



Republic of Iraq
Ministry of Oil

Iraqi Refineries Overview



39th JCCP International Symposium

January 2021

Outlines

- **General Outlook & Important Figures**
- **Iraqi Refineries Overview**
- **Challenges**
- **Upgrading Technologies Needed**
- **Conclusions**

Iraq Petroleum Industry Outlook

- Iraq is one of the world's largest oil exporters, has the resources and intention to increase its oil production vastly & its refining capacity as well.
- Increasing needs to oil products makes the goal of raising the refining capacity a vital issue for the Iraqi oil industry which is seeking to develop and construct the new planned refineries with advanced technologies that enhance products to meet low sulfur emissions.



Iraq Petroleum Industry Facts & Figures



Proven crude oil reserves (million barrels)

145,019

Proven natural gas reserves (billion cu. m.)

3,729

Crude oil production (1,000 b/d)

4,410.0

production of natural gas (MMSCF/year)

1,107291

Refinery available capacity (1,000 b/cd)

609

Crude oil exports (1,000 b/d)

3,863.0

Important Dates In Iraqi Petroleum Industry

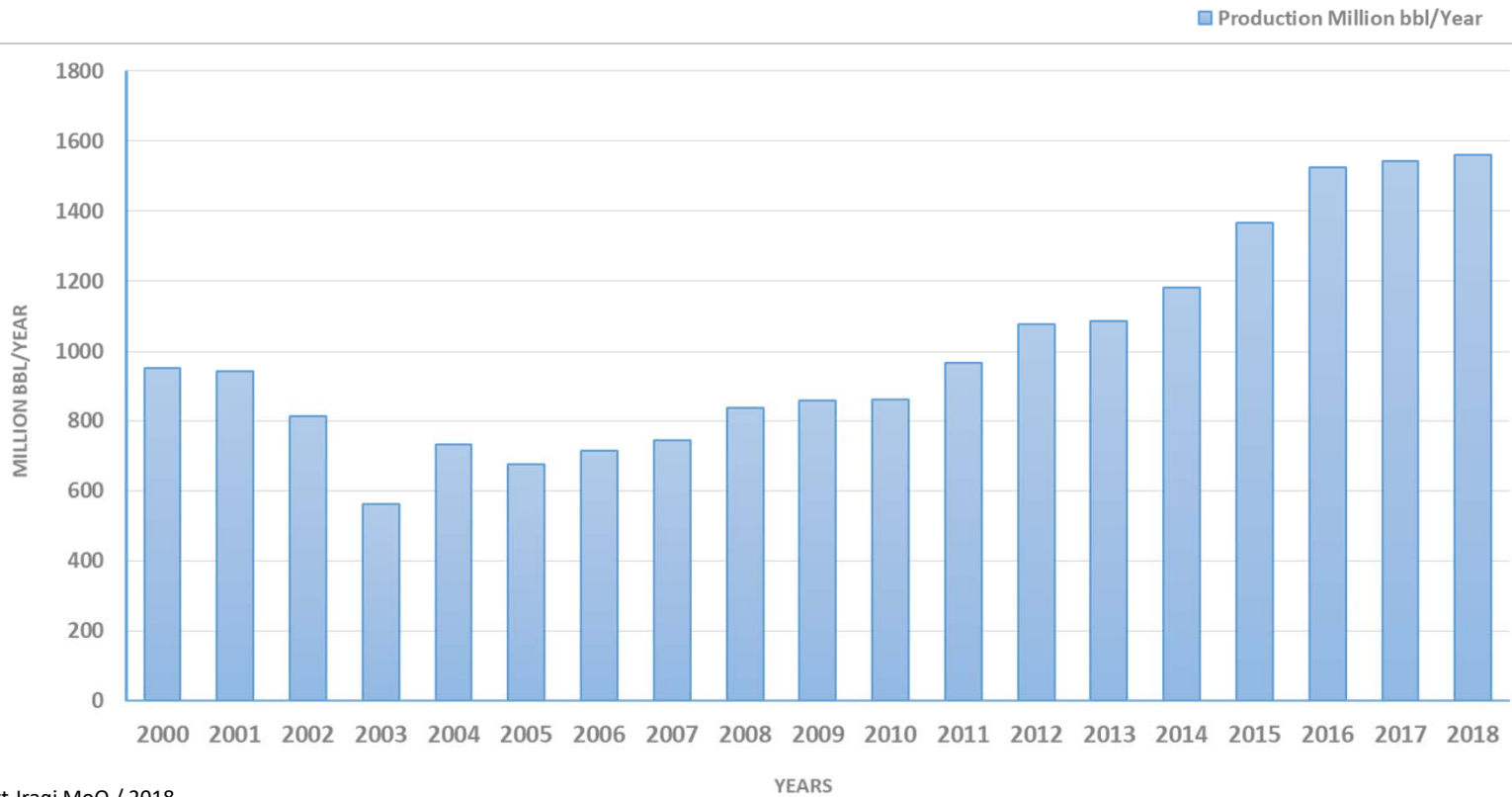
- 1927 “Baba” dome , the country’s first productive oil well was drilled.
- 1927 “ Wand “was the country’s first Refinery built , with 12000 bbl./d
- 1934 Iraq started to export its oil to international markets.
- 1959 Iraqi ministry of oil was founded.
- 1960 OPEC Organization was founded in Baghdad.



SOURC: Stastical group Report-Iraqi MoO /2018 , OPEC [Annual Statistical Bulletin 2019](#)

Iraq Oil Production (2000-2018)

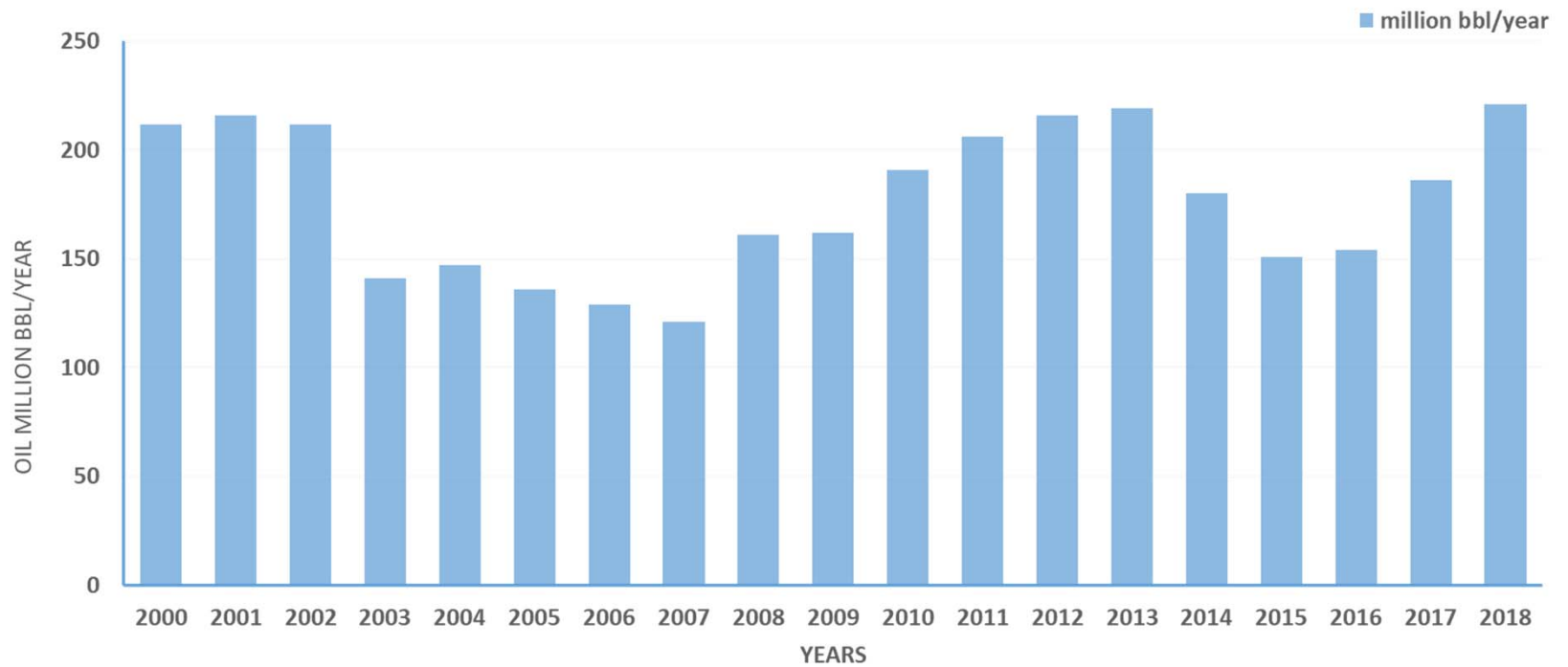
| Year | Production Million bbl/Year |
|------|-----------------------------|
| 2000 | 952 |
| 2001 | 944 |
| 2002 | 813 |
| 2003 | 561 |
| 2004 | 730 |
| 2005 | 676 |
| 2006 | 714 |
| 2007 | 743 |
| 2008 | 835 |
| 2009 | 856 |
| 2010 | 861 |
| 2011 | 968 |
| 2012 | 1077 |
| 2013 | 1088 |
| 2014 | 1181 |
| 2015 | 1367 |
| 2016 | 1525 |
| 2017 | 1543 |
| 2018 | 1562 |



SOURC: Stastical group Report-Iraqi MoO / 2018

Oil Supplied to Refineries (2000-2018)

| Year | Million bbl/Year |
|------|------------------|
| 2000 | 212 |
| 2001 | 216 |
| 2002 | 212 |
| 2003 | 141 |
| 2004 | 147 |
| 2005 | 136 |
| 2006 | 129 |
| 2007 | 121 |
| 2008 | 161 |
| 2009 | 162 |
| 2010 | 191 |
| 2011 | 206 |
| 2012 | 216 |
| 2013 | 219 |
| 2014 | 180 |
| 2015 | 151 |
| 2016 | 154 |
| 2017 | 186 |
| 2018 | 221 |



SOURC: Stastical group Report-Iraqi MoO / 2018

Iraq Refining Overview

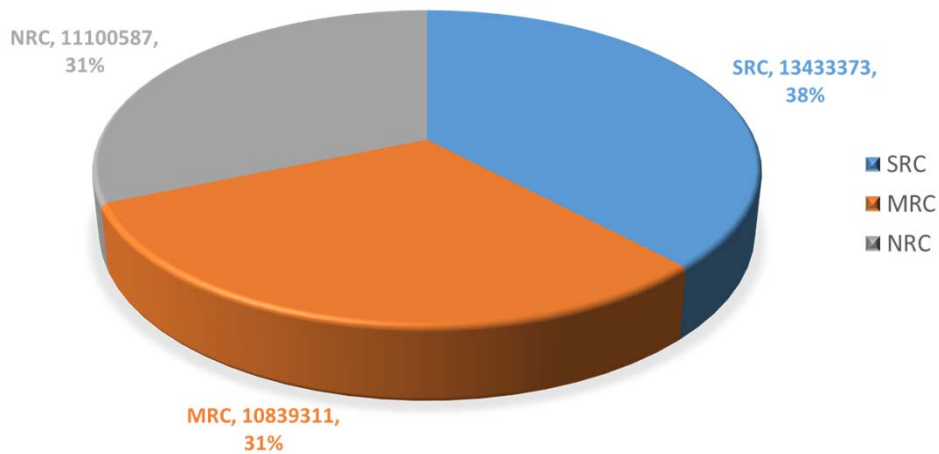


Iraq Refining Overview

- Domestic refining capacity to be doubled within next ten years.
- Rehabilitation and expanding Iraq's refinery infrastructure.
- Three Major Refineries Companies & with specification of euro-5 .
. In the middle of 2020, Ministry of Oil signed the contract to establish a unit of FCC with a Japanese company.
- Available capacity 609,000 bbl/day in 2018



% Refined Crude Oil /M³



Iraq Internal Production & Consumption of Crude Oil (1000 bbl/day)

| Year | Production | Crudes supplied to refineries | Crudes supplied to power stations | Total current consumption from internal production |
|------|------------|-------------------------------|-----------------------------------|--|
| 2016 | 4167 | 420 | 160 | 580 |
| 2017 | 4469 | 531 | 171 | 702 |
| 2018 | 4410 | 605 | 163 | 768 |

SOURCE: Stastical group Report-Iraqi MoO /2018

New Projects To Develop Existing Refineries

In parallel to new refineries projects, Iraq is investing to revamp and expand existing refineries.

South Refineries

- CDU with capacity 70 kbd (4th unit) -EPC
- Isomerization unit with capacity 10000 bbl/day -EPC

New planned projects:

- Naphtha HDT 30000 bbl/day
- CCR with capacity 17000 bbl/day
- New 4th gas unit
- FCC unit with capacity 34000 bbl/day (visbreaker unit ,SRU,LGO HDT)

Midland refineries company

- Commissioning operation of Isomerization unit with capacity 10000 bbl/day
- Naphtha HDT with capacity 13000 bbl/day +CCR with capacity 10000 bbl/day (EPC)

North refineries company

- Different units are currently under Rehabilitation
- Rehabilitation CDU 70000 bbl/day of Salahdin 1 refinery , total capacity to be 140000 bbl/day in 2020
- Rehabilitation of north refinery CDU 150000 in future



Challenges Facing Current Refineries

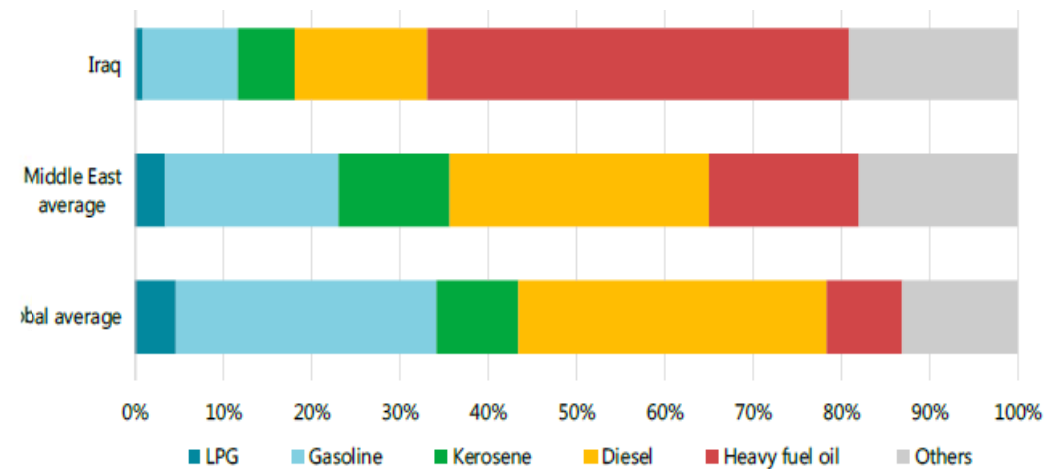
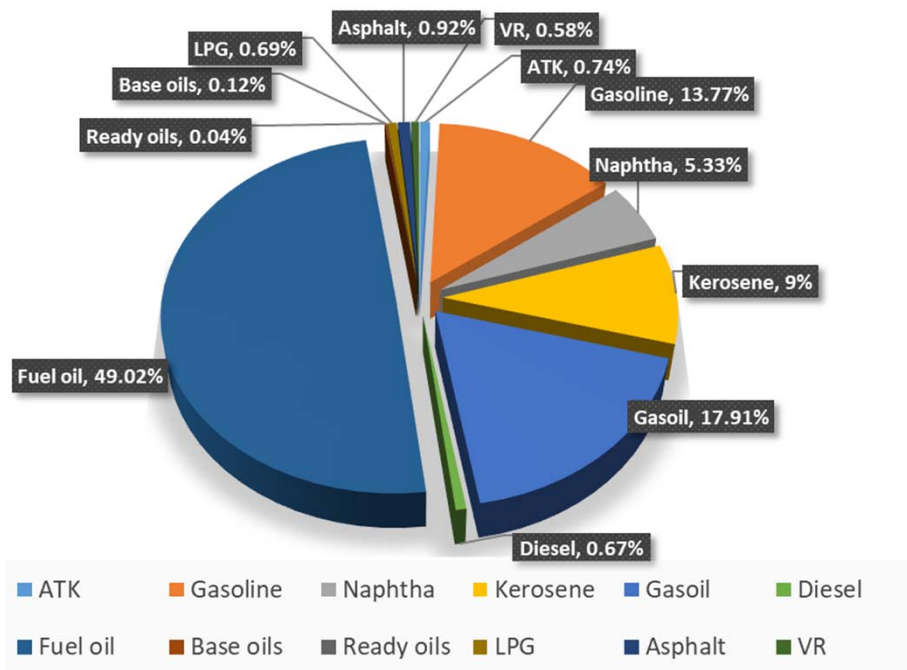
. Fuel oil represents nearly half of total refining production (50% HFO) with high sulfur content (3.5-4.5 wt%) which is not meeting the IMO new regulations of decreasing to 0.5 wt%.

.Fuel oil is used mainly as fuel for industry & for power generation, part of it is sent to lube plant to produce lubes, wax and asphalt.

- Desulphurization units capacity are not covering all products.**
- Crude Oil Specifications problems received by refineries.**
- lack of funding for the new project.**
- Storage & transportation capacity shortage.**

Quality of Refining Products

- Most current refineries Oil products are not meeting the international standards
- Very high yields of low-value outputs and low yields of high-value outputs



Refinery product mix in Iraq compared with regional / global averages, 2018

Source: IEA, Iraq Energy Report, 2019

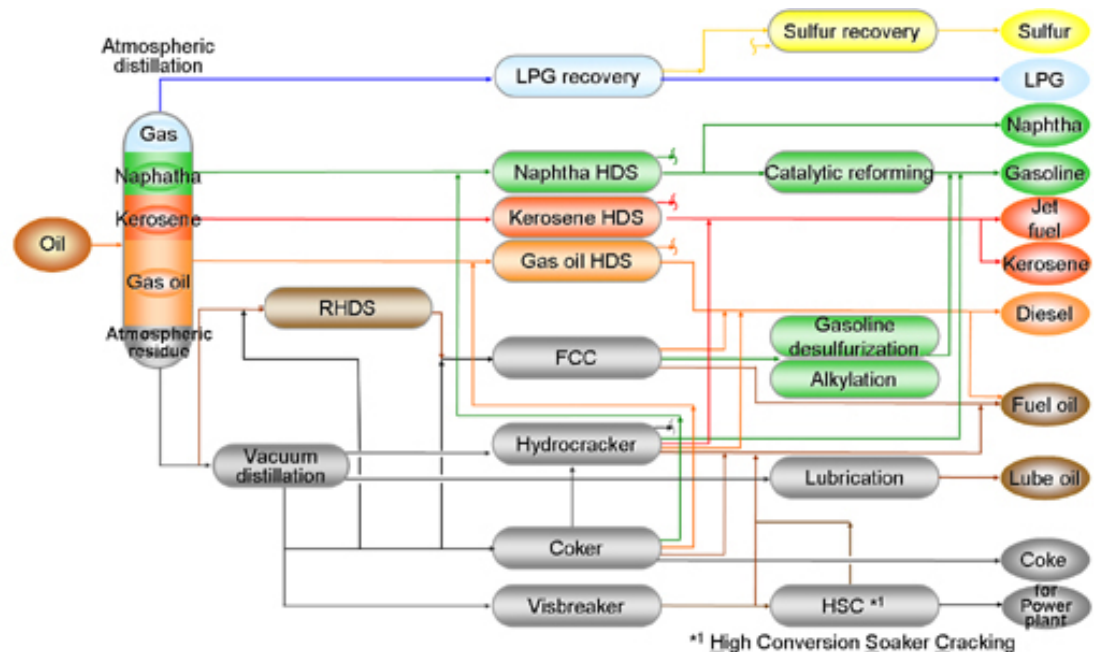
Average Vol% of Iraqi refineries products of refined crude oil in 2018

SOURCE: Stastical group Report-Iraqi MoO /2018

- **New upgrading technologies needed To reach Bottom of Barrel**

The new projected refineries would ensure use high percentage of refinery feed (crudes) to get high value products ,as complex refineries to increase the Nelson complexity index (NCI) ,Than existing current ones of average (3.9) NCI, using the semi or deep conversion technologies that would modernize, the Iraqi refineries infrastructure to exploit the bottom of barrel .

- Catalytic Cracking Units
- Hydrocracking units
- Gasification technology
- Delayed Coker
- FCC & RFCC UNITS
- RDS\VRDS



Our policy is to maximize the Investment in Refineries

Iraq Government is planning to double capacity with constructing new refineries by investment to add about one million b/d through the following projects:

| No | Refinery Name | Capacity KBPSD | Current State |
|----|---------------|----------------|---|
| 1 | Kirkuk | 70 | signed contract |
| 2 | Karbala | 140 | EPC |
| 3 | Maissan | 150 | signed contract |
| 4 | Nasiriyah | 150 | announced for investment |
| 5 | Basra | 150 | under negotiation with an investor |
| 6 | Fao | 300 | a letter send to companies to show their interest |
| 7 | Haditha | 70 | Investment or (EPC +F) |

Investment law 64/2007 :

Technical requirements : The refinery shall utilize advanced designs to maximize both gasoline and gasoil yield or at least one of them to ensure the production of fuel oil shall not exceed 20% by volume and to ensure that the design shall fully conform to industrial safety and environment rules and regulations.



Conclusions

- **Huge incentives are being offered for investment in current Iraqi refineries and other new projects , Urgent need for migration from hydro skimming refinery system to semi – conversion then to deep conversion refineries according to EURO-5 .**
- **Iraq projected to expand downstream activities in order to increase revenues and reduce reliance on imported refined products.**
- **Amendments to laws, rules & regulation are underway to develop them to achieve these goals.**



**Thank You For
Your Attention**
