2013 have increased than those of 2010, but production has decreased by 1.86% for 2012.

Finally, because of growth of prices of products and dollar rate, companies could register a profit of 95% more than 2011 in their report card. By study of current anticipations in this industry we see that companies have reduced their productions because deficiency of raw

material. But, on the other hand, they have sold by 24% growth by a dollar equal to Rls.25,000.

The important point is that growth of finished price is more than growth of sale in the anticipations. This problem beside other costs such as transportation, salary, fixed costs, etc. decreased profitability of this industry by 0.5% than last year.

Since export sale of companies were calculated with Rls.25,000 dollar, it is possible the average of dollar rate remains more than Rls.25,000 in this year. If so, companies can utilize this for more profitability. Therefore, it seems that anticipations are a little conservative. To obtain more realistic anticipations, one can consider more expensive dollar than Rls.25,000 in budget to obtain a more realistic anticipation.

Anticipation of probable scenario

As mentioned for table of financial information, if we consider the rate of free dollar in this year equal to Rls.33,000, we will have 22% growth than the prices average of last year. On the other hand, about 60% of sale of companies in this industry is supplied by export. Therefore, free dollar rate can increase sale of this industry by 20%. Then, the effect of this amount on total sale of this industry is 12%. Namely, sale of petrochemical companies can grow 12% more than the anticipation. Then, net profit will grow 6.5% by profit margin of this industry that is equal to 54%.

Therefore, according to table 4, profitability of companies in this industry increases by 6%. Obviously, this value is for average of this industry, and companies individually can make profit more or less than this rate.On the other hand,

Table 1: Study of quantitative factors of industry

EPS growth rate	Current P/E	Current P/B	Current PEG	Return rate of industry	Beta factor
15.85% (years 10)	5.84	3	0.53	1384% (years 5)	1.25

Table 2: Financial ratios of industry

Financial ratio	Average ratio of industry	Average ratio of market	Remarks
ROA	48%	17%	better than total market 182
ROE	76%	37%	
ROCE	64%	29%	
Current ratio	2.77	1.68	
Assets circulation ratio	0.89	0.67	
Circulation of accounts receivable	3.52	2.72	
Proprietary ratio	0.57	0.42	
Equity to debts	2.08	1.37	
Debt ratio	0.43	0.57	
Operational profit margin	53%	35.74%	
Net profit margin	54%	24.88%	

Table 3

Factor	Changes of 2011	Changes of 2012	Anticipation for 2013
Production	13	-1.86	-1.84
Sale	11	1.97	2.05
Sale value	59	70	24
Finished price of sold goods	36	33	38
General, administrative, office costs	43	84	29
Net profit after tax	437	95	-0.5
Ave. rate of free dollar	(1400) 29	(2750) 96	(2300) 20

Table 4

Factor	Anticipation of oil companies for 2013	Probable anticipation for 2013
Production	-1.84	-1.84
Sale	-2.05	-2.05
Sale value	24	36
Finished price of sold goods	38	38
General, administrative, office costs	29	29
Net profit after tax	-0.5	6

Table 5

Factor	Anticipation of oil companies for 2013	Probable anticipation for 2013
Sale value	100	100
Finished price of sold goods	(35)	(63)
Gross profit	65	37
General, administrative, office costs	(9)	(9)
Other	(3)	(3)
Operational profit	53	25
Other	1	1
Net profit after tax	54	26

Table 6

Factor	Anticipation of oil companies for 2013	Probable anticipation for 2013
Production	-1.84	-1.84
Sale	-2.05	-2.05
Sale value	24	45.4
Finished price of sold goods	38	38
General, administrative, office costs	29	29
Net profit after tax	-0.5	18.8

we should consider the best and the worst scenarios in anticipations. As we mentioned before, the worst scenario for petrochemistry industry for this year is increment of feed rate. Therefore, by more expensive feed, especially for methane, profitability scenario is as follows.

Feed rate increment scenario

Feed cost for methane is 35% of finished price of sold product. Therefore, if feed rate is increased to Rls.3200, that is 333% growth, it causes 80% growth of finished price of sold product. By applying this difference in table 5, we see a decrement of net profit by 50% in this industry.

Note: This 50% profit decrement includes companies that considered feed gas rate equal to Rls.700. If fee gas rate is considered more in budget, net profit will decrease less. Therefore, in average, increment of feed rate will decrease net profit by 35%.

Dollar rate increment scenario

By increment of free dollar rate in this year, profitability of this industry will increase. For example, if average free dollar rate reaches to Rls.38,000 in this year, then profitability of this industry is as mentioned in table 6. Consequently, net profit of this industry will increase by 18.8%.

Other scenarios were not discussed, such as removal of deprivations and supplying enough feed.

Industry Technical Analysis

As you see in the chart of Industry Technical Analysis, price has formed a triangle flag. According to this pattern, price must be raised as mush as the flag column, which is shown by A in the chart. This ascent shows number 4000 that coincides to Fibonacci line 138.2. This line is an exact price goal that increases probability of movement.

Conclusion

If there is no fundamental even in this industry, because of positive perspective of this industry in a mid-term and long term interval, it brings a suitable profitability for investors. But, because of existing problems in this industry, 6% profitability growth (positive and negative) for short term is logical. Companies of this industry can act different from the industry average. ■

Iran-Sweden Petrochemical Plant to Become Operational

The construction of the second phase of Karoon Petrochemical Plant, a joint project by the Iranian and Swedish engineering companies, has been completed by 90% and will start operation by the end of the current Iranian year (ends on March 20, 2014).

The first phase of the joint project started in 2002 in Imam Khomeini Port's Special Economic Zone and was officially inaugurated in the winter of 2008.

The main product of the plant is Toluene diisocyanate (TDI), with the capacity of 40,000 tons per year. Karoon also produces Hydrochloric Acid and Sodium Hypochlorite in form of by-products. The company's products and services are designed to provide domestic downstream industries with high quality raw material. Also, the company is entering the global competition in the field of Isocyanates market.

The second phase of the complex which is now in the final stages of construction will produce 40,000 tons per year of methylene diphenyl diisocyanate (MDI) in addition to nitrobenzene and ethylene.

The value of Iran's annual petrochemical output may double to $40 billion, Oil Minister Bijan Namdar Zanganeh said last week. For the time being, the value of domestic petrochemical products per year is about $20 billion, he said, hoping that the figure would increase to $40 billion.

In June, the ex-managing director of the National Iranian Petrochemical Company Abdolhossein Bayat said the intensification of US sanctions on Iran's petrochemical industry will not impede exports.

"Despite the sanctions, petrochemical products are being exported to over 65 countries. Iran started diversifying its petrochemical products and finding new markets two years ago," Bayat added.

In May, Bayat said that over the past eight years, the country's annual petrochemical output has increased by 38 million tons. The output will surpass 75 million tons by the end of the current Iranian calendar year, which ends on March 20, 2014, he noted.

Iran exported about $12 billion worth of petrochemical products in the previous Iranian calendar year (March 2012-March 2013), he added.

East Asia, Central Asia, Southeast Asia, and Africa were the main destinations of Iran's petrochemical products.

In March, Bayat said the country's petrochemical output is projected to hit 100 million tons by 2015. ■

Will Central Asia Replace the Middle East as Prime Oil Source?

Claude Salhani

One of the prime reasons why the Middle East holds such importance to the West is partiality because it is the main supplier of oil and natural gas to countries in the West. Over the past several decades Western countries had few, if any, options other than to purchase its oil and gas from Middle Eastern oil producing despite the headaches that came with it. Headaches, for example, that's included political unrest, turmoil and strife.

But now with the newly found fields of oil and gas in Central Asian countries such as Kazakhstan and more recently Turkmenistan, as well as the oil from Azerbaijan are only the beginning of what may lie in these vast oil fields of the steppes and the Caucuses. But the Middle East comes with more than its fair share of problems. Wars, uprising, conflicts, civil wars, kidnapping and a rising anti-Americanism in the region makes it indeed very difficult to conduct business as usual, where there seems to be perpetual strife in some part of the region at any given moment. Such as:

Iran: As one of the top oil producers in the world, the Islamic Republic could face setbacks if its facilities are hampered in any way. This could come as a direct result of an Israeli preemptive strike on Iran's nuclear facilities, or as a result of an Iranian retaliatory attack on Israeli and/or US interests or targets in the region. For example, once Israel attacks Iran, the Islamic Republic could retaliate via it proxy militia Hezbollah – now with real combat experience gained in Syria. That in turn, would bring about more retaliation and counter retaliation. Eventually, either the oil facilities or lines of transportation would be affected. Based on an interview Israeli Prime Minister Benyamin Netanyahu gave CBS News earlier this week, that Iran is on track to becoming a nuclear power within the next two weeks and that in so doing would be crossing the imaginary red line that US President Barak Obama has established. Netanyahu also stated that Israel could not allow Iran to have nuclear weapons.

Iraq: Is another major oil produced in the Middle East and another country troubled by internal strife. Continued suicide bombings and attacks against government facilities makes it difficult to conduct normal business. Add to that the contention between the Shiites, the Sunnis and the Kurds and the problems in the country are further amplified.

The recently discovered oil and gas fields off the costs of Lebanon and Israel are vast enough to provide a decent return to the two countries, both badly in need of cold, hard cash. Bringing those wells online however might be delayed due to the political situation in the region.

Now consider the alternative to Middle East oil: Central Asian oil.

As the Arab countries continues to struggle through wars and conflicts consider the alternative; the countries that once were part of the Soviet Union are now making advances in leaps and bounds into the foray of Western styled free market economies thanks to a vibrant, growing and promising petrochemical industry.

One example is how oil production form Turkmenistan helped push production up 15 percent for Dubai energy company Dragon Oil, its chief executive said Tuesday.

Dragon, which focuses on Caspian exploration, said its daily production during the first half of the year reached 73,600 barrels of oil per day, a 15 percent increase year-on-year.

Chief Executive Officer Abdul Jaleel al-Khalifa said he was "pleased to report solid production" during the first half of the year.

The company said it attributed the increase to production activity in Turkmenistan, where it has six wells completed as of Tuesday. All of its oil is exported through Azerbaijan. It said the average rate of production from new and existing wells has maintained a level about a base December rate of 73,500 bpd.

The Caspian region is expected to play a major role in European ambitions to add more diversity to an energy market dominated by Russian suppliers.

"We maintain our medium-term guidance over the 2012-15 period of average gross production growth of 10 percent to 15 percent per annum, taking our gross field production to the target level of 100,000 bpd in 2015 and maintaining this plateau for a minimum period of five years," the company said.

The other Central Asian energy giant, Kazakhstan, has reached a production level of 1.6 billion million barrels per day in 2011. Exports are at 1.078 million per day.

But will the Arab world see the handwriting on the wall before it's too late? That question remains to be answered. ■

Shale gas production economics spreadsheet model and inputs

Eric Penner
RBN Energy

With natural gas prices for CME NYMEX Henry Hub futures averaging $3.69/MMBtu so far this year, you might think that the internal rate of return (IRR) for dry natural gas wells in the Haynesville would be under water. But in fact, wells are still being drilled with IRRs in the low teens. Granted these wells don't look nearly as good as liquids plays in other shale basins, but the wells are profitable. How could this be when the cost of a typical deep, multistage horizontal well in the Haynesville can run $9 million? Today we take you through the math in our production economics model and provide a downloadable spreadsheet.

In the first episode in this series (see Drilling) we discussed "unconventional resources" and conventional hydrocarbon drilling then reviewed the technologies developed by the late George Mitchell and his team to produce unconventional shale resources. In the second episode (see Shale Production Economics – Part 2 – Drilling and Completion Costs) we introduced the eight input factors for our model of production economics and provided example values for drilling and completion costs. In part 3 we explained four techniques to forecast initial production (IP), decline rate and estimated ultimate recovery (EUR) for a shale gas well (see Shale Production Economics Part 3 – Estimating Well Production). These production parameters determine the rate of return for a well. Unconventional shale wells are characterized by high IP rates and rapid decline rates but the high early production rate provides drillers with a rapid return on their investment, which makes these plays so attractive. In episode four we looked at variable production costs for a shale gas well – including lease operations, transportation to market, royalties and taxes (see Variable Cost and Net Present Value).

In this series we are modeling the economics of shale production with reference to a specific example – the Haynesville Shale. We use the Haynesville because it is a dry gas formation, meaning that only natural gas ("mostly meth-

ane") is produced. That allows us to model the production economics without having to delve into the complexities associated with wet gas (including NGL) or combined crude and gas liquids. These liquid hydrocarbons are, of course very important to many US shale plays today, but once you understand the economic returns on a dry gas well then the liquids produced from wet gas or oil wells can be viewed as an additional uplift dimension to the basic model.

This time we take you through the variables in our model well. In the next episode we will cover the model outputs. This time we provide a downloadable Excel spreadsheet that you can use to test out the sensitivities of the production and cost variables for a Haynesville shale gas well.

The Production Economics Model

We are going to walk through a model that can be used to calculate the Internal Rate of Return (IRR), the Discounted Cash Flow (DCF) and the Break Even price of natural gas, depending on the inputs provided and the form of evaluation. We provide an Excel file version of the model as an attachment to this blog that you can download here. [To download the file, you must be logged in as a registered RBN member . You can play with the variables in the spreadsheet model and adapt it to your own data, but please note that it is provided as an example, not a definitive well economics predictor. Don't call us up if your production well does not achieve the rate of return you expected.

Model inputs

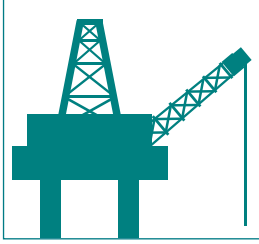
Before we discuss how the model works, we will go through the inputs. Table 1 below is a copy of the spreadsheet model input cells, with colored boxes added so that you can identify which input cell we are talking about. We also labeled input columns and rows on the table to help you find the right cell. The cell references that we use in this description should match the cell references in the spreadsheet.

Drilling and Completion Cost: (Red rectangle in Table 1 – cell E7 in the model sheet). This is the cost of drilling that we discussed in Part 2 of the series. The default value is our estimated average drilling and completion cost for a Haynesville well - $9 MM.

Royalty Interest: (Dark blue rectangle in Table 1 – cell E8 in the model sheet). This is an agreed upon percentage of the gross production revenue, before production costs, paid to the owner of the mineral rights. The royalty interest will vary according to the lease terms but is typically 25 percent in the Haynesville.

Well Spacing - Acres: (Dark green rectangle in Table 1 – cell E9 in the model sheet). Number of acres per lease well. We input 40 acres as a reference in our model. The value is used to determine the amount paid in lease property taxes for the well (see Leasehold Costs below).

the Discounted Cash Flow (DCF) and the Break Even price of natural gas, depending on the inputs provided and the form of evaluation. We provide an Excel file version of the model as an attachment to this blog that you can download here. [To download the file, you must be logged in as a registered RBN member. If you are not yet a member you can sign up for free at our website here.] If you have trouble downloading the file (usually some firewall issue) then let us know at info@rbnenergy



Leasehold Costs - $/Acre: (Purple rectangle in Table 1 – cell E10 in the model sheet). This is the Ad Valorum property tax for the value of the equipment used to operate the well. Multiplied by the well spacing to get a per well value. In our model we set the leasehold cost to $0 for the sake of simplicity.

Operating Cost Esc. - %/yr: (Pink rectangle in Table 1 – cell I7 in the model sheet). This is the expected annual escalation for well operation costs (see Operating Costs below – cell K16). In our simple model we did not assign a value – assuming that the operating cost would remain consistent over the life of the well.

Gas Price Esc. - %/yr: (Orange rectangle in Table 1 – cell I8 in the model sheet). This is the expected annual escalation (up or down) to the netback price of natural gas input in the "Gas Price" variable – cell I16). This factor is multiplied by the gas price in cell I16 to calculate a new gas price every year in cells I17 through I 40. The netback price of natural gas at the wellhead is the price at the closest natural gas trading hub less transportation costs. In our model we have not set an escalation factor. You might input an escalation factor based on a futures market forward curve of gas prices or align the value with your hedging expectations for gas prices.

Discount Factor: (Light blue rectangle in Table 1 – cell I9 in the model sheet). The discount factor is used to determine the Discounted Cash Flow (cells P16:P40 in the sheet) from the Before Tax Net Cash Flow (cells N16:N40 in the sheet). The sum of the discounted cash flows is the net present value (NPV). The value of the discount factor where NPV is zero is often called the internal rate of return (IRR). In fact the discount factor could be as simple as a published interest rate but typically represents a company's internal cost of capital. We set the default discount rate in the model to 10% because operators often calculate a well's break-even price on a before tax basis using a flat 10% discount

rate. This allows an "apples to apples" comparison between wells and across companies.

Production Taxes: (Brown rectangle in Table 1 – cell I10 in the model sheet). The production taxes or severance tax is a tax on the final sale price of the gas at the wellhead. Production taxes apply to net revenue after royalty payments (cells J16:J40 in the model sheet).

Initial Production: (Light green rectangle in Table 1 – cell C16 in the model sheet). This is the first year's gas production volume (Mcf/d). Production is multiplied by gas price to calculate gross revenue. After the first year the production is calculated using the production decline rate (see below).

Production Decline Rate - %/yr: (Black rectangle in Table 1 – cells F16-21 in the model sheet). The decline rate in our model is input as a variable for the first 6 years of production then remains at the same level as year 6 (7 percent) for the remaining life of the well. The numbers input into the decline rate variable fields can be calculated using a number of methods, some more complex than others, that were outlines in Part 3 of this series. The default values set in the model are based on a simple percent annual decline curve.

Gas Price: (Gray box in Table 1 – cell I16 in the model sheet). The gas price is the netback price for natural gas at the wellhead. This is the selling price for gas less transportation costs. Sales prices are typically obtained from price reporting publications at local trading hubs. We have used $3.69/MMbtu in the model sheet - the average gas price for NYMEX Henry Hub futures this year so far. If a gas price escalation factor is provided (orange rectangle in Table 1 – cell I8 in the model sheet) this is used to calculate gas prices after the first year. If there is no escalation factor the gas price used is held constant throughout the period. The gas price field can be used to solve the break even cost for the model in a given production/discount rate scenario (more on this in the next episode).

Operating Costs: (Orange rectangle in Table 1 – cell K16 in the model sheet). The operating cost is the variable cost of production that we explained in Part 4 of the series in $/Mcf). If the operating cost escalation factor is set (Pink rectangle in Table 1 – cell I7 in the model sheet), then that factor is used to increase operating costs after year 1. If not the model assumed operating costs stay flat over the life of the well.

In the next episode in the series we will run through the model outputs and discuss the various production economics evaluations that can be calculated with the model. ■

Source: RBN Energy LLC

UAE:

Modernizing and diversifying its energy portfolio

UAE oil industry in breathing a fresh air, a new minister and a whole new and modern outtake on the oil industry that will take UAE a long way. Modernizing their facilities and diversifying their energy portfolio and opening new horizons in international energy markets.

As the youngest and only Arab OPEC minister to have experience at a foreign company, could you please introduce yourself to the readers of OGFJ?

I earned my Bachelor of Science degree in petroleum engineering in 1996 from Tulsa University in the United States. I gained a technical and management background in reservoir engineering, production operations, and project management from managing the production and facilities engineering for five operating companies of the Abu Dhabi National Oil Company (ADNOC). Within that period, I was seconded to Shell EP in the Netherlands where I focused on diversifying my portfolio from an international point of view working on a number of projects in Nigeria, the North Sea, Brunei, and the Netherlands.

Subsequently, I returned to the UAE and was given the responsibility of looking after all of Abu Dhabi's five offshore companies. In my capacity as a manager of production and facilities engineering, I managed and coordinated a collective daily production of more than one million barrels; almost half of the country's total production at that time. I was involved in major upgrades of Abu Dhabi's Marine Operation Company (ADMA OPCO) and Zakum Development Company (ZADCO) that amounted to multi-billion dollar projects.

Moving away from these technical aspects, I joined Mubadala in 2007 where together with a small team I contributed to establishing what is now known as Mubadala Petroleum. I was responsible for the growth and business development of the company that is now present in 12 countries. Through my six-year practice at Mubadala, I was exposed to a commercial perspective of the industry until I was

The modernization and economic development of the UAE has been a double-edged sword. Progress is obviously good for the nation and its people, but it means energy usage has soared, and greater energy consumption means less to sell overseas. How are you dealing with this issue?

This depends on the strategies we devise to balance and tackle the future of the country's energy considerations. At this given moment, I believe we have made good progress towards diversifying our energy portfolio to ensure that we strike that balance. Take the example of the introduction of nuclear energy, a key milestone that will contribute up to 25% of Abu Dhabi's electricity consumption. Without that, we would be more dependent on our natural resources and burning more of it. The gradual elimination of the consumption of liquid fuel for energy is also an initiative to maximize the UAE's benefit and reduce our environmental footprint.

Almost all of our electricity today is generated by gas and we only tap into insignificant amounts of fuel oil or diesel sources when required. The challenge lies in linking this with what is facing us in the future. One of my aims is to devise a new strategy that will tackle all of these challenges relating to the growth of local demand as well as our role as an OPEC member supplying the world with oil and gas. We intend to continue that critical role. I recently highlighted the need to revamp and increase our export capacity to 3.5 million bpd. There are a number of on-going projects aimed at realizing this ambition and we are on track to realizing this capacity production by 2017, as noted by ADNOC's managing director.

Despite the country's vast proven gas reserves, rapid growth in domestic energy demand over the past few years has caused the UAE to become a net-importer of natural gas prompting the country to renew its focus on exploiting its gas reserves. What challenges are you facing in exploiting the reserves and what role can foreign partners play in addressing these?

I believe we are well developed within that space. Even in the more challenging areas, you can see that we welcome the introduction of the latest technologies. Al Hosn, the relatively new joint venture in Abu Dhabi working on the Shah sour gas project, is a good illustration of that readiness to work with the providers of technology who can help us to enhance the development of our gas resources. The underlying issue here is not the abundance of the resource. Instead, the challenge is one of technology and of forward thinking and planning before demand spikes which lead to dramatic actions such as the importation of more expensive options such as LNG.

In any case, if you must choose between burning fuel and the more expensive option, I believe the latter

would be more favorable. This is especially true if you are faced with a cyclical demand for energy as we do in the UAE between the summer and winter.

Abu Dhabi has embarked on an ambitious growth plan in terms of oil production capacity, which is set to increase to 3.5 million bpd by 2017. Specifically what investments does this entail and what opportunities do they create for existing and prospective partners?

A lion's share of that capacity growth will stem from the major operating companies within Abu Dhabi. ADCO, along with its partners, is steadily progressing towards achieving its new capacity targets, as are the ADMA OPCO and ZADCO joint ventures. There is a difference between capacity and actual production which is interrelated with our role as an OPEC member in supplying the market with equilibrium amounts of oil. Of course, as a member of OPEC, we are committed to ensuring a good balance between price and supply.

Broadly speaking, the investments we are observing today demonstrate that there is a need for those countries endowed with the major resources to have that additional capacity and flexibility to respond to the changing environment. No one, for instance, anticipated that the turbulence in the Middle East would evolve so rapidly. That had a significant impact on supply conditions. Moreover, despite the economic slowdown in Europe, the price of oil remained at record high levels. Under normal circumstances, we would have expected to see a different price reaction. Key suppliers must have the capacity and flexibility to respond to such developments.

"The challenge is one of technology and of forward thinking and planning before demand spikes which lead to dramatic action such as the importation of more expensive options, such as LNG."

The UAE is one of the OPEC members that realized a record oil income in 2012. However, recently, some industry observers have said that OPEC is increasingly "irrelevant." How would you respond to that statement?

I do not believe that is a fair statement and must disagree. OPEC has played, and will continue to play, a key role in the balancing of the market. Just as with any other organization, there are challenges, but they will certainly not make OPEC an obsolete or inactive body.

What we need to focus on moving forward as an organization is maintaining our unity and strategizing around the original goal of OPEC. We need to develop a common strategy on how we tackle the evolving market dynamics and how we can continue to best balance the market to both protect the consumers and the interests of its member countries. History has taught us that every spike in the price of oil is subsequently followed by a decrease. That instability is not our ultimate interest regardless of whether member countries realize a short-term benefit. We

are more interested in stabilizing the market to enjoy a degree of predictability in growth so that we can respond to it more effectively. The aforementioned flexibility in production capacity is one of the measures that will allow the OPEC members to manage on-going market dynamics.

American oil production has risen to its highest level in decades due to technological developments that have enabled economic production from shale and other tight oil formations. Canada is rapidly developing its oil sands, a long-term resource for that country. Both countries are developing LNG export facilities. How is the UAE responding to the shale gas and oil "revolution" in North America? Do you see any of this as a threat to your country?

On the contrary, I see an opportunity there. As a net importer of gas, I think the fair price of gas will be dictated by market forces. How much of the gas can or will be exported from the United States is a question for the industry to answer, rather than the regulators. Similarly, another question and challenge relates to the investments required in Canada to export their gas to the market and determining the price that will be deemed as reasonable by investors. As you can see, gas has three key prices depending on where that gas is discovered.

In my view this is not entirely a negative considering the industry's responsiveness to the pull and push of technology. The evolution of technology and infrastructure in the US is something that would help securing the gas to accommodate the rapid growth of certain countries as in China, for instance. We know that the resources exist, however at what cost will they be extracted and supplied to the consumers? Is that technology barrier or infrastructure barrier reasonable enough to encourage investment despite the knowledge of future gas prices? I believe these are the major challenges investors are facing today.

It is fair to say that today the UAE is an "oil and gas" nation. However, a few points lead us to believe the energy mix of your country is evolving. As you have just pointed out, nuclear energy is expected to account for up to 25% of power generation by 2021. In addition, the UAE recently inaugurated the world's largest solar plant, Shams 1, and you also recently publicly stated that "we want to seize the opportunities presented by clean energy technologies." Could you elaborate as to which energies will form the core of the UAE's future mix, and which energies will play a more complementary role?

For the time being, gas will continue to be the core source of energy for the UAE. Looking ahead, we are working on a communicated percentage increase in terms of the contribution of alternative and more sustainable sources of energy. We are in the initial chapter of developing and implementing renewable sources but we do have the aspiration to attain reasonable percentages in the future.

The challenge in the use of renewables relates to regulations. That is, sustainable energy sources are rather well developed in Europe and a number of other countries due to the lack of oil subsidies. The issue we are facing locally is the heavy subsidy of some forms of energy as opposed to renewables, which may be unfair.

You need to look at this issue from the future perspective. If you are a net importer of energy, would you choose to import gas? Or do you develop a renewable source? Which one is more cost effective given the given gas price? This is what we are working towards here at the Ministry to devise a strategy and guideline around that. In addition, we are aiming to develop principle regulations that will take into consideration all forms of energy in an unbiased manner. From a regulatory point of view, these topics are well developed in Europe and we are using them as a benchmark to be ready to adapt to the future.

We do not yet have a clear answer on the UAE's future energy mix beyond what has already been announced by Abu Dhabi and Dubai but that is precisely what we are working towards. For the time being, Dubai for instance has committed to having a 5% contribution of renewables by 2030, or

1,000MW, while Abu Dhabi is working towards a 7% contribution by 2020. Ultimately, what we lack is a holistic strategy on a federal level to tackle those issues that could lead to stronger commitments.

On the other hand, looking at the technological aspect, I recently visited the Masdar Institute of Technology and was proud of the renewable R&D technologies being developed there. These efforts are aimed at making all forms of such energies a reality, from the lab all the way up to the implementation stage through collaboration with commercial organizations. I believe this initiative that the Abu Dhabi government sanctioned is undoubtedly a step in the right direction and if we continue gaining the local governments' support then we can achieve significant milestones in developing these technologies. Although realistically gas will continue to be the central energy source for the time being, I am very optimistic about the future of the advancements being made in the renewable sphere. As we move to the future, renewables will play a more complementary role while increasingly gaining a share of the UAE's energy mix.

This depends on the strategies we devise to balance and tackle the future of the country's energy considerations. At this given moment, I believe we have made good progress towards diversifying our energy portfolio to ensure that we strike that balance. Take the example of the introduction of nuclear energy, a key milestone that will contribute up to 25% of Abu Dhabi's electricity consumption. Without that, we would be more dependent on our natural resources and burning more of it. The gradual elimination of the consumption of liquid fuel for energy is also an initiative to maximize the UAE's benefit and reduce our environmental footprint.

How do you foresee the Emirates in 10 years and where will the country fit in this rapidly evolving world energy map?

This goes back to the UAE's founder, the late Sheikh Zayed bin Sultan Al Nahayan, who during the country's early history cared tremendously about its environment. The Supreme Petroleum Council - the highest authority responsible for the petroleum affairs in the Emirate of Abu Dhabi - was encouraging ADNOC and its partners to adopt a zero flaring policy and the reduction of emissions. From an environment perspective, I think the UAE is demonstrating an international level of awareness and care that lead to our leading role in hosting the headquarters of the International Renewable Energy Agency (IRENA) in Abu Dhabi. The formation of IRENA heralds a new era of international cooperation to address the pressing issues of climate change, global warming and energy security. In addition to this, the agency is tasked with facilitating access to all relevant information on the potentials for renewable energy, best practices, effective financial mechanism and state-of-the-art technological expertise. In this context, we are trying to support most of the initiatives that make sense in that space.

Simultaneously, we are balancing this goal with our role as a major supplier of hydrocarbons. Both are of the utmost importance to us and I think it is difficult to find many examples of countries that are trying to achieve both at the same time. Some are more focused on the production of hydrocarbons, while other are more focused on developing alternative sources of energy. We are trying to strike that balance in between these two poles which is no easy feat. These characteristics of the UAE serve as a differentiator for our country. Norway is an excellent example of both a significant hydrocarbons producer and a front runner in sustainable energies.

The major challenges we are therefore facing is the lack of awareness on the importance of energy conservation and its proper use as well as the related high level of subsidies the government is providing. This is a common challenge for the GCC countries where the energy is heavily subsidized resulting in a very high per capita usage. If we succeed in reducing that, I believe we will be conserving our environment while helping the government to better serve its people by channelling the subsidies to more beneficial initiatives and projects.

What is your final message for our readers?

The UAE is opening up. We are an open economy and continue to encourage the sort of partnerships that make sense. From this prospective, we need all the help we can get to tackle the challenges related to the development of our gas resources. I believe that the SPC and ADNOC in Abu Dhabi are approaching this with an open mind. The UAE government is also highly supportive of initiatives designed to improve the technologies to advance other energies. In order to support these ambitions, it is important that we tackle these issues from a number of fronts including the regulatory, R&D, and investment perspective. ■

Crude Oil Futures Down

Crude-oil futures slipped to the lowest levels in nearly seven weeks on expectations that maintenance work at U.S. refineries will cut near-term demand.The prospect for a big drop in crude demand in the world's largest oil consumer comes as traders are keeping a close eye on diplomatic maneuvering at the United Nations, where Iran is expected to make overtures about improving relations with the West in an effort to loosen sanctions, which include an embargo on oil sales.

Both U.S. President Barack Obama and Iran's new president, Hasan Rouhani, are scheduled to address the world body Tuesday, but Iran said there aren't any plans for a direct meeting of the leaders of the two nations, which would be the first since the Iranian Revolution. But U.S. Secretary of State John Kerry will hold high-level talks with his counterpart, Foreign Minister Javad Zarif on Thursday.Light, sweet crude oil for November delivery on the New York Mercantile Exchange traded down 64 cents, at $102.95 a barrel, its lowest level since Aug. 8. Front-month crude has dropped for the prior three sessions.

ICE North Sea Brent crude oil for November was 12 cents lower, at $108.04 a barrel, also the weakest price since Aug. 8.

Iran has made repeated comments about a willingness to cooperate on resolving issues related to its nuclear program. An impasse over the issue led to strict U.S. and European Union sanctions, which have reduced Iran's oil sales and choked off revenues. Iran maintains it seeks only nuclear-generating capacity, but the U.S. and its allies dispute this, alleging that Iran seeks to develop nuclear weapons.Iran comes to the forefront as diplomatic initiatives overcame a potential U.S. air strike against Syria, over its alleged use of chemical weapons, and as Libyan crude oil exports have been returning to the market after recent port strikes."The market is jumping the gun on Middle East peace," said Carl Larry, analyst at Oil Outlooks and Opinions.Still, he said that expected seasonal maintenance work at U.S. refineries will cut demand for crude in the near term, allowing for inventories to rise and putting pressure on prices.

Oil ministers from Saudi Arabia and Kuwait sought to assure the market that near-term oil supplies will be adequate.

Kuwait's Oil Minister Mustafa al-Shamali said his nation is currently pumping at capacity of 3.2 million barrels a day of crude. That figure is well above the International Energy Agency's estimate of August output of less than 2.8 million barrels a day.

Ali al-Naimi, the Saudi oil minister, said "supplies are adequate and inventories are excellent." He also repeated a pledge that the kingdom would meet any additional demand. He didn't cite a current output level, but the Saudis have reported production last month hit 10.19 million barrels. Mr. Naimi said the kingdom's output capacity stands at 12.5 million barrels a day.

U.S. gasoline and diesel fuel inventories now stand at 10% and 16.1% above year-earlier levels, keeping pressure on prices of those products.October-delivery RBOB gasoline, which dropped Monday to its lowest price since December, was unchanged at $2.6230 a gallon. Prices rebounded from modest losses after Marathon Petroleum Corp. (MPC) said it had a fire in a hydrotreater at its 451,000 barrel-a-day Galveston Bay refinery in Texas. The company declined to comment on operations, but said the fire was quickly extinguished on Monday.

Heating-oil futures for October delivery, which trade as a proxy for diesel fuel, were 1.79 cents lower, at $2.9383 a gallon, trading at the lowest level since early July. ■

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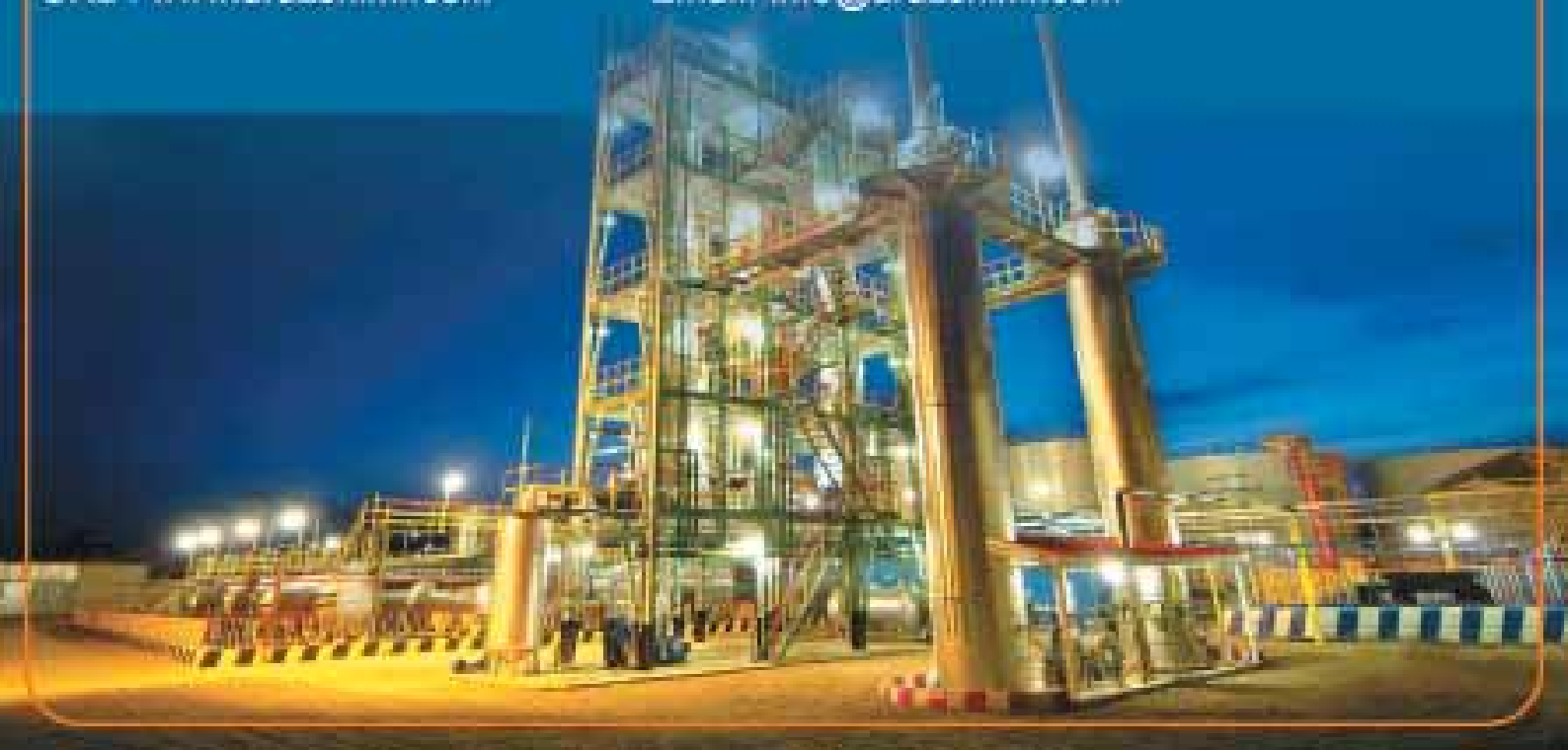

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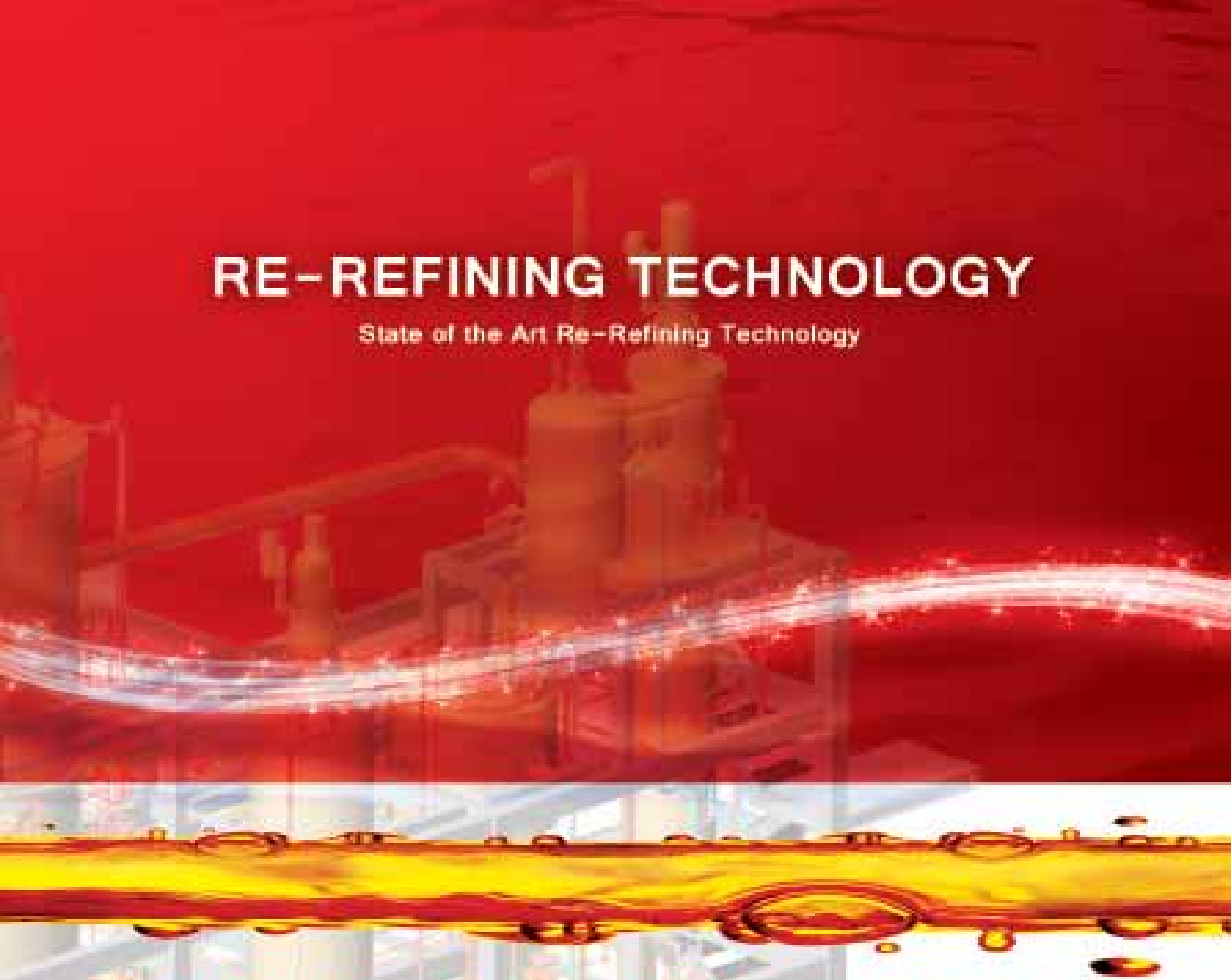

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